



CARIIA
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Initiative in Africa and Asia*

Review of Current and Planned Adaptation Action in Burkina Faso

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Titles in this series are intended to share initial findings and lessons from research and background studies commissioned by the program. Papers are intended to foster exchange and dialogue within science and policy circles concerned with climate change adaptation in vulnerability hotspots. As an interim output of the CARIAA program, they have not undergone an external review process. Opinions stated are those of the author(s) and do not necessarily reflect the policies or opinions of IDRC, DFID, or partners. Feedback is welcomed as a means to strengthen these works: some may later be revised for peer-reviewed publication.

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Abstract

For the landlocked West African country of Burkina Faso, climate change presents a significant challenge. The country is among the least developed countries in the world, and many Burkinabe continue to live in multi-dimensional poverty, have limited access to social services, and depend on climate sensitive livelihood activities — particularly agriculture and livestock raising. The country historically has been impacted by prolonged dry conditions and flooding due to heavy rainfall, and faces growing environmental concerns such as deforestation, land degradation, and water scarcity. These circumstances leave the country vulnerable to climate change, as has been acknowledged by the Government of Burkina Faso in its national development strategy. The government has responded by engaging in adaptation planning, prioritizing actions related to water, agriculture, livestock, and forestry. It has also begun to mainstream climate change considerations into the policies and plans of its most vulnerable sectors. The international community is supporting adaptation efforts in Burkina Faso, funding projects that primarily address needs related to its priority sectors. Many of these projects target populations in the country’s vulnerable northern areas. Significant additional capacity building within government, including local governments, and support for vulnerable populations is needed for Burkina Faso to maintain and advance the development gains it has achieved in recent years. These issues are more fully explored in this paper, which is one in a series of country reviews prepared to provide the Collaborative Adaptation Research Initiative in Africa and Asia with a snapshot of adaptation action in its countries of engagement.

Résumé

Examen des mesures d'adaptation actuelles et prévues au Burkina Faso

Pour le Burkina Faso, un pays enclavé de l'Afrique de l'Ouest, les changements climatiques présentent un défi de taille. Le Burkina Faso est l'un des pays les moins développés du monde, et de nombreux Burkinabés vivent toujours dans une pauvreté pluridimensionnelle, disposent d'un accès limité aux services sociaux et dépendent d'activités sensibles aux aléas climatiques pour leur subsistance, notamment l'agriculture et l'élevage. De tout temps, le pays subit tant des conditions de sécheresse prolongées que des inondations dues aux pluies diluviennes, en plus de faire face à des préoccupations environnementales grandissantes comme la déforestation, la dégradation des sols et la rareté de l'eau. Dans de telles circonstances, le pays est exposé aux effets des changements climatiques; dans sa stratégie nationale de développement, le gouvernement du Burkina Faso en a fait le constat. Le gouvernement a réagi en entreprenant la planification de mesures d'adaptation, en donnant la priorité aux mesures liées aux ressources en eau, à l'agriculture, à l'élevage et à la foresterie. Il a également commencé à intégrer les questions liées aux changements climatiques aux politiques et aux plans de ses secteurs les plus vulnérables. La communauté internationale soutient les efforts d'adaptation du Burkina Faso, en finançant des projets qui ciblent principalement les besoins associés aux secteurs prioritaires du pays. Bon nombre de ces projets visent les populations des régions vulnérables du nord du pays. Un sérieux effort de renforcement des capacités s'impose au sein du gouvernement, y compris dans les administrations locales, ainsi qu'une aide aux populations vulnérables, pour que le Burkina Faso conserve et consolide les gains acquis ces dernières années en matière de développement. Ces questions sont traitées plus en profondeur dans ce rapport, qui s'inscrit dans une série d'examens de pays menés dans le cadre de l'Initiative de recherche concertée sur l'adaptation en Afrique et en Asie (IRCAAA), pour donner un aperçu des mesures d'adaptation dans les pays où elle est déployée.

Acronyms

ABTN	Association Bao Taab Neere pour le développement durable et la sauvegarde de l'environnement (Bao Taab Neere Association for Sustainable Development and the Protection of the Environment)
BRACED	Building Resilience and Adaptation to Climate Extremes and Disasters
CARIAA	Collaborative Adaptation Research Initiative in Africa and Asia
CGIAR	Consultative Group for International Agricultural Research
CIA	Central Intelligence Agency
CONASUR	Conseil National de Secours d'Urgence et de Réhabilitation (National Council for Emergency Relief and Rehabilitation)
CONEDD	Conseil national pour l'environnement et le développement durable (National Council for the Environment and Sustainable Development)
DFID	Department for International Development (United Kingdom)
EU	European Union
FIP	Forest Investment Program
GCCA	Global Climate Change Alliance
GFDRR	Global Facility for Disaster Reduction and Recovery
IAVS	Institut d'Applications et de Vulgarisation en Sciences (Institute for Application and Distribution of Sciences)
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
LDCF	Least Developed Countries Fund
MECV	Ministère de l'environnement et du cadre de vie (Ministry of Environment and Quality of Life)
MEDD	Ministere de l'Environnement et du developement durable (Ministry of Environment and Sustainable Development)
MDG	Millennium Development Goal

MEF	Ministère de l'économie et des finances (Ministry of Economy and Finance)
MAHRH	Ministère de l'agriculture, de l'hydraulique, et des ressources halieutiques (Ministry of Agriculture, Water and Fisheries)
MRA	Ministère des ressources animaux (Ministry of Animal Resources)
NAPA	National Adaptation Programme of Action
NAP	National Adaptation Plan
ND-GAIN	University of Notre Dame's Global Adaptation Index
OECD	Organisation for Economic Cooperation and Development
PAPISE	Plan d'actions et programme d'investissements du sous-secteur de l'élevage (Action Plan and Investment Program for the Livestock Sector)
PNSAN	Politique nationale de sécurité nationale et nutrition (Policy on Food Security and Nutrition)
PNSR	Programme national du secteur rural (National Rural Sector Programme)
PRISE	Pathways to Resilience in Semi-Arid Economies
REDD+	Reducing emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks
SCADD	Stratégie de croissance accélérée et de développement durable (Strategy for Accelerated Growth and Sustainable Development)
SP-CONEDD	Secretariat permanent du Conseil National pour l'Environnement et le Développement Durable (Permanent Secretariat of the National Council for Environment and Sustainable Development)
UN	United Nations
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WRCU	Water Resource Coordination Unit

WASCAL West African Science Service Center on Climate Change and Adapted Land
Use

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Synopsis

Climate risks	Key sources of vulnerability		
Vulnerable sectors	Illustrative potential impacts on vulnerable sector	Illustrative adaptation priorities and adaptation measures for each vulnerable sector	Projects in sector¹
<ul style="list-style-type: none"> • Increase in extreme rainfall events • Decrease in rainfall and increased variability of rainfall • Rising temperatures • More wind 		<ul style="list-style-type: none"> • High reliance on climate-dependent livelihoods • Low agricultural capacity and production that is largely rain-fed and for subsistence • Weak education and health systems • Deforestation and soil degradation 	
Water	<ul style="list-style-type: none"> • Destruction of water infrastructure due to flooding • Sedimentation and siltation in rivers and lakes • Increased pollution and depletion of surface water resources • Drying of wells and decreased recharge of water table • Exacerbation of existing water stress; increased water scarcity as supply unable to meet demands from multiple users 	<ul style="list-style-type: none"> • Implement protection measures to control pollution of waterways and water stores • Improve planning and management of Oursi Lake to reduce climate impacts on both the lake and the ecosystems and populations it supports • Stop siltation and accumulation of sediments in lakes and waterways • Develop scenarios that identify impacts and vulnerabilities and inform recommendations on actions to promote adaptation 	19%
Agriculture	<ul style="list-style-type: none"> • Reduction in crop yields (including vegetables and fruit trees) and increased reliance on unfavourable seed varieties • Risk of losing less-resilient crop species • Increased run-off, erosion and soil leaching • Changes to the planting calendar • Agricultural expansion to compensate for crop losses and declines in yield • Increase in pests (crickets, caterpillars) 	<ul style="list-style-type: none"> • Increase overall irrigated agricultural production; promote increased use of irrigation in the northern region • Develop an adaptation strategy specific to the agricultural sector • Support agricultural research on the creation and introduction of adapted crop varieties • Strengthen early-warning systems to improve food security • Protect agricultural production through the use of appropriate technologies in the south-west and east of the country 	52%

¹ Percentage of total identified discrete adaptation projects and programs based upon research undertaken as part of this review. Note that individual projects may address more than one sector.

		<ul style="list-style-type: none"> • Build adaptive capacity of households • Develop and implement agricultural insurance 	
Livestock / Pastoralism	<ul style="list-style-type: none"> • Loss of livestock due to water scarcity and flood events • Increase in water-borne livestock disease • Reduced productivity and loss of fodder and pasture quality • Drying of watering holes 	<ul style="list-style-type: none"> • Increase fodder production and establish food stocks for livestock • Make pastoral regions and strategic pastoral areas secure • Develop and implement warning and response tools to avoid crises related to access to water and fodder by pastoralists • Establish security stocks of veterinary supplies 	19%
Forestry	<ul style="list-style-type: none"> • Increased erosion and decline in soil quality • Reduced water availability and associated loss of forest resources • Loss of biodiversity and migration of flora species • Increased evapotranspiration, loss of big trees, and acceleration of forest fires 	<ul style="list-style-type: none"> • Improve planning and management of natural forests, including valuing non-wood forestry products in the east of the country • Improve fauna management and habitat by communities in the Mouhoun region • Promote energy-saving and renewable energy technologies 	29%
Particularly vulnerable regions	Particularly vulnerable groups	Status of climate governance (policies, institutions)	
<ul style="list-style-type: none"> • North and central plateau of Burkina Faso • Ouagadougou • Oursi Lake • Mouhoun region 	<ul style="list-style-type: none"> • Rural communities • Women, elderly, and youth 	<ul style="list-style-type: none"> • Inter-ministerial body oversees climate change initiatives • National Adaptation Plan published in 2015 • Climate change recognized as key risk in some national policies, several of which identify possible actions to reduce risk • Climate change adaptation mainstreaming efforts concentrated in the agricultural sector 	

Introduction

Burkina Faso is a landlocked country in the Sahel region of West Africa consisting of extensive plains, low hills, high savannahs, and a desert area in the north. The country covers just over 274,000 square kilometres and is home to almost 17 million people. It is bordered to the north and northwest by Mali, to the south by Côte d'Ivoire, Ghana, Togo, and Benin, and to the west by Niger (see Figure 1). Burkina Faso has lakes and river basins throughout its territory. The largest water network is located in the south of the country, which contains three main river basins: the Volta, the Comoé, and the Niger (Simonsson, 2005). In the rest of the country, rivers flow intermittently (World Bank, 2011).

Burkina Faso is a low-income country with limited natural resources and a weak industrial base. Approximately 80% of the population is engaged in the agricultural sector, with cotton being the country's main cash crop and, along with gold, a key export. The economy has experienced moderate levels of growth in the last few years (World Bank, 2015b). Positive human development trends also have been observed, including improvements to health care services and the education sector. Despite these improvements, poverty remains a widespread challenge. The country has a young and growing population that mainly lives in rural areas with low revenue-generating employment opportunities. Faced with high levels of population growth and pervasive poverty, Burkina Faso is unlikely to meet the United Nations Millennium Development Goals (MDGs) (United Nations Statistics Division, 2015).

As a Sahelian country, Burkina Faso's has a climate that is characterized by low and variable rainfall, making it vulnerable to both droughts and floods, particularly in its northern region. It already faces stress due to land degradation and limited water availability due to various human pressures and existing climate variability. Climate change will compound these existing challenges; Burkina Faso's increasing population and largely rural and unqualified working population will interact with rising temperatures and rainfall variability, which could lead to water shortages, reduced agricultural yields, and higher deforestation rates. Of principal concern is the impact climate change will have on the country's agriculture-dependent population. The Government of Burkina Faso has recognized the challenge posed by climate change and identified four key sectors as particularly vulnerable to climate change: water, agriculture, livestock, and forestry. It has completed a national adaptation plan and is advancing the integration of climate adaptation into sectoral policies and actions.

This report provides a snapshot of current and planned efforts in Burkina Faso to advance action on climate change adaptation. It is one in a series of country reviews prepared to provide the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) with a picture of the policies, programs, and projects designed and implemented specifically to address the current and projected impacts of climate change in its countries of engagement. Jointly funded by the UK Department for International Development (DFID) and the International Development Research Centre, CARIAA aims to help build the resilience of

poor people to climate change in three hot spots in Africa and Asia: semi-arid areas, deltas in Africa and South Asia, and glacier- and snow-fed river basins in the Himalayas. To achieve this goal, CARIAA is supporting four consortia to conduct high-calibre research and policy engagement activities that will inform national and subnational planning processes in 17 countries, including Burkina Faso.

This report first outlines Burkina Faso’s current climate and how it is projected to change in the coming decades. It then presents the socio-economic and environmental factors that increase the vulnerability of the country and its people to climate change, describing Burkina Faso’s current development status and the potential implications of climate change for key sectors, groups, and regions. This is followed by an overview of the critical policies and plans shaping Burkina Faso’s efforts to address climate change adaptation at the national level. Section 5 describes the scale, type, and focus of current and planned adaptation-focused programs and projects in Burkina Faso, as well as the level of adaptation finance flowing into the country, to assess the extent to which efforts to address the country’s critical adaptation priorities are underway. A profile of in-country efforts to advance adaptation learning and knowledge sharing, as reflected in the presence of networks and communities of practice active in this field, is provided in section 6. The paper concludes with an assessment of the general status of adaptation planning at the national and subnational levels in Burkina Faso.



