



# Burkina Faso

## 1. Country overview

Burkina Faso is a land-locked country in West Africa, bordering six other nations, with an estimated population of 21 million (UN 2019). Livelihoods are highly vulnerable to changes in the natural environment, with over 80 per cent of the population employed in agriculture.

Recent spikes in conflict add to the population's vulnerability. In 2014 there was a popular uprising against a review of the constitution. Following the uprising, president Blaise Compaoré resigned after 27 years in power and presidential elections were held in 2015 (UNDP 2020). Since 2016 Burkina Faso has seen intercommunal conflict increasingly leading to armed group attacks. Between 2016 to present, Burkina Faso was faced with civilian deaths, increased internal displacement, and a deteriorating security situation along the borders of Mali and Niger (USAID 2020).

Burkina Faso ranks 159 out of 181 countries in the Notre Dame Global Adaptation Initiative (ND-GAIN) index. The ND-GAIN index summarizes a country's vulnerability to climate change and other global challenges in combination with readiness to improve resilience. This ranking indicates that Burkina Faso has extremely high vulnerability levels and low levels of readiness to adapt to climate change (ND-GAIN 2020). Furthermore, the country scores extremely low on the Human Development Index (HDI) with a score of 182 of 189. Life expectancy is 58 years old and more than 85 per cent of the population lives in multidimensional poverty (Crawford *et al.* 2016).



Figure 1: Burkina Faso map (Central Intelligence Agency (CIA) 2021).

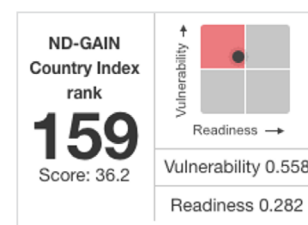


Figure 2: Burkina Faso's ND-GAIN Ranking (ND-GAIN 2021).

## 1.1 Climate

Burkina Faso is characterized by a dry tropical climate and it experiences a short rainy season and long dry season (UNDP 2021). These seasons are influenced by the movement of the Intertropical convergence zone (ITCZ) (Crawford *et al.* 2016). The country has three distinct climatic zones. The Sahel region is in the north of the country and receives the least rainfall, with less than 600mm of annual precipitation. The North-Sudanian zone is in the centre of the country and sees somewhere in the range of 600-900mm of rain a year. Finally, the South-Sudanian zone, in the south of the country, sees annual average rainfall to be over 900mm (UNDP 2021). Rainfall is unpredictable and variable, which frequently causes issues for people and livelihoods (Global Facility for Disaster Reduction and Recovery (GFDRR) 2011). Annual average temperatures in Burkina Faso range between 27-30°C, with monthly averages ranging from 15-45°C (USAID 2017).

## 1.2 Climate change

### Historical climate

### Projected Climate

#### Temperature

Since 1975 annual average temperatures have been observed to increase by 0.6°C (USAID 2012). There has been an increase in the average yearly temperatures of approximately 0.10°C per decade from 1901–2013 (USAID 2017).

Reports suggest a warming of 0.26°C per decade over the last 30 years (USAID 2017).

By 2050, a 1.4 - 1.6°C rise in temperatures is expected in Burkina Faso (UNDP 2021). Temperature is projected to increase by 3-4°C by 2080-2099, this is substantially higher than the global average (World Bank 2021).

Temperature increases vary across the country, with higher temperatures expected in the north, the south-west, and in the dry season (Potsdam Institute 2020; World Bank 2021).

#### Precipitation

Observations from weather stations taken since 1902 depict an expansion of the dry zone, which has been moving southward over the last century (GFDRR 2011).

Droughts are a regular occurrence and some argue northern Burkina Faso has been in a “quasi drought” since 1970 (Crawford *et al.* 2016).

Flooding events are increasing. Between 1991 and 2009, Burkina Faso saw 11 major floods which impacted 380,000 people and took 93 lives (GFDRR 2011).

A high level of uncertainty exists regarding projections on precipitation in the region. Projections range from a decline of 10 per cent to an increase in 16 per cent of precipitation by 2100 (Crawford *et al.*, 2016). IPCC estimates show a potential increase in rainfall in the West African region under a high emissions scenario of 1 per cent by 2035, 2 per cent by 2065, and 5 per cent by 2100 (Crawford *et al.* 2016).

Despite little projected change in annual precipitation sums, ‘future dry and wet periods are likely to become more extreme’ (Potsdam Institute, 2020).

