Climate Centre

CROIX-ROUGE BURKINABE

Country-level | Climate fact sheet

Burkina Faso

The following climate factsheet summarizes available information on the climate of Burkina Faso, climate change and impacts of these changes on humanitarian activities in country. Each of the factsheets were written as a compilation of information from peer-reviewed academic papers, government publications, and INGO documentation.

1. Climate overview

Average annual temperature: Increases from the south-west (27°C) towards the North (30°C)

Average annual rainfall: Decreases from the south-west (1200mm /year) towards the North (<600mm/year)

Main driver of climate variability: 1- Intertropical Convergence Zone (ITCZ)

Short overview

Burkina Faso is characterized by a dry tropical climate and it experiences a rainy season from June to September (figure 1c). The rainfall variation across the country is influenced by the migration of the Intertropical Convergence Zone (ITCZ). The dry season is influenced by the harmattans, or dry, easterly winds that bring hot air to the region from March to May. Annual average temperatures in Burkina Faso range between 25-32°C, with monthly minimum temperature of 17°C in December and January and maximum temperature of 40°C between March and April (figure 1c). The El Niño Southern Oscillation (ENSO) creates irregular periodic variation in the temperature as well as sea surface temperature, thus influencing year-to-year variability and extreme weather events such as heatwaves, droughts, and floods. Drier than normal rainfall conditions in some parts of the country during July to September is generally associated with the El Niño (warm) phase of ENSO.

The diverse and varied geography of Burkina Faso means that it is exposed to a broad array of environmental hazards (hydrometeorological as well as geophysical) which are directly impacted and exacerbated by the impacts of climate change across the country. Ranked 15 out of 191 countries by the 2022 Inform Risk Index (DRMKC, 2022).

1.2 Climate Change in Burkina Faso

Historical climate change	Projected climate change
Temperature	
▪ The mean annual temperature over Mali have increased at a rate of approximately 0.2°-0.3°C/ decade since 1961 to 2015 (Gutiérrez *et al.,*2021) ▪ The frequency and intensity of hot extremes have increased and cold extremes have decreased (Seneviratne *et al.,*2021)	▪ Mean temperature over the region are projected to rise until 2050 by at least 2.5°-3.5°C for a high greenhouse gas concentration scenario (SSP5-85) and 2°-3°C for low greenhouse gas concentration scenario (SSP2-4.5) (Gutiérrez *et al.,*2021). ▪ Maximum and minimum temperature will increase, and heat waves will intensify in duration and peak temperatures for every increase in global warming levels above the pre-industrial values. In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35 °C is projected to rise and with high certainty (Gutiérrez *et al.,*2021; Ranasinghe *et al.,*2021; Seneviratne *et al.,*2021).
Precipitation	
Overall, no clear trend in rainfall due to high year to year natural variability. Rainfall variability has increased, observed rainfall declines beginning in the 1950s through the 1980s, with partial recovery from the 1990s onward.	▪ Mid-century estimates (2040-2060) of annual precipitation changes over Burkina FAso indicate an increase dominate by natural variability (Gutiérrez *et al.,*2021) ▪ The frequency and intensity of heavy precipitation events are projected to increase with potential effects in flooding and soil erosion (Seneviratne *et al.,*2021)

2. Priorities of the Movement and climate change

2.1 Scale up climate-smart DRR, early action and preparedness: DRR portrait

Observed Hazard	Projected Risk
Drought	
Extreme heat and water scarcity are a high risk in all the country – meaning that droughts and 'prolonged exposure to extreme heat, resulting in heat stress, is expected to occur at least once in the next five years' (ThinkHazard, n/a). Also note than wind sand and insect infestation can have damaging impact during the dry season (World Bank, 2021).	The expected increase in maximum temperatures, and probable increase in drought conditions (Think Hazard, n/a), will affect pastoralist activities (World Bank, 2021). In addition, the reduction in the length of the rainy season, and uncertain projections of increasing extreme rainfall events can lead to insufficient crop yields. Social protection activities and the establishment of Early Warning Early Action mechanisms can mitigate the vulnerabilities of the communities (World Bank, 2021).
Flood	
The North and Centre of the country are especially vulnerable to floods, resulting from successive drought periods. Over the last 30 years several severe floods have occurred in these regions (World Bank, 2021). Internation support has been required for floods in 2021, 2020, 2016, 2010, 2009, 2007, 2006 (IFRC, 2022).	Little changes in amount or intensity of precipitation are expected. However, changes to environment and land-use could increase the vulnerabilities of communities to flood (Think Hazard, n/a).
Epidemics	
Deadly meningitis outbreaks are occurring regularly; 1996 (killing 4,000), 2001 (killing over 1,500), 2006 (killing 600), 2007 (killing 1,330), and most recently in March 2010 with 193 fatalities. They usually take place from October to May because of the hot and dry climate. Measle (2009) and yellow fever (2008) have also required international interventions (IFRC, 2022).	The reduction in the length of the rainy season, and uncertain projections of increasing extreme rainfall events could lead to increasing dry and hot climate favourable to the development of diseases.