Figure 1 – Map of Burkina Faso (United Nations, 2004)

1. Current climate and projected changes

Lying in the Sahelian region, Burkina Faso has a dry tropical climate that is prone to strong seasonal and annual climatic variations (Kiema, 2014; Global Facility for Disaster Reduction and Recovery [GFDRR], n.d.). The country's climate is marked by distinct rainy and dry seasons influenced by movement of the Inter-Tropical Convergence Zone. The length of the rainy season varies from a two-month wet period in the northern portion of the country to a six-month rainy season in the south (World Bank, 2011; Simonsson, 2005). The rains start in March to early April in the southwest, in May to June in the central region, and in June to early July in the north (Simonsson, 2005). The dry season, during which almost no rain falls, is influenced by the hot easterly harmattan winds that enter the country from March to May. Due to these variations, the country can be divided into three eco-climatic zones: the Sahelian zone in the north, which receives between 150 and 600 mm of rainfall per year and is dominated by scrubland and grasslands; the Sudano-Sahelian region in the centre on the savannah plateau, which receives 600 to 900 mm of rainfall annually; and the Sudanian zone in southern portion of Burkina Faso, which receives 900 to 1,200 mm of rainfall annually and is primarily covered by savannah grasslands and parklands (GFDRR, n.d.; Ministère de l'environnement et du cadre de vie [MECV], 2007; Simonsson, 2005; World Bank, 2011).

Mean annual temperatures in the region range between 27°C and 30°C (Climate Services Center, 2013). The highest temperatures are experienced mostly in the country's northern region, which has the most desert-like topography and climate (Simonsson, 2005). Evapotranspiration is high across the country at an average of 100 mm per month, reaching up to 200 mm in February and March (World Bank, 2011).

Droughts are a regular occurrence in the country and are often prolonged. Between 1991 and 2009, Burkina Faso experienced three major droughts (in 1990 to 1991, 1995 to 1996, and 1997 to 1998) that affected over 96,000 people and were associated with minor food crises (GFDRR, n.d.). More generally, the country has been experiencing "quasi-drought" conditions since the early 1970s, due to a combination of sporadic rains and the poor water retention capacity of its soils. It has been observed that Burkina Faso's dry zone has been extending southward since 1902. Dry conditions are particularly acute in November and December, when the average humidity rate is 10% (World Bank, 2011).

Floods have not been reported as frequently as drought, although they have occurred more regularly in recent decades (Simonsson, 2005) and affect a large number of people. Between 1991 and 2009, the country experienced 11 major floods, which affected an estimated 380,000 people and lead to the deaths of 93 people (GFDRR, n.d.). Floods are generally associated with heavy rains during the rainy season, and their impact is influenced by poor infrastructure and land degradation. The northern and central parts of the country are more susceptible to floods, resulting in part from the successive occurrence of drought conditions in these regions (World Bank, 2011).

1.1 Climate trends

Changes in mean annual temperatures have been observed in recent years in Burkina Faso. A study by the United States Geological Survey and United States Agency for International Development (USAID) (2012) indicates that since 1975, temperatures have increased over 0.6°C across the country, or an average 0.15°C increase per decade. This change is statistically significant and suggests that Burkina Faso is becoming hotter. In a different study, Daron (2014) notes that temperatures in the region increased consistently in all seasons between 1963 and 2012, with the exception of localized cooling observed in the border area between Burkina Faso, Ghana, and Côte d'Ivoire. The greatest temperature increase has occurred in the north, particularly in the March to May period (Padgam et al., 2015).

The region has experienced inter-annual and decadal variability in rainfall patterns over the past century, with an overall decline in rainfall between 1950 and the mid-1980s, followed by an increase in rainfall during the 1990s. Since 2000, rainfall levels have not increased; rather, between 2000 and 2009 rainfall levels were 15% lower than the mean levels between 1920 and 1969. These changes have been attributed to warming in the northern Atlantic Ocean (United States Geological Survey & USAID, 2012). On a seasonal basis, based on a comparison of temperatures recorded between 1963 and 2012, analysis suggests that there has been an overall decline in precipitation in Burkina Faso in the period of March to May. A mix of rainfall declines in the country's southwest and northeast and rainfall increases along the central border with Mali were observed in the period from June to August. However, these observations are subject to substantial uncertainty and, given the region's high degree of annual variability, do not indicate a clear trend spurred by climate change (Daron, 2014).

1.2 Climate change projections

As the global climate changes, temperatures across West Africa, including within Burkina Faso, are projected to continue to increase. Based on its most recent analysis using global circulation models, and under a high-emissions scenario, the Intergovernmental Panel on Climate Change (IPCC) projects that western Africa will experience mean annual temperature increases of a median value of 0.9°C (ranging from 0.7°C to 1.5°C) by 2035, by 2.1°C (range of 1.6°C to 3.3°C) by 2065, and by 4.0°C (range of 2.6°C to 5.9°C) by 2100 (Christensen et al., 2013).² Warming is projected to be greater in the December to February period, and lower between June and August. It is expected that there will be an increase in the frequency of hot days and a decrease in the occurrence of cold temperature extremes (Christensen et al., 2013).

² These projections are based on use of 39 global models and the Representative Concentration Pathway 8.5 scenario for the time periods 2016 to 2035, 2046 to 2065, and 2081 to 2100 and against a baseline period of 1986 to 2005.

Daron (2014)³ reported similar results based on a comparison of regional climate model simulations. These results project that western Africa, including Burkina Faso, will experience mean annual temperature increases of at least 1.5°C and possibly up to 3°C by 2040. The rate of warming is projected to be greater in the northern regions of western Africa (Daron, 2014). This warming process in a country that already has high average air temperatures has implications for livelihoods and communities, which may be exposed to greater heat stress and higher rates of evapotranspiration. Outcomes could include amplification of existing water shortages, reduced crop production, and less availability of pasture (United States Geological Survey & USAID, 2012).

With respect to precipitation projections, there is disagreement regarding the outlook for rainfall in the Sahel, with some studies predicting drier conditions and others predicting a wetter future (Padgam et al., 2015). In its assessment of changes in precipitation levels in West Africa, the IPCC suggests the mean annual rainfall could increase by a median value of 1% by 2035, 2% by 2065, and 5% by 2100 under a high-emissions scenario. However, there is considerable variability in the range of projected change in precipitation levels; for 2100, for example, the range varies from a decline of 10% to an increase of 16% (Christensen et al., 2013).⁴ Similar variability was found by Daron (2014), which compared the outputs of three regional climate model projections under a high-emissions scenario to the 2040s.⁵ No consensus emerged from the outcomes of these three model projections. This uncertainty may be attributed in part to the difficulty associated with projecting precipitation changes in the Sahel region, particularly due to the high year-to-year variability in the region.

Ibrahim et al. (2013) made an effort to assess the projected changes in rainfall patterns specifically in Burkina Faso. Comparing outputs from five different regional climate models, the study found diverging projections regarding changes in the number of rain days and in the mean daily rainfall.⁶ However, the analysis did find greater consensus on the likelihood of there being a delayed ending of the rainy season and an increase in the length of dry spells (Ibrahim et al., 2013). Overall, the uncertainty associated with future rainfall patterns in West Africa makes it challenging to understand the potential implications of climate change for Burkina Faso's people and economy.

³ As part of the Coordinated Regional Downscaling Experiment project, Daron (2014) used the latest regional climate models to provide 50 km² resolution projections up to the year 2100. The models used the high greenhouse gas emission forcing scenario of Representative Concentration Pathway 8.5 and a baseline period of 1950 to 2000. For the temperature projections, three different sets of global circulation models were used (HadGEM2 and ICHEC) in combination with two regional climate models (KNMI and CCLM4). For the warmest conditions, modelling was based on HadGem2-CCLM4.

⁴ These projections are based on use of 39 global models and the Representative Concentration Pathway 8.5 scenario for the periods 2016 to 2035, 2046 to 2065, and 2081 to 2100 and against a baseline period of 1986 to 2005.

⁵ For the precipitation projections three different sets of Global Circulation Models were used, (HadGEM2 and ICHEC) and two Regional Climate Models (KNMI and CCLM4). For the driest conditions, modelling was based on ICHEC-CCLM4, and wettest conditions were based on ICHEC-KNMI (Daron, 2014).

⁶ Projections were compared to a baseline period of 1971 to 2009 based on data collected from ten national synoptic stations in Burkina Faso. Using A1B scenario, projections using multiple linear regressions were derived from five regional climate models (CCLM, HadRM3P, RACMO, RCA and REMO) for the period 2021 to 2050, with a spatial resolution of 50 km by 50 km with two boundary conditions. The ranges in decrease in rainfall were dependent on the model used, where the lowest projection of 1% was produced by HadRM3P and RACMO and the highest of 14% was produced using CCLM.

2. Vulnerability to climate change

Burkina Faso's vulnerability to climate change is a function of the climatic changes to which its population, economy, and livelihoods are exposed and national capacities to manage, recover from, and adapt to these changes. This section introduces and explores the economic, political, demographic, social, and environmental factors within Burkina Faso that influence its vulnerability to climate change and its adaptive capacity. It also highlights the vulnerability of key regions, groups, and economic sectors.

2.1 Current drivers of vulnerability

According to the Human Development Index prepared by the United Nations Development Programme (UNDP), Burkina Faso is a country with a low level of human development (see Table 1). The country lies near the bottom of the index, ranking 181 out of 187 countries. This low ranking reflects a number of weak development indicators: Burkinabe life expectancy is just 56 years, and 85% of the population is considered to be living in multi-dimensional poverty (the fourth-worst rate in the world). Only 28.7% of adults in the country are literate, the second-lowest rate of literacy in the world, and Burkinabe children on average spend just 1.3 years in school, making it the least-educated country in the world (United Nations Development Programme [UNDP], 2014). Across the population, multi-dimensional poverty is widespread, with gross national income per capita being just US\$1,602 (UNDP, 2014).⁷

Despite this low ranking, development gains in Burkina Faso have been impressive in the last two decades. In fact, Burkina Faso ranks highest in Africa in terms of MDG acceleration, or the pace at which countries are approaching their development goals (United Nations Economic Commission for Africa [UNECA] et al., 2014). Primary school enrolment increased 40 percentage points, from 25.3 to 64.5%, over the 1991 to 2012 period (UNECA et al., 2014). This leaves Burkina Faso short of the goal of 80% enrolment (MDG 2), but the country should nevertheless be lauded for its progress. In terms of other MDG targets, Burkina Faso has made marginal or moderate progress in reducing hunger and under-nutrition (MDG 1), in improving maternal health (MDG 5), and in combating diseases (MDG 6). It has made remarkable progress on reducing child mortality (MDG 4): the rate of mortality of children under five was halved from 1990 to 2012. Good progress has also been made with respect to increasing access to drinking water; while 43.6% of the population had access to safe drinking water in 1990, that figure had climbed to 81.7% by 2012 (UNECA et al., 2014). Unfortunately, access to improved sanitation facilities has not increased at the same rate; less than 7% of the rural Burkinabe population has access to such facilities, and the national total remains low, at 18.6% (UNECA et al., 2014).

⁷ US\$, 2011, adjusted for purchasing power parity.

Progress toward Burkina Faso's development goals is challenged by the country's rapidly growing population. The country's population numbers almost 17 million, but is expected to reach 26.6 million people by 2030. Burkinabe are, on average, young and largely rural: the median age is just 17, and only 28% of the population lives in urban centres (UNDP, 2014). Its cities are growing at 6% per year (Central Intelligence Agency [CIA], 2015).

Although the country has made progress toward MDG 3, promoting gender equality and empowering women (UNECA et al., 2014), significant differences in income continue to exist across gender lines: gross national income per capita for men is US\$1,871, while for women it is US\$1,335 (UNDP, 2014). Gender inequality extends beyond income: less than 1% of women aged 25 have some secondary education (the number of men with the same level of education is still low at 3.2%), and only 15.7% of seats in parliament are held by women (UNDP, 2014).

Burkina Faso's low level of human development is also reflected in the fact that its economy remains dominated by the agricultural sector: agriculture employs 90% of the workforce and is responsible for 38% of GDP (CIA, 2015). Cotton is the principal cash crop, with additional cultivation of peanuts, shea nuts, sesame, sorghum, millet, corn, and rice. Livestock is also an important livelihood activity (CIA, 2015). The dominance of the agriculture sector in the national economy occurs despite the fact that only 22% of the country's land is arable, soils are generally poor, drought is recurring, and the country falls under the global threshold for water scarcity (Ministère de l'environnement et du cadre de vie [MECV], 2007; Organisation for Economic Cooperation and Development [OECD], 2006; World Bank, 2015b).

In recent years, GDP growth has been moderate, at 6.5% in 2012, declining to 3.6% in 2013, and then rising again to 4.0% in 2014 (World Bank, 2015b). Along with cotton, gold is a key export; it accounted for three-quarters of Burkina Faso's total export revenues in 2013 (CIA, 2015). Given this dependence on cotton and gold exports, the country's economic growth and revenues are strongly tied to global commodity prices of these two goods. Additional important natural resources include manganese, limestone, marble, phosphates, pumice, and salt. Burkinabe industries include cotton lint, beverages, agricultural processing, soap, cigarettes, and textiles (CIA, 2015), and the industrial sector makes up 22% of the economy. Nearly 90% of employment is considered vulnerable, and a large portion of the male workforce migrates annually to neighbouring countries for seasonal employment (UNDP, 2014). High population growth rates, low levels of education, and limited natural resources are major challenges for the Burkinabe economy moving forward.

Governance and security within Burkina Faso are further challenges. The country has experienced unrest and political change in recent years. After 27 years in power, President Blaise Compaore was forced from office in October 2014 following mass protests against his efforts to amend the constitution's two-term presidential limit. A transitional government was appointed with former Foreign Minister Michel Kafando as interim president, and a

coup in September 2015 attempted to oust him from power. Presidential elections were successfully held in November 2015.⁸ Political instability in neighbouring Mali adds to Burkina Faso's long-term challenges, and the 35,000 Malian refugees currently in the country put additional stress on its natural resources (UN Office for the Coordination of Humanitarian Affairs, 2015).