## 1.3 Climatic Vulnerability

Burkina Faso contributes to just 0.08 per cent of global emissions yet is ranked 99.33 in the Global Climate Risk Index (LSE 2021). With an ND-GAIN Index ranking of 159th, Burkina Faso is also ranked among the most climate vulnerable countries globally (ND-Gain 2021). In terms of climate vulnerability, the UNDP has identified four major challenges facing the country: deforestation, desertification, low rainfall and extreme weather events (UNDP 2020). Extreme weather events include floods, droughts, high winds and high variation between rain and dry seasons. Further climate-related hazards stem from locusts, dust storms, and heat waves, which also contribute to increasing climate vulnerability (GFDRR 2011). Combined, these exacerbate challenges already faced by the population and stress agricultural yields and management of natural resources (UNDP 2020).

## 2. Humanitarian sectors and climate change

### 2.1 Water and habitat

Burkina Faso ranks 138th of 169 countries in water vulnerability to climate change, with lower scores (such as this one) denoting higher vulnerability and Burkina Faso is extremely vulnerable to water related stressors (ND-GAIN Index 2021). Many rivers in the country are intermittent; just two rivers (the Mouhoun and Nakambe) flow year-round (USAID 2012). Rainfall in some parts of the country is present for only two months of the year (GFDRR 2011). Adding to already scarce water resources, increasing temperatures are projected to increase evapotranspiration of up to 6.8 per cent under the medium-high global emissions scenario RCP6.0 (Potsdam Institute 2020). Increasing temperatures coupled with decreasing precipitation are expected to cause water deficits, low crop yields, famine, increased desertification and the loss of livestock and crop-dependent livelihoods.

Besides drought, flooding occurs across the country and has long-term impacts. Increases in the intensity of rainfall events, especially following increased dry periods, has the potential to be catastrophic to soil composition. This is an issue made worse by the high levels of deforestation present in the country (Crawford *et al.* 2016). Habitat change has been observed with the increasing desertification occurring from the north of the country moving southward (GFDRR 2011). The Food and Agriculture Organization of the UN (FAO) estimates that approximately one third of the country, totaling 9 million hectares of productive land, has been degraded. The most recent estimates project an increase of the degraded land to 360,000 hectares per year (FAO 2021a). Finally, climate change and population growth will decrease per capita water availability by 2080, with acute water stress in the west and central regions of the country (Potsdam Institute 2020).

### 2.2 Economic Security

The country's high dependence on climate sensitive economic activities, particularly agriculture, makes it vulnerable to climate change. Moreover, its citizens experience widespread multidimensional poverty that makes climate shocks hard to absorb (Crawford *et al.*, 2016). Increasing temperatures combined with more frequent drought and flooding have the potential to be extremely detrimental to agricultural activities (USAID 2017). Climate crop model projections show a decrease in yields of 15-25 per cent across the Sahel by 2080 as a result of increased temperatures, heatwaves, and intense rainfall (USAID 2017). The three most commonly grown crops are millet, sorghum and cowpea. While these are heat and drought tolerant crops, if temperatures rise above 35°C yields are expected to decrease. This decrease would be exacerbated by decreasing soil quality, increased wind and water erosion, and flooding (USAID 2017).

Burkina Faso has little economic diversity, with just two main exports: cotton and gold mining (CIA 2021). The dependence on both of these exports means the country relies on global commodity prices of these goods. Further, cotton is highly water-intensive and heat-sensitive, which may limit the country's adaptive capacity.

As a result of the combination of increasing climate shocks, environmental degradation, and pest outbreaks, food security in Burkina Faso is at risk (World Food Programme (WFP) 2018). Over one-fifth of households are determined to be food insecure (2018 figures), with WFP citing climate shocks as one of the main drivers (additionally to structural poverty, low agricultural yields, absence of social protection nets, and gender challenges) (WFP 2018).

## 2.3 Health

Burkina Faso has a high health vulnerability to climate change, driven by poor housing and low number of medical staff available (ND-GAIN Index 2021). According to the International Commission of the Red Cross (ICRC), a key factor driving reduced health care access is the closing of clinics due to deteriorating security situation (ICRC 2019). Despite the far-reaching impacts that climate change is projected to have on health, there are encouraging signs that the government of Burkina Faso is taking the threat seriously in their climate-related plans (Dasandi *et al.* 2020).

The links between climate change and increasing mortality and morbidity in Burkina Faso are clear. Weather, climate, and rainfall variability have been shown to impact infectious disease rates in-country, with climate change causing 'shifts in the timing, seasonality, and geographic range of disease epidemics' (USAID 2012). For example, with one of the highest meningitis rates in the world, as well as projected temperature increases of up to four degrees Celsius by the end of the century, climate change will increase meningitis rates as well as extend the meningitis belt further southwards (Feldscher 2018; USAID 2012). Furthermore, vector-borne diseases such as malaria already pose a challenge to Burkina Faso, where an estimated 61.5 per cent of hospitalizations are malaria-based and it is the leading cause of mortality for children under five (Potsdam Institute 2020). The burden on health infrastructure will only continue to grow as higher temperatures drive higher prevalence of malaria.