It is essential to note that many of these hazards are interrelated and produced compound risks to the same areas and communities. In addition, risk must be understood as the interplay between hazard risk, exposure, and vulnerability which make certain communities, individuals, and sectors more impacted by the hazards. All project design should consider the risk mentioned above and the compounding risks they represent.

2.2 Reduce health impacts of climate change

The most crucial climatic-driven risks to health and nutrition are increased risks of heatwaves, infectious diseases, flooding, reduction in water quality and availability, and food insecurity (USAID, 2017). The country's high dependence on small-scale rainfed agriculture with utterly low adaptive capacity, weak health care system, poverty, and poor hygiene and sanitation aggravates the climate change induced health challenges (Sorgho *et al.,*2021; USAID, 2017).

Projected increases in prolonged periods of high temperatures will increase the risks of heat waves, causing serious health impacts on vulnerable populations, especially the elderly and young people (Sorgho *et al.,*2021). Heat-related deaths will increase from about 2 to 100 per 100,000 people annually by the end of the century (Postdam Institute, 2020). Climate change is also expected to lead to frequent and intense heavy rainfall that will increase the risk of flood-related mortality, reduce water quality and destroy agricultural lands, water infrastructure and homes (USAID, 2017). Due to a high dependence on surface water, there are increased risks of water contamination during periods of intense rainfall that result in the spread of skin infections, parasitic diseases, waterborne diseases, and vector-borne diseases, especially malaria (Doctors Without Borders (MSF), 2021; Sorgho *et al.,*2021). Furthermore, respiratory infections, water shortages, and related diseases will increase as drought events intensify and become more frequent (USAID, 2017).

Extreme weather events stand to disrupt agricultural productivity in Burkina Faso which will likely increase risks related to hunger and malnutrition in the country (Potsdam Institute, 2020). In addition, declines in crop yields affect child survival and nutrition (Belesova *et al.,*2018). Finally, climate change is anticipated to increase mental health risks and psychological disorders, especially among the elderly and young people (Sorgho *et al.,*2021).

2.3 Sustainable water: resources management, infrastructure and access

Water, Sanitation and Hygiene

The major climatic risks to water resources in the country are droughts, floods and erosion that affect the quality and quantity of water supplies (Ampomah, 2019). For example, erosion during floods and drought increases the turbidity of water and contaminates it with other pollutants. Climatic risks also damage water infrastructure increasing the risks of contamination of water supplies (*ibid*, 2019).

According to the ND-GAIN Index (2022) ranking, Burkina Faso is extremely vulnerable to water-related stressors. In the country's North, there are no year-round rivers, and the entire country has only two perennial rivers; the Mouhoun and Nakambe (Belemtougri *et al.,*2021; USAID, 2017). Therefore, people in the North increasingly rely on wells, household tanks, and intermittent water for their household water needs. Many people also depend on surface water sources which are vulnerable to climate change (MSF, 2021). Accordingly, any climatic crisis, for example drought, is likely to become a water crisis in Burkina Faso (Water Aid, 2021).

Climate induced droughts and temperature increases coupled with population growth will likely lead to a decline in per capita water availability (Postdam Institute, 2020). Given the limited groundwater resources in the country, the projected declines in infiltration due to heavy rainfall (increasing runoff potential), temperature increase, and droughts will exacerbate the existing water crisis (USAID, 2017). In 2021 alone, 6 of the 13 regions in the country were affected by water crisis due to drought (MSF, 2021). Water insecurity and poor sanitation in these conditions disproportionately affect women and children (Dickin *et al.,*2021).

Flooding has also been identified as a significant climatic hazard which will cause damage to water and sanitation infrastructure and contaminate national water supplies (Dickin *et al.,*2021). These are expected to increase the risks of waterborne diseases such as cholera and diarrheal diseases (Sorgho *et al.,*2021).

2.4 Enable climate resilient livelihoods and economic security

A high reliance on small scale-subsistence farming coupled with very low adaptive capacity makes the country's economy and livelihoods highly vulnerable to climate change (Sorgho *et al.,*2021). Agriculture is the predominant sector of Burkina Faso's economy, contributing over 30% of the GDP (Traore *et al.,*2022). Moreover, 86 percent of the population rely on small-scale subsistence agriculture (crops and livestock) for their livelihoods (USAID, 2022). 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 (USAID 2017). Owing to climate change, rainfall variability and declining distribution of rainfall will likely impact agricultural production, incomes and livelihoods and food security (Tankari, 2020).

Climate change induced droughts and temperature increases will reduce cereal production in the country (ND-GAIN, 2022). Yield losses have severe consequences for the population, especially the poor in urban and rural areas, affecting food availability and security (El-Bilali, 2021). 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 2021).