The main environmental issues faced by the country are droughts and desertification, which historically have severely affected agricultural activities, population distribution, and the economy. Deforestation is also a significant concern for the country, with the amount of forest cover in the country estimated to have decreased by 18.4% between 1990 and 2011 (UNDP, 2014). The rate of deforestation is closely linked to the fact that about 80% of Burkinabe rely on fuelwood and/or charcoal to meet their energy needs. Land clearance for agriculture is a further driver of deforestation (Onyango, 2016). Overgrazing and soil degradation are also of concern (CIA, 2015).

Table 1 – Key indicators of development progress for Burkina Faso				
Category	Indicator	Year	Value	Source
Human development	Human Development Index (score ^d /rank ^d out of 187 countries)	2013	0.388/181	UNDP (2014)
	Population in multi-dimensional poverty (%)	2013	85.2	
	Under-five mortality rate (per 1,000 live births)	2013	102	
	Adult literacy rate (15 years of age and above)	2013	28.7	
	Improved water source, rural (% of population with access)	2012	76	World Bank (2015a)
	Improved sanitation facilities (% of population with access)	2012	19	
	Access to electricity (% of population)	2010	13.1	
Gender	Gender Inequality Index (value ^e /rank ^d out of 187 countries)	2013	0.607/133	UNDP (2014)
Demographics	Total population (in millions)	2013	16.9	UNDP (2014)
	Average annual population growth rate (%)	2010	2.8	

⁸ The presidential election was won by former prime minister Roch Marc Christian Kabore (British Broadcasting Corporation, 2016).

	Population, urban (% of population)	2011	28.2	
Economic development	GDP (in current US\$, millions)	2013	12,884	World Bank (2015a)
	GDP growth (annual %) (average of period 2010 to 2013)		6.6	
	Agricultural land (% of land area)	2012	44.1	
Governance	Corruption Perceptions Index (score ^f)	2014	38	Transparency International (2014)
	Corruption Perceptions Index (rank ^d out of 174 countries)	2014	85	
	Fragile States Index (score out of 120 ^g)	2014	89.0	Fund for Peace (2014)
	Fragile States Index (status)	2014	Very High Warning	
	Expenditure on education, Public (% of GDP)	2012	3.4	UNDP (2014)
	Expenditure on health (% of GDP)	2011	6.5	
Environment	Population living on degraded land (%)	2010	73.2	UNDP (2014)
	Change in forest area, 1990/2011	2013	-18.4	
<p>^a Projections based on medium-fertility variant</p> <p>^b Because data are based on national definitions of what constitutes a city or metropolitan area, cross country comparison should be made with caution</p> <p>^c Data refer to the most recent year available during the period specified</p> <p>^d Where 1 or first is best</p> <p>^e Where 0 is best</p> <p>^f Where 0 is highly corrupt and 100 is very clean</p> <p>^g Where 120 is very high alert, and 0 very sustainable</p>				

2.2 Vulnerability of key sectors, regions and groups

According to the University of Notre Dame's Global Adaptation Index (ND-GAIN), which measures levels of vulnerability to climate change as well as the readiness of countries to respond to this process, Burkina Faso is the 25th-most-vulnerable country of those assessed. According to the index, Burkina Faso's vulnerability has increased in recent years. Areas of particular concern include the country's agricultural capacity and the population's limited access to medical professionals and improved sanitation facilities. In terms of its readiness to respond to climate change, Burkina Faso's score has been improving, but remains low overall; it is ranked as the 39th-least-ready country (ND-GAIN, 2015). The main areas of weakness in terms of readiness relate to the country's weak education system and its insufficient information and communications technology (ND-GAIN, 2015). As indicated in Table 2, the index suggests that Burkina Faso's level of vulnerability and readiness is similar to many of its neighbours. Ghana and Niger are outliers, with Ghana

scoring quite high, particularly in terms of readiness, and Niger being ranked as highly vulnerable (ND-GAIN, 2015).

Table 2 – Comparison of Global Adaptation Index scores for Burkina Faso and neighbouring countries

Country	Vulnerability*		Readiness**		Overall
	World rank	Score	World rank	Score	World rank
Burkina Faso	159	0.545	146	0.337	156
Mali	176	0.596	136	0.354	162
Niger	181	0.643	158	0.319	176
Benin	169	0.568	131	0.363	153
Togo	156	0.532	149	0.333	151
Ghana	126	0.456	90	0.465	104
Côte d'Ivoire	133	0.473	174	0.285	150

* Lower score indicates lower vulnerability. The vulnerability score is determined based on indicators of exposure, sensitivity, and adaptive capacity taking into consideration indicators related to six life-supporting sectors: food, water, health, ecosystem service, human habitat, and infrastructure.
** Higher score indicates higher degree of preparedness. The readiness score takes into account measures of economic readiness, governance readiness, and social readiness to pursue adaptation actions.

Source: ND-GAIN, 2015.

Burkina Faso's vulnerability to climate change is tied to its high reliance on climate-dependent livelihoods: 86% of the population relies on agriculture, pastoralism, or forestry to support their livelihood activities (MECV, 2007). This vulnerability is compounded by the fact that Burkina Faso's agricultural sector is largely subsistence-based (i.e. non-mechanized) and is already among the least productive on the continent due to a host of factors, including poor soils, limited rain, land degradation, and erosion. This makes the rural poor the largest vulnerable group in the country. Women, the elderly, and youth are also called out within the smallholder subsistence farmer group as being especially vulnerable to the impacts of climate change. The country's high reliance on cotton production, which generates about 8% of the country's GDP, also leaves it vulnerable to climate change. While higher temperatures could lead to increased yields, this benefit could be offset by more sporadic and variable rainfall (World Bank, 2011).

The country's high dependence on climate-sensitive economic activities is reflected in its National Adaptation Programme of Action (NAPA) released in 2007. It identified four key vulnerable sectors in which urgent and immediate action is required: water, agriculture, pastoralism, and forestry (MECV, 2007). For each sector, the NAPA outlines the expected impacts of climate change resulting from four key climate trends: an increase in extreme

rainfall events, changes in the amount and variability of rainfall, increased temperatures, and increased wind (see Table 3). The country's health sector is also vulnerable to climate change; increasing temperatures and the potential for more droughts and floods are expected to lead to an increase in heat-related mortality, diarrheal diseases, and food insecurity (World Bank, 2011).

The north and central plateau of Burkina Faso are most exposed to drought risks. The aridity, shorter growing season, and less diversified agriculture of this region leaves farmers and agro-pastoralists more vulnerable to potential changes in the timing, distribution, and amount of precipitation. Recurrent exposure to drought in this area has undermined the livelihood resources upon which people depend, and adaptive and coping measures taken by farmers and agro-pastoralist to manage climate risks have proven to be insufficient to build resilience (Kiema, 2014). The situation leaves many Burkinabe in the northern areas of the country particularly vulnerable to the impacts of climate change.

The risk of flooding is concentrated around the capital city of Ouagadougou, in the centre of the country. This stems in part from the presence of informal, unplanned settlements near the capital. Flooding is also a risk in the north and in the southeast (World Bank, 2011).

Table 3 – Likely impacts of climate change on key vulnerable sectors in Burkina Faso				
Climate risk				
Sector	Extreme rainfall events	Decrease in rainfall and increased variability of rainfall	Temperature increase	Increased wind
Water	<ul style="list-style-type: none"> • Destruction of water infrastructure due to flooding • Sedimentation and siltation of rivers and lakes • Pollution of surface water 	<ul style="list-style-type: none"> • Drying of wells • Decreased recharge of the water table • Water scarcity, with supply unable to meet demands from multiple users • Exacerbation of existing water stress 	<ul style="list-style-type: none"> • Depletion of surface water resources • Increased demand for water • Increased evaporation 	<ul style="list-style-type: none"> • Increased evaporation • Increased siltation of lakes • Increased pollution of water sources
Agriculture	<ul style="list-style-type: none"> • Reduction in crop yields and loss of crops • Soil leaching and increased 	<ul style="list-style-type: none"> • Changes to the planting calendar • Reduction in agricultural 	<ul style="list-style-type: none"> • Soil degradation • Agricultural expansion to compensate for 	<ul style="list-style-type: none"> • Loss of fruit trees and their blossoms • Reduction in yields

	runoff and erosion	yields and increased food insecurity <ul style="list-style-type: none"> • Risk of losing crop species that are less resilient to climatic changes • Greater water scarcity 	crop losses and declines in yield <ul style="list-style-type: none"> • Loss of crop species and productivity for vegetable cultivation • Increase in pests (crickets, caterpillars) 	<ul style="list-style-type: none"> • Increased reliance on unfavourable seed varieties
Pastoralism	<ul style="list-style-type: none"> • Loss of livestock in flood events • Increase in water-borne livestock disease 	<ul style="list-style-type: none"> • Reduced pasture and fodder • Loss of livestock due to water scarcity • Reduced productivity 	<ul style="list-style-type: none"> • Decline in quality of fodder and loss of pasture • Drying of watering holes 	<ul style="list-style-type: none"> • Water scarcity and reduced pasture • Increase in viral diseases
Forestry	<ul style="list-style-type: none"> • Increased erosion 	<ul style="list-style-type: none"> • Reduced water availability and associated loss of forest resources • Loss and migration of associated fauna • Loss of flora 	<ul style="list-style-type: none"> • Loss of water for forest fauna • Decline in soil quality • Loss of biodiversity • Migration of flora species • Increased evapotranspiration 	<ul style="list-style-type: none"> • Loss of big trees • Increased evapotranspiration • Acceleration of forest fires

3. Adaptation planning context

This section provides an overview of the extent to which Burkina Faso has begun to put in place policies, plans, and strategies that identify adaptation priorities and help advance adaptation efforts. It examines the degree to which adaptation issues have been integrated into national development policies and plans and the extent to which discrete climate change plans and strategies, including those specifically addressing adaptation, have been prepared. This section also discusses the extent to which current strategies and plans relevant to Burkina Faso's vulnerable sectors address climate change and progress by subnational governments to prepare for climate change.

Table 4 provides a general assessment of Burkina Faso's progress on adaptation planning. To date, adaptation planning has mainly been considered in relation to Burkina Faso's agriculture sector. Irrigated agriculture and research and development on impacts, vulnerabilities, and adaptation options remain key adaptation priorities in national development planning policies and strategies, as well as in sectoral strategies.

Table 4 – National adaptation planning context: Summary of progress as of September 2015	
Indicator	Progress
Climate change recognized in the country's guiding development vision/plan	Yes, in the national Strategy for Accelerated Growth and Sustainable Development 2011 to 2015
National-level coordinating entity for climate change established and active	Yes, the National Council for the Environment and Sustainable Development under the Ministry of Environment and Sustainable Development (MEDD, Ministère de l'Environnement et du développement durable)
Climate change policy and/or law in place	Not present
Climate change strategy published	Not present
Climate change action plan published	Not present
Adaptation plan published	Yes, National Adaptation Plan published in 2015
Climate Change Fund or Adaptation Fund operational	Not present
Climate change units established in key ministries	Not present
Climate change integrated into national sectoral policies	Risks and possible actions identified primarily in sectoral strategies related to agriculture

3.1 National-level development policy context

Burkina Faso's approach to development has been shaped by a long-term vision document, Burkina 2025, which was initiated in the late 1990s in response to failure of structural adjustment plans to reduce poverty in the country. Based on retrospective analysis of Burkina Faso's economic, political, and social development, as well as enquiries into the population's aspirations, Burkina 2025 presents a vision for Burkina Faso as a country progressing in terms of economic factors and overall wellbeing, a just country in terms of lawfulness and punishing of corruption, and a united country. Completed in 2005, the document includes brief mention of climate change as one of 63 variables characterizing the

Burkinabe development context, but does not address the issue in detail or propose adaptation options (Government of Burkina Faso, 2005).

As of the time of writing, implementation of Burkina 2025 is guided by the Strategy for Accelerated Growth and Sustainable Development (SCADD, *Stratégie de croissance accélérée et de développement durable*) for 2011 to 2015. The overarching goal of SCADD is to achieve strong economic growth that is underpinned by improved revenues, improved quality of life of the country's population, and environmental sustainability. It recognizes the impacts of climate change as a major risk to the country's growth and development priorities, particularly through effects on the agricultural sector. The government notes that in 2009 alone, climate-related factors were responsible for a loss of 268,005 tons of cereals, a monetary value of CFA35.266 billion (CAD\$76.87 million) (Ministère de l'économie et des finances [MEF], 2011).

Agriculture, which in the strategy encompasses crops, livestock, forestry, and fisheries, is the only sector in which the SCADD proposes specific measures and targets to address adaptation. It calls for the development of a sector-specific adaptation strategy and sets a target to increase the percentage of irrigated versus rain-fed agriculture to 50% by 2015. The logical framework that lays out the specific objectives, expected results, and planned actions under the SCADD similarly links adaptation with agricultural priorities. This indicates that actions to lessen vulnerability to climate change in the agricultural sector are expected to contribute to reaching two specific objectives: achieving a growth rate of 10% and reducing extreme poverty and hunger. This focus on agriculture corresponds to the key vulnerable sectors in Burkina Faso listed in Table 3 and the importance of ensuring food security for the country. Sections of the SCADD focused on other sectors, such as infrastructure and urban development, do not mention climate change adaptation considerations (MEF, 2011). The Government of Burkina Faso is preparing its next five-year national plan (2016 to 2020), which will replace the SCADD.⁹

In 2013, Burkina Faso adopted a National Sustainable Development Policy (*Politique nationale de développement durable au Burkina Faso*) that sets the country's direction until 2050. This policy continues to recognize the impacts of climate change as an important challenge. It also notes that an implementation strategy is being developed to replace the SCADD when it expires (Ministère de l'environnement et du développement durable [MEDD], 2013).