In addition to increases in infectious disease, climate change is also driving under-nutrition. Currently one-fifth of the population is estimated to be under-nourished (Global Hunger Index (GHI) 2020). Climate change will add stressors and heighten food insecurity by increasing desertification, decreasing crop yields, and negatively impacting subsistence-based livelihoods (Potsdam Institute 2020). Increasing temperatures are also contributing to the number of people impacted by heat waves. A recent climate risk analysis projects that up to ten per cent of the population will be impacted by heat waves annually by 2080 (up from one percent in year 2000). This will result in five times as many heat-related mortalities (Potsdam Institute 2020).

## 2.4 Protection

There is significant and growing insecurity and instability in Burkina Faso. Already host to more than 23,000 refugees from Mali, the number of Internally Displaced People (IDPs) rose from 50,000 to three quarters of a million in one-year (from 2019 to 2020) (2021a; World Bank, 2021). Factors driving displacement stem from complex and cascading risks, partly related to climate. As climate change drives an increase in drought, many are forced to leave their homes in search of more productive land and/or an alternate source of income generation. These displaced peoples are then rendered vulnerable to additional shocks, such as the floods that recently destroyed the shelters of IDPs (UNHCR 2021b). Furthermore, climate change contributes to desertification, which encroaches on crop and livestock land. Increasing variability and unpredictability of precipitation makes agriculture difficult, if not impossible. And when the rains do come, they come with a newfound intensity that sometimes drowns or floods crops (Relief Web 2021).

Furthermore, armed conflict and extreme weather have continued to drive displacement, resulting in over 1 million people currently displaced -- more than 20 times higher than when conflict escalated in late 2018 (International Organization for Migration (IOM) 2021). This has led some international organizations to conclude that Burkina Faso is facing 'by far the largest protection crisis in Central Sahel' (FAO 2021b). Though researchers back at drawing direct and explicit correlations between climate change and violence (Yahaya Ibrahi, 2020), the violence does have some roots in a changing climate. Increased desertification and decreased access to water sources and arable land are amplifying tensions and increasing competition for scarce resources. Increased conflict has been recorded between pastoralists and farmers in recent years, as both fight for access to critical water sources and fertile land (Relief Web 2021). Further, regions where conflict boils over tend to also be the regions where climate shocks, food and water insecurity, and widespread poverty have enabled armed groups to 'exploit' these tensions and play off of scarcity fears (Relief Web 2021).

The protection situation is compounded by ongoing humanitarian needs in the country, and amplified again by the socio-economic pressures from COVID-19 (FAO 2021b). In late 2020, WFP warned that the situation in Burkina Faso was becoming dire; the confluence of conflict, displacement, and COVID-19 has resulted in the number of 'desperately hungry people' tripling since the year prior. Without urgent action, Burkina Faso could be the first place to see a famine (IPC Classification 5) since South Sudan in 2017 (WFP 2020).

## 2.5 Policy

Burkina Faso submitted their first Intended Nationally Determined Contribution (INDC) in 2016 (UNFCCC 2021). Their mitigation and adaptation objectives focus on agroforestry, sustainable land use, water resource management, and renewable energy. A recent review of country engagement of the health impacts of climate change, published in the Bulletin of the World Health Organization, revealed that Burkina Faso was number three in the world in terms of references to climate change and health in their Nationally Determined Contribution (NDC) (with 34 mentions) (Dasandi *et al.* 2020). Improved public health was also one of Burkina Faso's priority adaptation objectives outlined in their National Climate Change Adaptation Program, including a focus on increasing the capacity of Early Warning Systems, and on adapting the governance, human resources, and infrastructure of the health sector to climate change (Ministry of Environment and Fishery Resources 2015).

The INDC and NDC build on the National Sustainable Development Policy (President of Burkina Faso, 2013), the National Multi-Risk Plan for Disaster Risk Preparedness and Response (Government of Burkina Faso 2013), and the National Partnership Program for Sustainable Land Management (Burkina Faso Government 2015). It also draws from the National Climate Change Adaptation Program, which explicitly states that Burkina Faso's vision is to enhance social and economic management through planning, resilience, and climate change adaptation measures through 2050 (Ministry of Environment and Fishery Resources 2015).

More recent developments include the organization of the Ministry of Environment, Green Economy, and Climate Change, passed in 2016 (President of Burkina Faso 2016). Finally, Burkina Faso's government explicitly highlights the country's vulnerability to climate change in their National Development Strategy of 2016-2020, listing it as one of the principal threats to development and reaching their objectives (Plan National de Développement Économique et Social (PNDES) 2016). The new National Development Plan (2021 - 2025) builds off the former and includes calls for green growth and sustainable development (Global Green Growth Institute (GGGI) 2021).

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