Climate change will affect not only the crop sector but also livestock through reduced forage and water availability and increased animal parasites and diseases (USAID, 2017). Furthermore, climate change will likely impact other natural resource-dependent livelihood sources, for example, forest-based economic activities (Belesova *et al.,* 2019).

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).

2.5 Address climate displacement and protection

Current and future displacement challenges

Burkina Faso faces one of the largest internal displacement crises within Africa, driven by a combination of poverty, inequality, non-started armed actors, and increasingly by environmental degradation and a changing climate. Between 2018 to the end of 2021, the number of IDPs increased from 47,000 to 1.6 million – a thirtyfold increase (IDMC 2022). Alongside this, Burkina Faso hosts more than 22,700 refugees and asylum-seekers, mainly from Mali (UNHCR 2022).

Internal displacement places additional burdens on regions already struggling with natural resources, creating hotspots of negative climate impacts on human security (UNHCR 2021a). The poorest, most drought-affected areas, such as the Liptako Gourma Region, have experienced some of the high levels of displacement and violence, with tensions exacerbated over shrinking water sources and arable land (UNHCR 2021b).

Modelling of migration within and from Burkina Faso based on different climate scenarios found that the highest total and international migration would occur in a future dry climate. Although the research noted this was contingent on social, economic, and political factors which are difficult to measure, this broadly lines up with more recent modelling on global drought-induced migration, which projects under the Paris Agreement targets a shocking increase of 200% (Smirnov *et al.,* 2022).

Heatwaves have reduced migration from Burkina Faso (Nawrotzki and Bakhtsiyarava 2017) but the projected rise in extremely hot days (World Bank 2021) pose severe threats to displaced people, particularly young children and the elderly, who may lack adequate shelter and cooling facilities due to displacement. Overall, heat-related mortality in the Sahel is estimated to increase fourfold by 2080 (UNHCR 2021).

Potential needs for migrants and displaced people

Some research with seasonal migrant labourers and their wives in Burkina Faso found that migration is a last resort with often worse socioeconomic outcomes, making it a decision about survival rather than a positive climate adaptation coping mechanism (Vinke *et al.,* 2022). However, despite this, migration and displacement are forecast to increase in at least the short-term in the country (DRC 2021). The gendered nature of displacement is also evident in the country, with women and children consisting of almost 80% of IDPs (IDMC 2022).

Protection

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 2020). 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 2020).

2.6 Policy

Relevant information from the Nationally Determined Contribution (NDC) (2021)

GHG Emissions Reduction target: The commitment represents a GHG cut of 29.42% compared to the Business as Usual scenario by 2030. It focuses on land management, energy, transport and waste.

Area of focus on Adaptation: Adaptation is mainly included as a mitigation co-benefit. Adaptation measure in the healt sector, infrastructure, on gender and research are lightly mentioned. The NDC proposes a budget of 2,8 billion USD to achieve the unconditional adaptation objectives (almost double of the mitigation budget).

Inclusion of DRR: The NDC is expected to have positive impacts on GRD –but the linkages are not detailed.

National Designated Entity: Conservation de la Nature

Key stakeholders: Ministry of environment and fishery resources. NDC Partnership, GGGI, UNDP, FAO, UNEP, Climate Analytics, GiZ, Belgium and Deusch cooperation.

Relevant information from the National Adaptation Plan (2021)

Area of focus on Adaptation: Mainstreaming CC and DRR in National policies

Inclusion of DRR: Yes, 'protect persons and goods from extreme climate events and natural disasters' is one of the long-term adaptation objectives of the county alongside of growth, food security, sanitation, public health and natural ecosystem regeneration. The detailed DRR measures focuses on mainstreaming, awareness, risk monitoring, flood, insurance and financing.

Key stakeholders: Global Water Partnership, Japon, UNDP, GEF

There is currently a gap in national policy in term of climate, partly filled by the regional (ECOWAS) environmental policies. The NAP includes mainstreaming of climate change in policy as one of the strategic axes (Ministry of Environment and Fishery resources, 2021).

Climate finance

Numerous Green Climate Fund Readiness activities and regional project are taking place in Burkina Faso, in addition to two national projects. One of them focuses on adaptation 'Africa Hydromet Program – Strengthening Climate Resilience in Sub-Saharan Africa: Burkina Faso Country Project' (GCF, 2022). National societies cannot directly apply for climate finance from the GCF, but they can be an implementing partner for an accredited entity (Climate Centre, 2022a).

National Societies can explore options for accessing climate funds through smaller funds, such as the GEF's Small Grants Programme or the FFEM's Small Scale Initiatives Program. Other funding from bilateral donors, national climate funds, or multilateral climate funds like Adaptation Fund, CREWS, or GCCA+ could be explored (Climate Centre, 2022a).

Engaging in national climate adaptation planning is vital for accessing climate finance.

Additional Resources

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Climate Centre. (2022b). Entry points for National Societies on Climate Finance partnerships. https://www.climatecentre.org/wp-content/uploads/Entry-Points-for-Climate-Finance-Partnerships.pdf

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