⁹ Burkina Faso released its National Plan for Economic and Social Development (*Plan national de développement économique et social*) for 2016 to 2020 in mid-2016 (Government of Burkina Faso, 2016). The new plan identifies climate-related factors as one of the main risks to achieving expected performance under the plan. It notes that the country will develop and implement programs for climate change adaptation as well as disaster risk reduction to mitigate this risk, and links adaptation to a broader focus on sustainable development. However, beyond this, specific adaptation targets and measures are not identified in the document.

3.2 National-level climate policy context

Currently, Burkina Faso does not have a national climate change mitigation and adaptation policy or strategy in place. However, the country has taken steps to define its adaptation priorities and develop a national adaptation plan. Burkina Faso's adaptation planning process advanced with the development of its NAPA, which was adopted by the government in 2007. In its NAPA, Burkina Faso identified a series of 12 priority adaptation actions related to water, agriculture, livestock, and forestry (included in Table 5) (MECV, 2007). Three projects have been implemented that respond to the content of the NAPA, with support of the Least Developed Countries Fund (LDCF), the Danish Ministry of Foreign Affairs, the Government of Japan, and UNDP.

Building on actions taken under its NAPA, Burkina Faso initiated development of its National Adaptation Plan (NAP) in 2012 and published it in 2015 (Ministry of Environment and Fishery Resources, 2015). The NAP aims to reflect improved approaches to integrating adaptation and resilience into medium- and long-term planning. Adaptation objectives specified include: protecting the pillars of accelerated growth outlined in the SCADD; ensuring sustainable food and nutritional security; protecting water resources and access to sanitation services; protecting the country's population against extreme weather events and natural disasters; protecting and improving the functioning of ecosystems; and protecting and improving the health of population groups. The NAP document includes both a national level adaptation plan and adaptation plans for priority development sectors, namely agriculture, animal production, environment and natural resources, meteorology, energy, health, and infrastructure; it addresses gender issues and civil society engagement as cross-cutting issues. The NAP document also includes some consideration of the need for integration between disaster risk reduction and climate change adaptation. For example, it notes the need to build the capacity of the National Council for Emergency Relief and Rehabilitation (CONASUR, Conseil National de Secours d'Urgence et de Réhabilitation) and to involve a CONASUR representative as a sector focal point in the NAP process (Ministry of Environment and Fishery Resources, 2015).

Burkina Faso's adaptation priorities have also been articulated in its Intended Nationally Determined Contribution (INDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in September, 2015, in the lead up to the 2015 UN Climate Conference. The INDC's adaptation component reflects the content of the country's NAP and its Strategic Framework for Investment in Sustainable Land Management validated in 2014. The latter is noted as providing an operational action plan for adaptation efforts in the agriculture sector. The document confirms that agriculture, water management, animal husbandry, biomass energy, and forests and land use remain Burkina Faso's priority sectors for climate change adaptation. Adaptation actions or projects are identified for each of these sectors. The total estimated budget for the identified adaptation measures to be implemented by 2030 is US\$8.4 billion, of which US\$5.4 billion is allotted to priority sectors (Government of Burkina Faso, 2015a).

Finally, Burkina Faso is striving to increase the resilience of its food system through its participation in the Food Crisis Prevention Network and its related initiative, the Global Alliance for Resilience. The latter is a regional platform that brings together 17 Sahelian and West African countries to improve preparation for and responses to food crises in the region. Its ultimate goal is to eradicate hunger and malnutrition over the next 20 years. The Alliance was launched in Ouagadougou in 2012 and is supported technically and politically by the Economic Community of West African States, the West African Economic and Monetary Union, and CILSS. As part of its engagement in this process, Burkina Faso has identified national resilience priorities for advancing its food security (OECD, n.d.).¹⁰

Table 5 – Priority adaptation actions by sector identified in Burkina Faso’s NAPA and sectoral strategies

Sector	Adaptation priorities
Water	<ul style="list-style-type: none"> • Put in place protection measures, areas to control pollution of waterways, and water storage (both above- and below-ground), particularly in the cotton growing areas of the country • Improve planning and management of Oursi Lake to reduce climate impacts on both the lake and the ecosystems and populations it supports • Stop siltation and accumulation of sediments in lakes and waterways • Develop scenarios that identify impacts and vulnerabilities and inform recommendations on programs and actions to promote adaptation
Agriculture	<ul style="list-style-type: none"> • Irrigation: Increase overall irrigated agricultural production in the country to 50% by 2015; protect cereal production by promoting increased use of irrigation in the Northern region, and develop irrigated agriculture in the provinces of Gourma, Namentenga, Tapoa, and Sanmatnga • Develop an adaptation strategy specific to the agricultural sector • Improve strategy for supporting agricultural research related to the creation and introduction of adapted crop varieties • Strengthen early-warning and prevention systems to improve food security • Protect agricultural production by using appropriate technologies in the south-west and east of the country • Build the adaptive capacity of households • Develop and implement agricultural insurance
Livestock	<ul style="list-style-type: none"> • Improve fodder production and access to livestock food stocks • Secure pastoral regions and strategic pastoral areas • Develop and implement early-warning systems and response tools to prevent crises related to water and fodder access

¹⁰ Burkina Faso has framed its national resilience priorities around five pillars: improving social protection for the most vulnerable communities and households in order to secure their livelihoods; sustainably strengthening the nutrition of vulnerable households; improving agricultural and food productivity and the incomes of the most vulnerable households; improving access to food; and strengthening governance in food and nutritional security (C. Simonet, personal communication, September 18, 2016).

	<ul style="list-style-type: none"> • Establish security stocks of veterinary supplies
Forestry	<ul style="list-style-type: none"> • Improve planning and management of natural forests, including valuing of non-wood forestry products in the east of the country • Improve community management of fauna and its habitat in the Mouhoun region • Promote energy-saving and renewable energy technologies

3.3 Institutional structure for climate governance

The National Council for the Environment and Sustainable Development (CONEDD, Conseil national pour l'environnement et le développement durable) sits within the Ministry of Environment and is the inter-ministerial body that oversees the Government of Burkina Faso's climate change initiatives, including the NAPA and the NAP. Created in 1995 (under its original name, Conseil national pour la gestion de l'environnement), CONEDD's mandate is to coordinate and harmonize the government's environmental interventions to achieve sustainable development (Secretariat permanent du Conseil National pour l'Environnement et le Développement Durable [SP-CONEDD], 2010).

CONEDD consists of three components: a Conference, a Permanent Secretariat based at the MEDD, and specialized committees (SP-CONEDD, 2010). The Conference is led by the Prime Minister of Burkina Faso with an office consisting of individuals as shown in Figure 2. Its broader membership comprises ministers and directors responsible for work in environmentally sensitive sectors, local government officials, representatives from the private sector and civil society, and religious and customary authorities. The Permanent Secretariat is responsible for coordinating and implementing CONEDD initiatives. Specialized committees are created by the Conference to serve a consultative function in response to arising priorities and issues. Notably, one of the specialized committees focuses on climate change and disaster prevention (Wetta et al., 2015). The conference meets once every two years (MEDD, 2015). Previous studies have noted that mechanisms for cross-ministerial and cross-sectoral coordination on climate change are lacking (OECD, 2013).

Burkina Faso's NAPA also mentions CONASUR as relevant to the country's institutional structure for climate governance (MECV, 2007). Housed within the Ministry of Social Action and National Solidarity (Ministère de l'Action Sociale et de la Solidarité National), CONASUR was established to adopt a strategy for preventing, reducing, and responding to the effects of natural disasters. It is also responsible for coordinating humanitarian action in response to natural disasters and building public awareness of disaster risk prevention and management (PreventionWeb, n.d.). Institutions supporting implementation of CONASUR's mandate have been decentralized to the regional, provincial, and commune level. A representative of CONEDD represents the MEDD at CONASUR's inter-ministerial meetings.

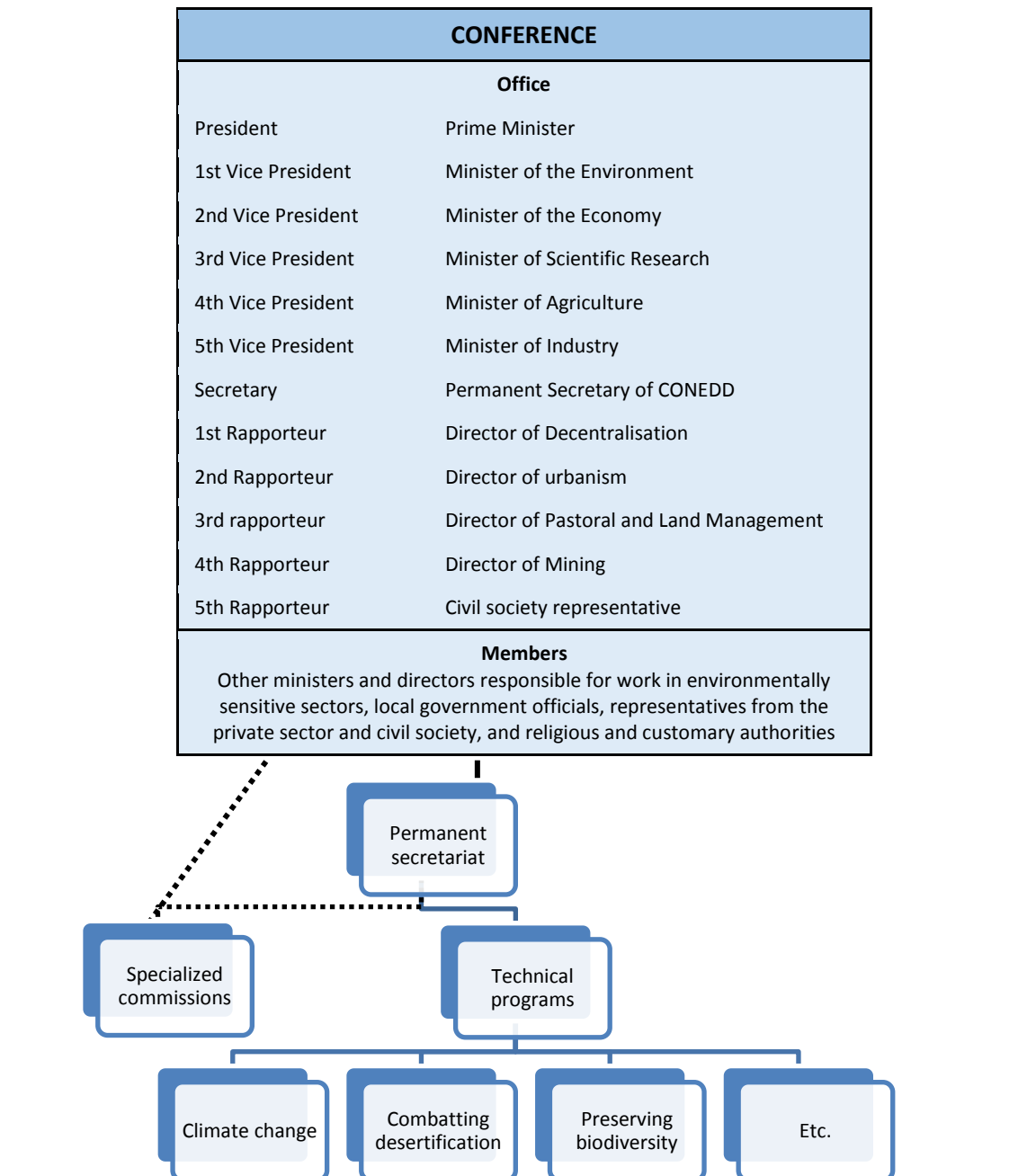


Figure 2 – Structure of CONEDD (MEDD, 2012)

3.4 National-level sectoral policies

As indicated in its NAP, Burkina Faso is taking steps to integrate adaptation and resilience into its medium- and long-term planning, including its sectoral plans. Reflecting the economic and social importance of agriculture in Burkina Faso, and the country’s priority

objective of ensuring food security, adaptation mainstreaming is so far concentrated in Burkina Faso's sectoral policies related to agriculture. Table 6 illustrates an overview of sectoral policies and strategies that fall under agriculture and its related subsectors. A number of these are operating on a 2015 horizon, meaning that review is underway or imminent — potentially creating opportunities for further integration of climate change considerations.

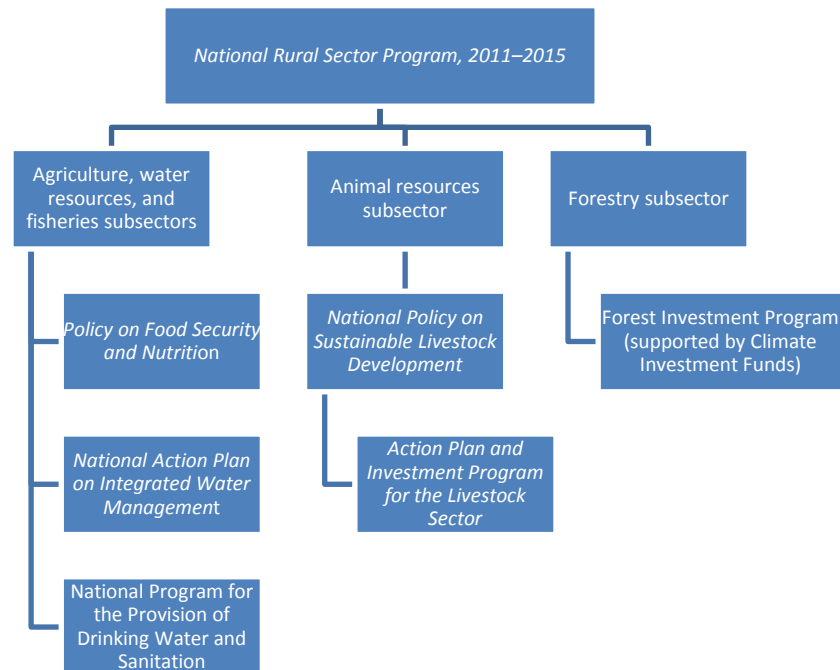


Figure 3 – National strategies and policies on climate-sensitive agriculture sector and subsectors (Adapted from OECD, 2013)

The National Rural Sector Program for 2011 to 2015 (PNSR, Programme national du secteur rural) is a national framework that aims to support a coherent approach across sectors of importance to Burkina Faso's highly rural population. A result of a merger between the previous Sector Program for Productive Rural Development (Programme sectoriel du développement rural productif) and Burkina Faso's National Agricultural Investment Program, it is the overarching agricultural strategy in the country (OECD, 2013). It was developed jointly by and applies to ministries responsible for agriculture, livestock, and environment and sustainable development. The PNSR identifies climate change as a principal category of risk to the rural sector, with expansion of irrigated agriculture and research on adaptation strategies and technologies as main adaptation approaches (Government of Burkina Faso, 2011).

Three of the PNSR's five main areas of focus identify planned actions that could support adaptation to climate change. In relation to improving food security and food sovereignty,

actions with potential implications for adaptation include: popularization of good agricultural practices based on research and local knowledge, promoting techniques and improving availability of technologies for sustainable soil management, diversification of agricultural production, supporting research for the development of new technologies and improved capacities for vegetable production, and increasing irrigated agriculture, including promotion of irrigation technologies. On the topic of environmental governance and promotion of sustainable development, the PNSR specifically addresses climate change impacts on forest resources, planning for actions that include vulnerability assessments to identify adaptation options and related capacity building. In regards to the management of water, soil, and property, the strategy identifies improving knowledge on water management in a changing climate as a planned action (Government of Burkina Faso, 2011).

Three agricultural subsectors and associated policies are situated under the umbrella of the PNSR (see Figure 3): agriculture, water resources, and fisheries; animal resources; and forestry (OECD, 2013). The National Policy on Food Security and Nutrition (PNSAN, *Politique nationale de sécurité alimentaire et nutritionnelle*), adopted in 2013, is one of the country's key strategies under the agriculture, water resources, and fisheries sector. The PNSAN identifies climate change as a main risk, and it includes actions to build the adaptive capacity of households under its objectives of building capacities to prevent and respond to food and nutritional crises. Under the PNSAN objective of strengthening governance of food security and nutrition are plans to develop agricultural insurance programs (Government of Burkina Faso, 2013).

With respect to water, Phase II of the National Action Plan on Integrated Water Management (*Plan d'action pour la gestion intégrée des ressources en eau*) includes consolidation of knowledge and research on climate change and water as a key strategic axis, reinforcing this as a priority area for action. One of the specific intended results of the strategy is improved knowledge of the implications of climate change for water resource management. It calls for the development of scenarios that identify impacts and vulnerabilities, which can then be used to inform recommendations on programs and actions to promote adaptation (MAHRH, 2009). On the other hand, the National Program for the Provision of Drinking Water and Sanitation (*Programme national d'approvisionnement en eau potable et d'assainissement*), which aimed to reduce the percentage of the Burkinabe population without access to drinking water and sanitation by 50% from 2005 levels, does not include any mention of climate change considerations (MAHRH, 2006).

The National Policy on Sustainable Livestock Development (*Politique nationale de développement durable de l'élevage*) provides the overall policy orientation in the livestock subsector until 2025, and it includes climate change impacts as a key risk to the availability of food and water for livestock. The policy emphasizes the importance of decentralization and the roles of governments at the community and territorial levels in its implementation (MRA, 2010b). The Action Plan and Investment Program for the Livestock Sector (*PAPISE, Plan d'actions et programme d'investissements du sous-secteur de l'élevage*) is the

implementation framework of this policy. The PAPISE includes a program on prevention and management of crises and vulnerabilities to climate change. The strategy for this consists of developing and implementing early-warning systems and response tools, and security stocks of veterinary supplies (MRA, 2010a).

In the forestry subsector, Burkina Faso is one of the eight countries originally selected to receive pilot support from the Forest Investment Program (FIP), a funding window under the World Bank Group's Climate Investment Funds. The FIP supports efforts to reduce deforestation while also promoting climate adaptation and poverty reduction. Since 2012, FIP has supported a series of pilot projects in Burkina Faso that have helped to limit deforestation and forest degradation, which should also improve resilience to the impacts of climate change and natural disasters (Climate Investment Funds, n.d.).

In 2014, Burkina Faso passed the Framework Law on the Prevention and Management of Risks, Humanitarian Crises and Disasters (Loi d'orientation relative à la prévention et à la gestion des risques, des crises humanitaires et des catastrophes). Considered to be a major policy achievement, the law addresses disasters related to agriculture and flooding, but does not acknowledge the role that climate change may play in increasing the risk of these types of events (Assemblée nationale Burkina Faso, 2014). More recently, the Government released its National Plan for Capacity Building on Risk Reduction and Response to Emergencies in Burkina Faso (Plan d'action national pour le renforcement des capacités pour la réduction des risques et la préparation à la réponse aux urgences au Burkina Faso) for 2016 to 2020. Designed by CONEDD, it places significant emphasis on the links between addressing climate risk and disaster risk reduction and response. Climate change adaptation considerations are mentioned in relation to many of the activities that the plan outlines to pursue the priorities it sets (Government of Burkina Faso, 2015b). Putting the law and national plan into operation has been limited by the lack of financial and human capacity within the MEDD and SP-CONASUR.

Finally, Burkina Faso's National Health Plan 2011–2020 (Plan national de développement sanitaire 2011–2010) sets forward strategies to improve the health status of its population through actions that will improve governance of the health sector, increase access to health services, and strengthen management of the country's health information system, among other objectives. The policy acknowledges climate change as an overall risk to the country's economy, but does not elaborate on the specific risks it poses for the health sector or how them might be addressed (Ministère de la santé, 2011).

Table 6 – Integration of climate change into national sectoral strategies, policies and plans: An assessment of progress					
Policies	Time Horizon	Absent	Climate change mentioned as potential risk	Possible actions for reducing risk identified	Targets identified for specific adaptation measures
National Rural Sector Program	2011 to 2015		✓	✓	✓
<i>National Policy on Food Security and Nutrition</i>	To 2025		✓	✓	
<i>National Action Plan for Integrated Water Management (Phase II)</i>	To 2015		✓	✓	
<i>National Sustainable Development Policy for Livestock</i>	To 2025		✓	✓	
<i>Action Plan and Investment Program for the Livestock Sector</i>	To 2015		✓	✓	
<i>National Plan for Capacity Building on Risk Reduction and Response to Emergencies in Burkina Faso</i>	2016 to 2020		✓	✓	
Forest Investment Program	None specified		✓		
<i>National Health Strategy</i>	To 2020		✓		
National Program for the Provision of Drinking Water and Sanitation	To 2015	✓			
<i>National Policy on Housing and Sustainable Development</i>	None specified	✓			

3.5 Subnational policies

Burkina Faso has been pursuing a process of decentralization since the 1990s, and in 2009 adopted the second edition of its Policy Paper on Decentralized Rural Development (Lettre de politique de développement rural décentralisé) (MEF, 2009). Although it recognizes climate change as a key risk factor facing local development, the policy paper does not

provide guidance on adaptation planning at local levels. To date, no such policy guidance is available online.

Evidence of community initiatives that reduce vulnerability to climate change — such as agricultural diversification — is emerging in spite of this lack of guidance on adaptation planning at subnational levels. It is not clear whether these initiatives are motivated by climatic considerations or by other factors such as land scarcity and economic opportunities (Padgam et al., 2015).

4. Current and planned adaptation programs and projects

The extent to which Burkina Faso will be able to take action within its priority sectors for adaptation action and thereby reduce its vulnerability to climate change will largely be influenced by the range and type of adaptation projects and programs implemented within its borders with the support of the national government and its international development partners. This section provides an overview of current and recently completed discrete adaptation projects and programs implemented in Burkina Faso, along with a brief analysis of the scale and orientation of climate finance flowing into the country.

4.1 Adaptation projects and programs

Adaptation programs and projects in Burkina Faso were identified through an extensive review of online sources, including the websites of UN agencies, multilateral development banks, bilateral development agencies, and research and international non-governmental organizations. The research focused on projects and programs that aim to support climate change adaptation, as reflected in their title, goals statement, and/or objective statement. All relevant projects and programs were captured in a database and classified according to their type and area of focus. For a detailed description of the methodology used in the review, please see Annex A.

As summarized in Table 7, the review process revealed 21 significant projects and programs currently supporting climate change adaptation in Burkina Faso. The vast majority of these projects are being implemented on a regional or global scale; fewer projects are being implemented solely within Burkina Faso in comparison to other West African countries involved in the CARIAA program. This distribution may reflect more limited capacity within the country to lead large adaptation projects. Consistent with this possibility, the majority of current projects identified seek to build awareness of the need to adapt to climate change and build the capacity of communities and institutions to implement adaptation actions. Descriptions of the projects identified through the review are provided in Annex B.

Table 7 – Sector of focus of current adaptation projects and programs identified in Burkina Faso					
Sector of focus	Priority sectors for adaptation	Number of projects*	Percentage of total projects**	Geographical characteristics	
Agriculture	✓	11	52%	National projects	6
Pastoralism	✓	4	19%	Regional projects	11
Forestry	✓	6	29%	Global projects	4
Ecosystem conservation		2	10%	Total	21
Ecosystem restoration		2	10%		
Watershed management	✓	3	14%		
Freshwater supply	✓	1	5%		
Disaster risk management		3	14%		
Gender		2	10%		
Private sector		1	5%		
Urban areas		3	14%		
Climate Information		8	38%		
Government		4	19%		
Civil society		1	5%		
Multisectoral		2	10%		
Other		1	5%		
* Individual projects may address one or more sectors					
**Calculated by the number of projects active in this sector relative to the total number of projects identified, reflecting the potential for a single project to address adaptation needs in more than one sector					

The projects underway in Burkina Faso focus on a wide range of sectors, though the primary emphasis is on agriculture, climate information, and forestry. This aligns with some of the priority sectors identified in Burkina Faso's NAPA, NAP, and INDC. Proportionally fewer ongoing adaptation projects solely focus on freshwater supply, although it is also a priority sector; none of the national projects focus on the needs of this sector. The current

and planned projects mainly focus on rural populations, particularly those engaged in agriculture. This focus is consistent with their identification as the groups most vulnerable to climate change (MECV, 2007).

A number of projects and programs are being implemented in the north, northeastern, and north-central areas of Burkina Faso, specifically in the Boucle du Mouhoun region and the provinces of Passoré, Sanmatenga, Namentenga, and Yatenga. This concentration reflects the fact that Burkina Faso's northern regions are most vulnerable to climate change, particularly through its potential impacts on agricultural crops and livestock.

Projects and programs implemented at the national level primarily target community-based adaptation, capacity building, and policy formation and integration, complemented by encompassing physical measures to reduce vulnerability to climate change. National projects foremost address concerns related to agriculture and forestry. The two largest agriculture projects focused exclusively on adaptation needs in Burkina Faso are Integrating Climate Resilience into Agricultural and Pastoral Production for Food Security in Vulnerable Rural Areas Through Farmers Field School Approach, funded by the LDCF, and Changing Farming Practices to Prepare for Heavy Rain and High Temperatures, funded by DFID. They aim to mainstream climate change adaptation practices and strategies into ongoing agricultural development initiatives and strengthen the ability of rural people in Burkina Faso to cope with the effects of increased rainfall variability and higher temperatures by diversifying agricultural production and improving practices. Access to Safe, Nutritious, and Sufficient Food in Boucle du Mouhoun is a smaller project funded by the Government of Canada that seeks to diversify agricultural production, introduce new crops, improve family diets, and help farmers adopt agro-environmental innovations that fight desertification.

Two noteworthy projects focused on adaptation in the forestry sector are Climate Governance and Sustainable Decentralized Forest Management in Burkina Faso and Adapting Natural Resource Dependent Livelihoods to Climate-induced Risks in Selected Landscapes in Burkina Faso. The first project, funded by the Global Climate Change Alliance (GCCA) and the World Bank, supports the adoption of a REDD+ strategy that incorporates climate change adaptation and mitigation into sectoral frameworks, policies, and investments. The second project emphasizes building community resilience with a focus on natural resource management sectors. It also received funding from the LDCF, UNDP, Government of Burkina Faso, and Veterinaires sans Frontiers, among others.

Eleven regional initiatives are taking place in Burkina Faso, foremost focusing on improved access to climate information and data, including early-warning systems and strengthening the use of such information in decision-making processes. Notable projects include the Strengthening Climate Information and Early Warning Systems in Western and Central Africa for Climate Resilient Development and Climate Change Adaptation, the Climate for Development in Africa Programme, and the GCCA Regional Program for West Africa. Another major regional activity in which Burkina Faso is participating is the Building

Resilience Without Borders in the Sahel Project, which aims to support 900,000 vulnerable women and men in three countries to adapt to climate extremes by improving access to climate information, scaling up the adoption on sustainable climate-resilient livelihood options, and promoting equitable, sustainable, and climate-resilient governance of natural resources.

Burkina Faso is part of the West African Science Service Center on Climate Change and Adapted Land Use (WASCAL) initiative, a large-scale research program designed to help West African states tackle climate change. It is focused on strengthening research infrastructure and capacities related to climate change, and it acts as a network by pooling expertise across ten West African countries and Germany (the funder) to improve climate risk management responses (WASCAL, n.d.). Burkina Faso is also one of four countries in the West African region participating in PlaNet Guarantee's Assurance Recolte Sahel initiative, supported by the International Finance Corporation's Global Index Insurance Facility. Although not a discrete adaptation project per se, since 2011 it has aimed to build adaptive capacity by piloting agricultural insurance products, including satellite-based weather index insurance for maize and area yield index insurance for cotton (International Finance Corporation, 2015; Wetta et al., 2015).

At the policy level, the Strengthening the Resilience of Pastoralists and Agro-pastoralists through Trans-Border Livestock Mobility project seeks to secure, service, and promote trans-border livestock mobility by providing key services and by enabling communities and stakeholders to lobby for appropriate policy-making at the local, national, and regional levels. Further, the Adaptation to Climate Change and Forests in West Africa project aims to develop policies and practices to support the sustainable management of forests and to increase the adaptive capacities of local communities through improved livelihoods from forest ecosystem goods and services.

The Water Infrastructure Solutions from Ecosystem Services to Underpin Climate-Resilient Policies and Programmes (WISE-UP to Climate) is the only identified water-focused regional initiative involving Burkina Faso. The project tests, develops, and demonstrates approaches for the use of mixed water infrastructure that combines natural river courses with artificial elements such as reservoirs. Furthermore, it supports sustainable development in the areas of poverty reduction, conservation of biodiversity, food security, and secure supplies of energy and water. The Great Green Wall for the Sahara and Sahel Initiative, funded by the World Bank, LDCF, African Development Bank, and European Union, is the largest regional project in which Burkina Faso is participating. The overall goal of the initiative is to strengthen the resilience of people and natural systems with sound ecosystem management, sustainable development of land resources, protection of rural heritage, and improvement of the living conditions of the local population.

Relevant global projects being implemented in Burkina Faso include the Pathways to Resilience in Semi-Arid Economies (PRISE) project, the Ecosystems Protecting

Infrastructure and Communities project, and the Climate-Smart Villages project. One of the CARIAA program's four consortiums, the PRISE initiative aims to spur climate-resilient development in African and Asian semi-arid lands by identifying economic threats and opportunities resulting from climate change. The project works with stakeholders in government, business, civil society, and regional economic organizations to better inform policies and investments for climate resilience. Ecosystems Protecting Infrastructure and Communities, funded by Germany, is using an innovative approach involving five case studies to identify and document the many benefits of preserving ecosystems. The objective is to raise awareness of the role and function of ecosystems as protective barriers and as contributors to reducing climate-related risks. Lastly, Burkina Faso is a targeted country of the Climate-Smart Villages project by the Consultative Group for International Agricultural Research (CGIAR) Research Program on Climate Change, Agriculture and Food Security that emphasizes local actions to ensure food security, promote adaptation, and build resilience to climatic stresses.

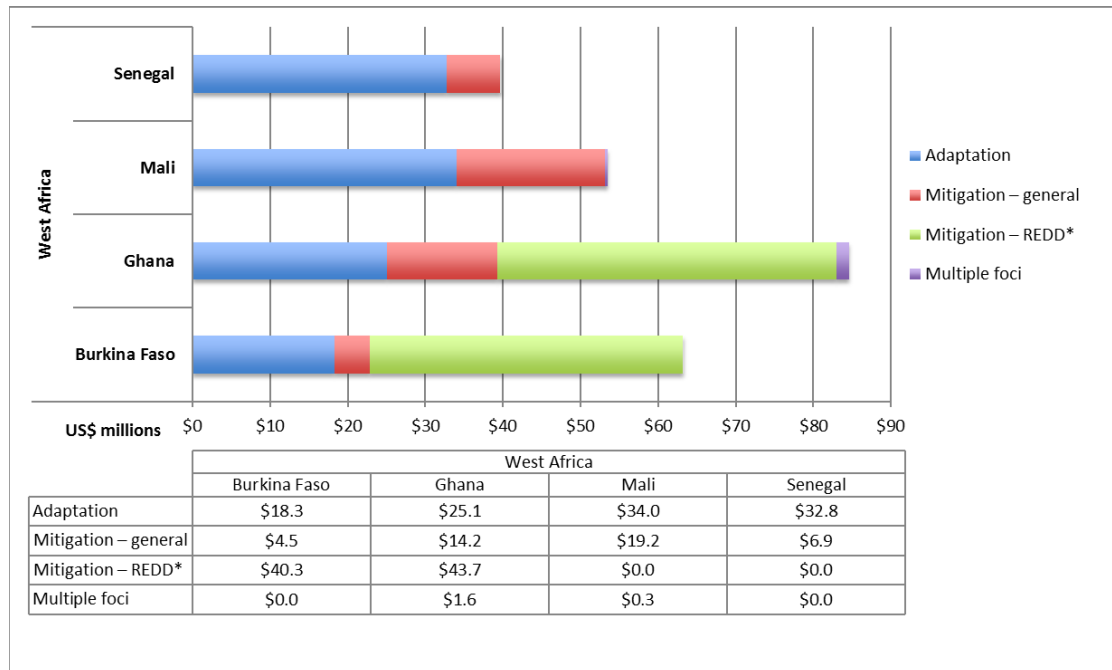
4.2 Climate finance

Funding for climate change adaptation in Burkina Faso comes from a variety of sources, including domestic public finance, international climate funds, and bilateral and multilateral development assistance. The following section provides an overview of the scale, sources, and orientation of current climate finance flowing into Burkina Faso. While acknowledging that the Government of Burkina Faso is engaged in financing activities that build adaptive capacity and advance adaptation action, the focus of analysis is on financing from international public sources.

A perspective on the scale of funding provided by the international community to support adaptation in Burkina Faso can be gained by examining data collected by the Climate Funds Update, which tracks climate financing through designated bilateral and multilateral climate funds. According to this source, Burkina Faso received approval for a total of US\$63.1 million in climate finance between 2003 and April 2015, of which US\$18.3 million focused solely on climate change adaptation (see Figure 4). Notable multilateral funding sources with respect to adaptation projects and programs include the LDCF and the Global Environment Facility. The five adaptation-focused initiatives tracked by the Climate Funds Update aimed at adapting natural resource-dependent livelihoods to climate-induced risks in selected landscapes in Burkina Faso, integrating climate resilience into agricultural and pastoral production for food security in vulnerable areas, and strengthening adaptation capacities, climate information, and early-warning systems.

As illustrated in Figure 4, Burkina Faso positions itself in the upper field compared to its neighbouring countries with respect to financing from designated climate funds. However, much of this funding is to support climate mitigation activities, particularly with respect to financing for REDD+ activities. Strictly looking at funds designated for adaptation, Burkina

Faso is placed last, having received a little over half the total funding received by each of Senegal and Mali.



*Reducing emissions from deforestation and forest degradation

Figure 4 – Comparison of approved funding from designated bilateral and multilateral climate funds in West Africa since 2003 in US\$ millions, as of April 30, 2015 (based on Climate Funds Update, 2015)

A second perspective on international support for adaptation action in Burkina Faso is gained by examining the OECD Rio Markers, which report on climate-related official development assistance from bilateral sources. According to this source, Burkina Faso received US\$401.5 million in bilateral funding for climate change adaptation between 2010 and 2013. Primary bilateral funders for designated climate change adaptation projects with a principal or significant focus included Denmark, Sweden, Germany, and France, as well as European Union institutions (OECD, 2015b). As shown in Figure 5, the proportion of funding which has adaptation as its principal or significant objective has varied between 2010 and 2013. During this time period, almost 60% of the total contribution was designated for projects and programs whose principal focus was adaptation (OECD, 2015a).

Agriculture, livestock, water resources, forestry, and biodiversity have been identified as the areas most susceptible to climate change in Burkina Faso (MECV, 2007). Consistent with this prioritization, agriculture, both livestock and crop production, is the main sector for which adaptation funding has been provided through official development assistance. Water supply and sanitation was the second-largest focus area of bilateral aid for adaptation between 2010 and 2013 (OECD, 2015b).



Figure 3 – Bilateral development aid marked identified as having as its principal or significant objective¹¹ support adaptation in Burkina Faso between 2010 and 2013, in US\$ millions, constant 2012 prices (based on OECD, 2015a)

5. Networks and communities of practice

A number of organizations are active on climate change adaptation in Burkina Faso. The Permanent Interstates Committee for Drought Control in the Sahel (Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel) is a regional Sahelian organization that has been operating from Ouagadougou since 1973 in response to the severe droughts that hit the region in the 1970s. Climate change is central to the work that the organization does: its touches upon all of its focus areas, including food security, agriculture, desertification, water, market access, and energy. The organization’s work includes research, training, and pilot projects throughout the region.

Burkina Faso also hosts the Water Resource Coordination Unit (WRCU) of the Economic Community of West African States. Based in Ouagadougou and in operation operating since 2004, the WRCU is in charge of the implementation of the Regional Action Plan on Integrated Water Resource Management. The WRCU will likely be an important actor for coordinating regional responses to climate change given its expected impacts on water resources in the region.

¹¹ Based on the definitions used by the OECD Rio Markers system, activities are considered to have supporting adaptation as their “principal” objective “when promoting the objectives of the UNFCCC is stated in the activity documentation to be one of the principal reasons for undertaking the activity.” In other words, the activity would not have been funded but for that objective. Activities marked “significant” have other prime objectives, but have been formulated or adjusted to help meet climate concerns” (OECD, 2011, p. 3).

Réseau MARP Burkina (the Network for Participatory Approaches to Research and Planning), is an active Burkinabe organization created in 1992. It is a network focused on participatory decision-making, training, and information sharing around development challenges. One of the areas in which it works is climate change. In 2013, the network organized a workshop to discuss strategies for combating food insecurity and adapting to climate change (World Resources Institute, 2013). Réseau MARP Burkina led a disaster risk reduction network (Réseau Réduction des risques de catastrophes) that played an active role in advocating to the government to pass the Framework Law on the Prevention and Management of Risks, Humanitarian Crises and Disasters in 2014.

Local non-governmental organizations that are particularly active on climate change include the Institut d'Applications et de Vulgarisation en Sciences (IAVS – the Institute for Applied Science and Extension) and the Association Bao Taab Neere pour le développement durable et la sauvegarde de l'environnement (ABTN – the Bao Taab Neere Association for Sustainable Development and the Protection of the Environment). IAVS, founded in 2008 and based in Ouagadougou, is an organization that, through research and training, tries to build capacity in Burkina Faso and other countries in West and Central Africa in a number of thematic areas: climate change, governance, food security, health, and energy, among others (IAVS, n.d.). ABTN is a non-profit organization operating in Burkina Faso whose work on climate change is focused on awareness raising, information dissemination, and training. They have a special focus on promoting and protecting women's rights, which likely carries through to their work on climate change (ABTN, n.d.).

6. Conclusions

Although Burkina Faso has achieved significant development gains in the last two decades, it remains among the least developed countries globally. Historically impacted by prolonged drought periods and floods, extreme climate events have long been a risk for the people and economy of Burkina Faso. The country's high dependence on climate-sensitive livelihoods — agriculture, pastoralism, forestry and fisheries — leave it particularly vulnerable to these events. These risks and challenges will grow with climate change as temperatures rise and increase heat stress and evaporation rates. While there is uncertainty regarding how rainfall patterns will change in the future, at a minimum the people and governments of Burkina Faso will need to further increase their capacity to prepare for and manage the annual and decadal variability in rainfall that currently impacts their livelihoods and economy.

The Government of Burkina Faso has acknowledged the risk posed by climate change in its national development strategies and prioritized adaptation in documents such as its INDC. It has been engaged in adaptation planning processes for some time, releasing its NAPA in 2007 and initiating development of its NAP in 2012. However, a solid governance structure

and the financial and capacity requirements to support implementation of these plans remains to be established. Progress has been made in integrating climate change considerations into sectoral policies, particularly in the agriculture sector and more recently into planning for disaster risk reduction and response. Ongoing efforts are needed to further integrate climate change across all relevant government ministries and identified key sectors as policies and plans are renewed.

With the establishment of CONEDD, with its mix of government and non-government representatives, Burkina Faso has also initiated efforts to strengthen cross-ministerial and cross-sectoral coordination. Greater effort to strengthen knowledge and information exchange between ministries is needed to build an institutional knowledge base on climate change. There is also a need to strengthen the capacity of subnational governments to plan for and implement adaptation actions. While the country initiated a process of decentralization in the 1990s, and its Policy Paper on Decentralized Rural Development recognizes the climate change as key risk factor, strategic guidance and support by the national government for adaptation efforts at the local levels appears to be largely absent. It is necessary to build government capacity to plan for and support adaptation at the local level that responds to local priorities and needs.

Given its low level of economic development, Burkina Faso is highly dependent on international assistance to advance its development efforts, including on the area of climate change. While the country has secured less funding for adaptation from designated bilateral and multilateral funds than other West African countries, a healthy array of projects are underway within the country. Consistent with its existing development needs and identified vulnerabilities, the main focus of adaptation action through projects and programs is the agricultural sector. The country is also receiving considerable support to improve its access to climate information and data, and to strengthen its capacity to use this information in decision-making processes and early-warning systems. Much of the action on climate change has been isolated and sector-specific. Moreover, the risks that climate change poses for some sectors, such as the country's growing urban areas and its health care system, have perhaps not received adequate support.

The economic, social, governance, and, increasingly, security challenges facing Burkina Faso are considerable. Targeted adaptation efforts can contribute to progress in meeting these current development challenges while reducing vulnerability to long-term changes. Sustained support from its international partners, along with demonstrated commitment to climate change action on the part of the national government, is required for Burkina Faso to achieve its development goals and build up its adaptive capacity in the face of near-, medium- and long-term climate risks.

7. Annexes

Annex A: Methodology

This section presents the research parameters established to guide development of the standardized reviews of current adaptation action in the CARIAA program's countries of engagement. It sets forward definitions used in this study, particularly with respect to the identification, selection, and classification of programs and projects considered in the review. This methodology was previously developed by the International Institute for Sustainable Development to support a review of current and planned adaptation action in 12 regions, which was completed in 2011 for the Adaptation Partnership. Modest updates to this original methodology were made to support the current review undertaken for the CARIAA program. For more information, see Adaptation Partnership (2015).

A.1 Adaptation actions included in the review

Within the review, adaptation action was defined as “policies, programs, and projects designed and implemented specifically to address the current and projected impacts of climate change.” Therefore, the review focused on examining policies, programs, and projects in which specific reference has been made to supporting adaptation to climate change or climate risk reduction.

Consistent with this definition, the review gave attention to discrete, time-bounded programs and projects designed and implemented specifically to support preparation for or implementation of practical adaptation actions within the broader context of achieving development objectives. Therefore, at least one of the following terms appeared in the title, goals statement, or objectives statement of each program or project included in the review: “adaptation,” “climate change adaptation (CCA),” “climate risk management,” or “climate vulnerability reduction.”

Based upon these parameters, the following types of programs and projects were not included in the review: disaster risk reduction, prevention, or management projects, unless they specifically reference that this activity is being undertaken in support of CCA; primary scientific research studies (for example agrology, botany, or meteorology) on the potential impacts of climate change (for example on changes in crop production, glacial melt rates, or typhoon patterns); long-term monitoring efforts (whether climatic or socioeconomic) needed to inform decision-making; stand-alone workshops, conferences, and training programs; and capacity building to support participation in processes related to the UNFCCC (such as training for negotiators, enabling activities to prepare reports).

The following additional parameters were established to guide the selection of programs and projects incorporated in the study:

- *Official start date.* To ensure that only “current” projects were included in review, selected projects needed to have begun on or after January 1, 2012, with the

exception of projects that began before this date but were still ongoing as of January 1, 2015.

- *Official end date.* Ongoing projects are those whose official completion day is on or after January 1, 2015. Projects completed after January 1, 2012, were classified as completed.
- *Funding characteristics.* Projects with a value of US\$100,000 or more were included in the study. However, reflecting the greater level of adaptation action underway in Bangladesh and India, the minimum value of projects included in the reviews for these two countries was raised to US\$250,000. Projects financed by international and domestic sources of funding were considered.

Additionally, identified projects were classified by geographical scale in accordance with the following definitions:

- **Global:** Projects involving countries throughout the world, including the profiled country.
- **Regional:** Multi-country projects within a particular subregion, be it a continent or subcontinental area (such as South Asia or West Africa), that includes the profiled country.
- **National:** Projects occurring within one country.

A.2 Type of project being undertaken

To better understand the orientation of the projects underway in the countries examined as part of the review, projects were classified by type using the following definitions:

- *Research.* Encompassing efforts to develop new knowledge or organize existing information so as to increase understanding of the links among climate change, human society, and ecosystems and inform adaptation decision-making.
- *Assessment.* Encompassing risk, impact, and vulnerability assessments, as well as monitoring of ecological and societal trends.
- *Capacity building.* Encompassing the provision of technical training, technical assistance, institutional strengthening, and education.
- *Knowledge communication.* Encompassing efforts to share information, knowledge, and practices related to CCA, including awareness raising and engagement of media.
- *Policy formation and integration.* Encompassing efforts to inform, develop, and implement CCA plans, strategies, frameworks, and policies at the local, subnational, national, and international levels.
- *Field implementation.* Encompassing physical measures to reduce vulnerability to the impacts of climate change, including the implementation of pilot projects, construction of infrastructure, development and modification of technologies, and management of physical resources.

- *Community-based adaptation*. Encompassing actions that directly engage community members in efforts to understand, plan for, and respond to the impacts of climate change.

A.3 Sector or area of focus

To further inform analysis of the range of adaptation action taking place in each country reviewed, programs and projects examined in the study were classified by sector using the following definitions:

1. **Food, fibre, and forests.** Defined as the management and use of terrestrial natural resources to directly improve human well-being. Its subcategories are:
 - *Agriculture*. Encompassing subsistence agriculture, commercial agriculture, and the rearing of confined domestic animals.
 - *Pastoralism*. Encompassing the use of domestic animals as a primary means for obtaining resources from habitats (UNEP, 2007), particularly in nomadic and semi-nomadic communities.
 - *Forestry*. Encompassing afforestation, reforestation, agroforestry, commercial forestry, community-based forest management, and woodland management.
 - *Fire management*. Encompassing monitoring, planning, and management to address the impact of fires on settlements and ecosystems, including forested and grassland ecosystems.
 - *Aquaculture*. Food production through the rearing of aquatic animals, such as fish, crustaceans, and molluscs, or the cultivation of aquatic plants in natural or controlled marine or freshwater environments.
2. **Ecosystems.** Defined as a system of living organisms interacting together and with their physical environment, the boundaries of which may range from very small spatial scales to, ultimately, the entire Earth (IPCC, 2001). Its subcategories are:
 - *Biodiversity protection*. Encompassing activities related to the maintenance of living organisms at various spatial scales, including the establishment and protection of parks and bioserves.
 - *Ecosystem conservation*. Encompassing efforts to *maintain* the health of particular ecosystems, such as wetlands, grasslands, forests, mangroves, and coral reefs.
 - *Ecosystem restoration*. Encompassing efforts to *restore* the health of particular ecosystems, such as wetlands, grasslands, forests, mangroves, and coral reefs.
3. **Freshwater resources.** Defined as the management and use of freshwater contained in terrestrial ponds, lakes, rivers, and watersheds, among others. Its subcategories are:
 - *Freshwater fisheries*. Encompassing the catching, packing, and selling of fish and shellfish derived from lakes, rivers, and ponds, as well as through freshwater aquaculture.

- *Watershed management.* Encompassing management of the basins that supply water to different streams, rivers, lakes, and reservoirs, including integrated watershed management.
 - *Freshwater supply.* Encompassing efforts to access and preserve freshwater for human consumption and use, including drinking water sources, groundwater resources, rainwater harvesting, and water infrastructure such as wells, dams, and dikes.
4. **Oceans and coastal areas.** Defined as the management and use of coastal areas and oceans. Its subcategories are:
- *Coastal zone management.* Encompassing the management of land and water resources in coastal areas, including through integrated coastal zone management and the establishment and maintenance of coastal infrastructure.
 - *Marine management.* Encompassing the management and use of offshore ocean and sea resources.
 - *Marine fisheries.* Encompassing the catching, packing, and selling of fish, shellfish, and other aquatic resources found in the oceans and seas, including through marine and coastal aquaculture.
5. **Disaster risk management.** Defined by the United Nations International Strategy for Disaster Reduction (2009) as the “systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster” (p. 10). It includes emergency response measures, preparation for extreme events and early warning systems. No sub-categories were established in relation to this macro project category.
6. **Migration and security.** Defined as efforts to support the movement of people and maintain their personal security in the face of incremental climate changes or climate shocks.
- *Migration.* Encompassing preparations for and responses to the potential movement of people from one location to another due to climate change impacts.
 - *Security.* Relating to personal security and freedom from violence, crime, and war due to natural and human-induced disasters (UNEP, 2007) and encompassing peace building, conflict reduction, and conflict avoidance.
7. **Gender.** Defined as the social attributes and opportunities associated with being male and female and the relationships between women and men, and girls and boys, as well as the relations among women and among men. These attributes, opportunities, and relationships are socially constructed and are learned through socialization processes (United Nations Entity for Gender Equality and the Empowerment of Women, n.d.). This category includes efforts to understand the vulnerability of women to the impacts of climate change, gender-sensitive adaptation strategies, and measures to improve the

situation of women at the local and policy level, including through gender mainstreaming. No subcategories were established in relation to this macro project category.

8. **Business.** Defined as the purchase and sale of goods and services with the objective of earning a profit. Its subcategories are:
 - *Tourism.* Encompassing the adjustment and development of tourist facilities and operations to account for current and future vulnerabilities, including these actions in relation to ecotourism.
 - *Private sector.* Encompassing potential impacts of climate change and potential adaptation strategies on the diverse activities underway in the portion of the economy in which goods and services are produced by individuals and companies including industry, mining, and other economic sectors.
 - *Trade.* Encompassing the exchange of goods and services within and between countries.
 - *Insurance.* Encompassing the development, testing, and adjusting of insurance and risk-management schemes, including weather-based index systems.

9. **Infrastructure.** Defined as the basic equipment, utilities, productive enterprises, installations, institutions, and services essential for the development, operation and growth of an organization, city or nation (IPCC, 2001). Its sub-categories are:
 - *Energy.* Encompassing energy-related systems and infrastructure, including small-scale and large-scale energy generation through hydroelectric power generation, wind, solar, and other forms of traditional and new energy sources, as well as transmission networks.
 - *Transportation.* Encompassing the components of the system required to move people and goods, including roads, bridges, railway lines, shipping corridors, and ports.
 - *Waste management.* Encompassing sanitation, sewage systems, drainage systems, and landfills.
 - *Buildings.* Encompassing actions related to built structures such as houses, schools, and offices, including changes to building codes, building practices, and green ways of construction.

10. **Human settlements.** Defined as a place or area occupied by settlers (IPCC, 2001). Its subcategories are:
 - *Peri-urban areas.* Encompassing the outskirts of urban centres and the transition zones between rural and urban areas.
 - *Urban areas.* Encompassing municipalities, towns, and cities, as well as areas in these centres (such as slums).
 - *Rural areas.* Encompassing villages and other small settlements, as well as rural landscapes and integrated rural development.

11. **Human health.** Defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (WHO, n.d.). It includes efforts to assess vulnerabilities to and the impacts of climate change on human health directly and indirectly, and the development and implementation of appropriate adaptation strategies at the local, regional, and national levels. No subcategories were established in relation to this macro project category.
12. **Climate information services.** Defined as the production and delivery of authoritative, timely, and usable information about climate change, climate variability, climate trends, and impacts to different users at the local, subnational, national, regional, and global levels. It includes efforts to develop, adjust, and provide short- and long-term climate forecasts, including climate change projections, to different audiences. No subcategories were established in relation to this macro project category.
13. **Governance.** Defined as the institutions (laws, property rights systems, and forms of social organization) through which societies define and exercise control over resources (UNEP, 2007). Its subcategories are:
- *Government.* Encompassing efforts to build the capacity of government officials, either at the national or subnational level, to prepare for and facilitate adaptation to climate change, including through the development of policies, plans, frameworks, and strategies, as well as the establishment and operation of climate change trust funds.
 - *Civil society.* Encompassing efforts to build the capacity of the public, including NGOs, to understand, prepare for, and respond to climate change.
14. **Social protection.** Based on DFID's definition of social protection, projects within this category focus on three sets of instruments to address chronic poverty and vulnerability:
- *Social insurance.* Referring to "the pooling of contributions by individuals in state or private organizations so that, if they suffer a shock or change in circumstances, they receive financial support."
 - *Social assistance.* Encompasses "non-contributory transfers that are given to those deemed vulnerable by society on the basis of their vulnerability or poverty."
 - *Workplace safety.* Involves the "setting and enforcing of minimum standards to protect citizens within the workplace" (DFID, 2006, p. 1).
- Adaptation projects that focus on labour market interventions and social assistance would be included in this category. No subcategories were established in relation to this macro project category.
15. **Multisectoral.** Defined as actions that simultaneously address more than one sector in one or multiple locations. It includes efforts that address more than one sector, which are challenging to tease apart, and in the context of this review includes large, multi-

country projects in which the specific sector of focus is nationally determined and, therefore, varies from country to country. No subcategories were established in relation to this macro project category.

16. **Other.** To capture areas of focus not clearly identified in the previous categories.

Annex B: Projects and programs

Projects working to address vulnerability to the impacts of climate change in Burkina Faso are presented alphabetically in the table below.

Name of project	Objectives	Funder(s) and budget	Implementing agencies	Type of project	Sectors	Duration	Scale and location(s)
Access to Safe, Nutritious, and Sufficient Food in Boucle du Mouhoun	The project aims to improve the food security of 40,000 people living in Boucle du Mouhoun by improving agricultural production and increasing the capacity of people to adapt to climate change. Activities to be undertaken within the project include (i) diversifying agricultural production by distributing improved seeds, goats, and sheep; (ii) introducing new crops that will improve local diets; (iii) promoting better practices for breeding and raising small livestock; (iv) training people in biogas production using manure; and (v) reforestation using native species.	Foreign Affairs, Trade and Development Canada through the Canada Fund for African Climate Resilience CAD\$2,500,630	Union des producteurs agricoles - Développement international, Fondation Jules et Paul-Émile Léger and Union des groupements pour la commercialisation des produits agricoles de la Boucle du Mouhoun	Capacity building, field implementation	Agriculture	December 2012–March 2014	National
Adaptation to Climate Change and Forests in West Africa	This project develops policies and practices to support the sustainable management of forests in the savannahs of West Africa, and to increase the adaptive capacities of local communities through improved livelihoods from forest ecosystem goods and services.	French Global Environment Facility	French Agricultural Research Institute for International Development and Center for International Forestry Research	Capacity building, knowledge communication	Forestry	2011–2015	Regional Burkina Faso, Mali
Adapting Natural Resource Dependent Livelihoods to	This project aims to reduce the vulnerability and build the resilience of local communities to the additional risks resulting	LDCF, UNDP, Government of Burkina Faso, Regional	UNDP and Permanent Secretariat for the National Council for	Capacity building, knowledge communication, policy formation	Agriculture, forestry, ecosystem restoration,	April 2014–2020	National

Climate induced Risks in Selected Landscapes in Burkina Faso: the Boucle du Mouhoun Forest Corridor and the Mare d'Oursi Wetlands Basin	from climate change. Activities focus on key agro-ecological and hydrological systems and natural resource management sectors in the Boucle du Mouhoun Forest Corridor and the Mare d'Oursi Wetlands Basin. The project also aims to mainstream climate change adaptation into local and regional development planning and finance.	Government of the Boucle du Mouhoun, Veterinaires sans Frontiers, and two other organizations US\$37,792,541	Environment and Sustainable Development	and integration, community-based adaptation	watershed management, climate information, government		
Assessment of Vulnerabilities, Adaptive Capacities and Past and Current Adaptive Strategies of Agroforestry Systems in a Wide Range of Contexts	This project undertakes participatory research about the vulnerability of rural communities to climate change in four regions in the Sahelian and Sudanian ecozones of Burkina Faso, Mali, and Niger. The results are expected to document local adaptation practices and elucidate the role of agroforestry systems in enhancing the resilience of rural communities to climate change.	Unknown	Consultative Group on International Agricultural Research; World Agroforestry Centre	Research	Agriculture, forestry, gender	2012–2015	Regional Burkina Faso, Mali, Niger
Building Resilience Without Borders in the Sahel	This project aimed to support 900,000 vulnerable women and men in Burkina Faso, Mali, and Niger to adapt to climate extremes. It aimed to facilitate change in three key areas: (1) “improving relevance of, access to and use of climate information services for planning and risk management;” (2) “scaling up access to and adoption of sustainable and climate-resilient livelihood options;”	DFID, through the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) program £69,400	CARE; Réseau Billital Maroobé; SNV; and TREE AID	Assessment; capacity building	Agriculture; climate information	Unknown–2014	Regional Burkina Faso, Mali, Niger

	and (3) “promoting equitable, sustainable and climate-resilient governance of natural resources”(Wrobel et al., 2014).						
Changing Farming Practices to Prepare for Heavy Rain and High Temperatures	This project will build the economic, ecological and organizational resilience of 620,000 rural people in Burkina Faso and strengthen their ability to cope with the effects of increased rainfall variability and higher temperatures. This will be achieved by diversifying agricultural production and increasing incomes (through improved and sustainable access to drought-tolerant seeds, soil fertility improvement and enterprise development), together with strengthened government extension services and early-warning weather systems. The project will scale proven resilience-building approaches, embed climate adaptation approaches in local, regional and national plans, and generate and disseminate best practice guidance on climate adaptation approaches (BRACED, n.d.).	UK DFID through the BRACED program £5,395,426	Welthungerhilfe	Field implementation, community-based adaptation	Agriculture, government	2014– unknown	National
Climate for Development in Africa	This program aims to increase the climate resilience of Africa's population, addressing the need for improved climate information in Africa and strengthening the use of such information for decision-making. The project is	European Union; Finland; Nordic Development Fund; Sweden; UK Aid; USAID	African Climate Policy Centre	Research, capacity building, knowledge communication	Climate information	January 2012– December 2015	Regional Ethiopia, Kenya, Tanzania, Uganda, Burkina Faso, Ghana, Mali,

	an initiative of the African Union Commission, the United Nations Economic Commission for Africa, and the African Development Bank.						Senegal, Botswana, Namibia, South Africa, Egypt
Climate Governance and Sustainable Decentralized Forest Management in Burkina Faso	This project aims to promote sustainable development in Burkina Faso through interventions that will alleviate poverty, increase resilience to climate change, and reduce deforestation and woodland degradation. It will support the development of a REDD+ strategy, help mainstream climate change and REDD+ into national frameworks and strategies, reduce the drivers of deforestation by enhancing participatory planning processes, and develop resources and knowledge management structures to support sustainable natural resources management.	Global Climate Change Alliance and World Bank Forest Investment Program €22 million	MEDD, National Council for Environment and Sustainable Development, and the World Bank	Assessment, knowledge communication, policy formation, and integration	Forestry, urban areas, rural areas, government	January 2014– December 2018	National
Climate-Smart Villages	This project aims to sustainably increase productivity and incomes, build resilience to climate change, reduce greenhouse gas emissions, and enhance national food security and development goals. It will do this by establishing climate-smart villages that will act as models of local actions that ensure food security, promote adaptation, and build resilience to climatic stresses. Researchers, local partners, farmers' groups, and	CGIAR Research Program on Climate Change, Agriculture and Food Security	Led by the International Center for Tropical Agriculture and Earth First	Assessment, capacity building, knowledge communication, and community-based adaptation	Agriculture and climate information	2011– unknown	Global Bangladesh, India, Nepal, Ethiopia, Kenya, Tanzania, Uganda, Burkina Faso, Ghana, Colombia, Guatemala, Honduras, Nicaragua, Vietnam,

	<p>policymakers will collaborate to select the most appropriate technological and institutional interventions that support climate-smart agriculture, taking into consideration global knowledge and local conditions.</p>						Laos, and Cambodia
Ecosystems Protecting Infrastructure and Communities	<p>The overall goal of this project is to catalyze and promote improved management of ecosystems and harness multiple ecosystem services to protect vulnerable communities from risks associated with climate change and natural hazards. Its objectives are to: (1) demonstrate the effectiveness and economic value of environmental management for disaster risk reduction and climate change adaptation; (2) raise awareness on the potential of environmental management to address disaster risk reduction and climate change adaptation; (3) work with communities to identify and implement locally nature-based measures for disaster risk reduction and climate change adaptation; (4) assist national and local governments to establish facilitating policy mechanism; (5) disseminate lessons learned; and (6) build national, subnational and local capacities for the implementation of ecosystem-based disaster risk reduction and climate change adaptation.</p>	<p>Germany's Federal Ministry of the Environment, Nature Conservation and Nuclear Safety's International Climate Initiative</p> <p>€4,004,645</p>	<p>Co-ordinated by IUCN working closely with the University of Lausanne (Switzerland), l'Institut National de la Recherche Agronomique (France), the Mangrove Action Project (Thailand) and the Swiss Federal Institute for Forest, Snow and Landscape Research.</p>	<p>Research, capacity building, knowledge communication, community-based adaptation</p>	<p>Ecosystem conservation, ecosystem restoration, disaster risk management, multisectoral, other: ecosystem-based adaptation</p>	<p>September 2012– August 2017</p>	<p>Global</p> <p>Nepal, Burkina Faso, Senegal, China, Chile, Thailand</p>

GCCA Regional Program for West Africa	This project aims to support West African countries in tackling climate change so as to achieve the MDGs. Its specific objective is to strengthen the capacity of national and regional stakeholders in mainstreaming climate change in development policies and strategies, and in implementing measures to adapt to climate change and increase the resilience of the population. (components: monitoring, mainstreaming, capacity building)	GCCA €4 million	Economic Community of West African States and Permanent Inter-State Committee for Drought Control in the Sahel	Assessment, capacity building, policy formation and integration	Climate information, government	March 2011– February 2015	Regional Burkina Faso, Mali, Senegal, Benin, Cabo Verde, Chad, Gambia, Guinea Conakry, Guinea-Bissau, Ivory Coast, Liberia, Mauritania, Niger, Nigeria, Sierra Leone, Togo
Great Green Wall for the Sahara and Sahel Initiative	The overall goal of the Great Green Wall initiative is to strengthen the resilience of people and natural systems in the Sahel and Sahara with sound ecosystem management, sustainable development of land resources, the protection of rural heritage, and the improvement of the living conditions of the local population. The initiative has three main objectives: (1) improve the living conditions of populations in the arid zones of Africa and reduce their vulnerability to climate change, climate variability, and drought; (2) improve the state and health of ecosystems in the arid zones of Africa and their resilience to climate change, climate variability, and drought; and (3) mobilize resources for	World Bank; LDCF; Special Climate Change Fund; AfDB; FAO; European Union; Global Mechanism of the United Nations Convention to Combat Desertification LDCF, Special Climate Change Fund, World Bank, and AfDB funds total US\$3.108 billion; additional funds from European Union: US\$1.9Million; Global Mechanism of the United Nations	African Agency of the Great Green Wall	Capacity building; policy formation and integration; field implementation	Agriculture, pastoralism, forestry, ecosystem conservation, private sector, green infrastructure	2011– unknown	Regional Ethiopia, Burkina Faso, Ghana, Mali, Senegal, Egypt, Algeria, Benin, Chad, Djibouti, Mauritania, Niger, Nigeria, Gambia, Sudan, Togo

	the implementation of the Great Green Wall Initiative through the establishment of efficient partnerships between national, regional, and international stakeholders.	Convention to Combat Desertification: US\$380,000; FAO: US\$456,000					
Increasing Access to Weather Information and Affecting Behaviour Change	Working in high risk locations of Burkina Faso, this program aims to build the resilience of vulnerable communities to climate extremes and disasters, such as droughts, floods, heavy precipitation, and excess heat. Through its interventions it is working to improve access to reliable climate information, increase agricultural production capacity and diversify production, and better understand and reduce the potential impacts of climate change on women and girls.	UK DFID through the BRACED program	Christian Aid (lead organization)	Capacity building, field implementation, community-based adaptation	Agriculture, gender, climate information	January 2015– January 2018	National
Integrating Climate Resilience into Agricultural and Pastoral Production for Food Security in Vulnerable Rural Areas Through the Farmers Field School Approach	This project aims to enhance capacity in Burkina Faso's agricultural and pastoral sectors to cope with climate change. It will achieve this goal by mainstreaming climate change adaptation practices and strategies into on-going agricultural development initiatives and agricultural policies and programming. It also will upscale the adoption of climate change adaptation technologies and practices by farmers through a network of already established farmer field schools.	LDCF US\$23.38 million	FAO, Ministère de l'Agriculture et de l'Hydraulique, MEDD and the Ministère des Ressources Animales in collaboration with the Conseil National de l'Environnement et du Développement Durable	Capacity building, knowledge communication, field implementation, community-based adaptation	Agriculture, pastoralism	April 2013– April 2017	National

Monitoring the Impacts of Urban Agriculture on Climate Change Adaptation and Mitigation in Cities	This project aimed to draft a monitoring framework to measure the mitigation, adaptation, and other development benefits that may be derived from urban and peri-urban agriculture and forestry. Indicators and tools were developed and field tested in four participating cities in collaboration with local and provincial authorities.	UK DFID and the Netherlands through the Climate and Development Knowledge Network £200,299	RUAF Foundation	Research, policy formation and integration	Agriculture, forestry, urban areas	February 2013 – November 2014	Global Nepal, Burkina Faso, Sri Lanka, Argentina
PRISE	This project aims to spur climate-resilient development in African and Asian semi-arid lands by identifying economic threats and opportunities resulting from climate change. The project will work with stakeholders in government, business, civil society, and regional economic organizations to research five areas: climate risk, institutional frameworks, regulatory frameworks, markets, natural capital, and human capital. Focusing on practical needs, the project will shed light on climate risks and opportunities, leading to better-informed policies and investments for climate resilience.	DFID and IDRC through CARIAA	Overseas Development Institute (UK); Innovation, Environnement, Développement Afrique (Senegal); Centre for Climate Change Studies, University of Dar es Salaam (Tanzania); Grantham Research Institute, London School of Economics (UK); Sustainable Development Policy Institute (Pakistan)	Research, capacity building, knowledge communication, policy formation and integration	Multisectoral	2014–2019	Global Pakistan, Tajikistan, Kenya, Tanzania, Burkina Faso, Senegal
Strengthening Climate Information and Early Warning Systems in Western and Central Africa for	Responding to priorities and actions identified in Burkina Faso's NAPA, this project aims to increase the capacity of the national early-warning network and strengthen access to climate information. It will also	LDCF US\$28.405 million	UNDP, Division of Environment Information and Monitoring, and National Council for Sustainable Development	Capacity building, knowledge communication, policy formation and integration, field implementation	Climate information, government	September 2013–2015	National

Climate Resilient Development and Climate Change Adaptation: Burkina Faso	transfer relevant climate and environmental monitoring technologies, and strengthen capacity to integrate climate information into development plans.						
Strengthening the Resilience of Pastoralists and Agro-pastoralists through Trans-border Livestock Mobility	This project will strengthen resilience of 905,000 pastoralists and agro-pastoralists (women, men, and children) by securing, servicing, and promoting trans-border livestock mobility across Mauritania, Senegal, Mali, Burkina Faso, and Niger. It will provide key services (fodder supplements, animal health) and enable communities and stakeholders to lobby for livestock mobility and for appropriate policy-making at local, national, and regional levels.	DFID; European Union; Acting for Life £6.28 million	Acting for Life (lead organization)	Capacity building, knowledge communication, policy formation and integration, field implementation, community-based adaptation	Agriculture, pastoralism, civil society	2015–2017	Regional Senegal, Niger, Mauritania, Mali, Burkina Faso
Synthesis of IWMI previous work in the Volta and Blue Nile Basins on Water Storage Evaluation under Future Climates, and examination of technical, socioeconomic and environmental criteria for evaluation of various storage options	This activity aims to analyze the current status of storage in the Volta and Blue Nile Basins and to suggest criteria and guidelines for such planned development. It will develop recommendations on how to consider climate change in evaluation of water storage options, basin-wide water storage planning in river basins, and assessment of the need for storage for different uses.	CGIAR Research Program on Climate Change, Agriculture and Food Security US\$250,000	International Water Management Institute, Postdam Institute, Water Research Institute, University of British Columbia, University of Ghana, and German Centre for Development Research	Research	Watershed management and freshwater supply	January 2012–June 2013	Regional Ethiopia, Burkina Faso, and Ghana

<p>Water Infrastructure Solutions from Ecosystem Services to Underpin Climate-Resilient Policies and Programmes (WISE-UP to Climate)</p>	<p>This project is working to improve water supplies and increase resilience to climate change in two basins: the Tana Basin in Kenya and the Volta Basin in Ghana and Burkina Faso. It is developing, testing, and demonstrating how to use natural infrastructure and built water infrastructure to support poverty reduction, conservation of biodiversity, water-energy-food security, and climate resilience.</p>	<p>German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety through the International Climate Initiative €5.31 million</p>	<p>International Union for Conservation of Nature; Tana-Athi Rivers Development Authority; Volta Basin Authority</p>	<p>Capacity building, research, field implementation</p>	<p>Watershed management, government</p>	<p>August 2013–July 2017</p>	<p>Regional Kenya, Burkina Faso, Ghana</p>
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