



# Burkina Faso

This climate fact sheet summarizes available information on the climate of Burkina Faso and the impact of climate change on humanitarian activities in-country. Each fact sheet in the series was written using information from peer-reviewed academic papers, government publications, and other documentation from international non-governmental organizations.

## 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:** Intertropical Convergence Zone (ITCZ)

### Short overview

Burkina Faso is characterized by a dry tropical climate and experiences a rainy season from June to September. The rainfall variation across the country is influenced by the migration of the ITCZ. The dry season is influenced by the *Harmattan* – a dry, easterly wind that brings hot air to the region from March to May. Annual average temperatures in Burkina Faso range between 25–32°C, with a monthly minimum temperature of 17°C in December and January and maximum temperature of 40°C between March and April. 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 droughts, floods and heatwaves. Drier than normal rainfall conditions in some parts of the country during July to September are 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. It was ranked 15th out of 191 countries in the 2022 Inform Risk Index (DRMKC, 2022).

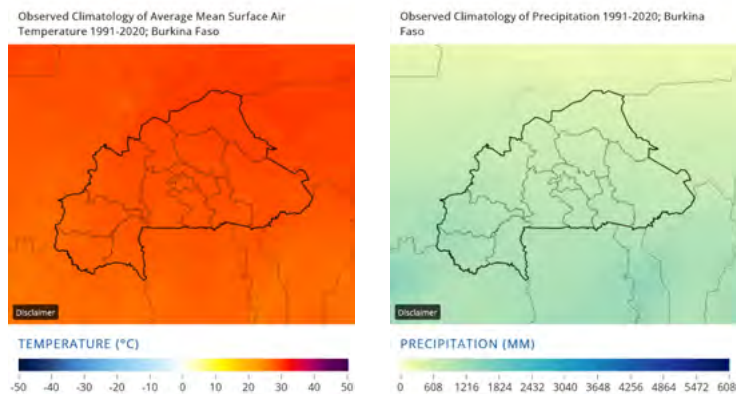


Figure 1. Observed climatology of (left to right) mean temperature and annual mean total precipitation 1991–2020. (from World Bank, 2021).

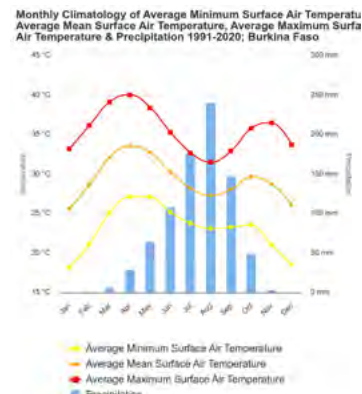


Figure 2: Observed average monthly climatology from 1991–2020 (from World Bank).

## 1.2 Climate change in Burkina Faso

### Historical climate change

#### Temperature

- West Africa has warmed by approximately 1.1°C since 1950, while the estimated increase since the pre-industrial climate of 1850 is around 2.1°C. In the Sahel region, warming has increased most in the pre-monsoon months of April to June (FCA, 2021).
- In most African regions the frequency and intensity of hot extremes have increased, while cold extremes have decreased (Seneviratne & Zhang, 2021).

### Projected climate change

- Mean temperatures over the region are projected to rise until 2050 by at least by 2.5–3.5°C for a high greenhouse gas concentration scenario (SSP5–8.5) and 2–3°C for a low greenhouse gas concentration scenario (SSP2–4.5) (Gutiérrez *et al.*, 2021).
- Maximum and minimum temperature will increase, and heatwaves 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 & Zhang, 2021).

#### Precipitation

Overall, there is no clear trend in rainfall due to high year-to-year natural variability. Rainfall variability has increased with observed rainfall declines beginning in the 1950s through to the 1980s, with partial recovery from the 1990s onwards.

- Mid-century (2040–2060) estimates of annual precipitation changes over Burkina Faso indicate an increase dominated 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 & Zhang, 2021).

## 2. Priorities of the Red Cross Red Crescent Movement under climate change

### 2.1 Scale up climate-smart disaster risk reduction (DRR), early action and preparedness

Observed hazard	Projected risk
<b>Droughts</b>	
<p>Extreme heat and water scarcity are a high risk across 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.d.). Also note that wind, sand and insects can have damaging impacts during the dry season (World Bank, 2021).</p>	<p>The expected increase in maximum temperatures, and probable increase in drought conditions (Think Hazard, n.d.), will affect subsistence farming and pastoralist activities (World Bank, 2021)</p> <p>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 communities (World Bank, 2021). For example, the CREWS (Climate Risk and Early Warning Systems) initiative in Burkina Faso helps farmers to use early warning systems to adjust farming practices and optimize cropping calendars (CREWS, 2022).</p>
<b>Floods</b>	
<p>The north and centre of the country are especially vulnerable to floods, resulting from successive drought periods, followed by extreme rainfall events. Over the last 30 years several severe floods have occurred in these regions (World Bank, 2021). On average, between 1986 and 2016 Burkina Faso experienced three flood events per year. When considering flood events that occurred from the 2000s onwards, the average number has increased to five per year with more than 50 per cent of flood events reported between 2006 and 2016 (Tazen <i>et al.</i>, 2019).</p>	<p>Most models indicate an increase in rainfall variability and unpredictable timing in the Sahel region, leading to more erratic precipitation patterns, increasing the likelihood of floods (World Bank, 2022). Additionally, changes in land-use patterns could increase the vulnerabilities of communities to floods. Rapid urbanization patterns combined with lack of drainage structure, settlements in flood-prone areas and lack of attention to waste management, all increase flood risk (Tazen <i>et al.</i>, 2018).</p>
<b>Epidemics</b>	

Deadly meningitis outbreaks occur regularly: in 2010 (6,837 cases and 989 deaths); in 2011 (3,984 cases and 649 deaths); and in 2012 (7,022 cases and 739 deaths.) (Séogo *et al.*, 2022). Outbreaks usually take place from October to May because of the hot and dry climate.

Burkina Faso is also prone to measles outbreaks, with the country reporting 2,190 measles cases in 2023, 252 cases in 2022, 3,866 cases in 2021, and 2,480 cases in 2020 (Relief Web, 2024).

In 2024, there are still cases of yellow fever in Burkina Faso (WHO, 2024).

The reduction in the length of the rainy season, and uncertain projections of increasing extreme rainfall events, could lead to an increasingly dry and hot climate favourable to the development of diseases. For example, higher temperature can shorten the development time of egg to adult, increasing the population density of mosquitoes. Increasing rainfall can create more stagnant water bodies, serving as breeding sites for mosquitoes. Warming temperatures can allow mosquitoes to survive at higher latitudes and all these factors can contribute to more malaria outbreaks.

It is important to note that many of these hazards are interrelated and produce compound risks in the same areas and communities. In addition, risk must be understood as the interplay between hazard, exposure and vulnerability which makes certain individuals, communities and sectors more impacted by the hazards. All project design should take such compounding risks into account.

## 2.2 Reduce health impacts of climate change

The most crucial climate-driven risks to health and nutrition in Burkina Faso are the increased risk of heatwaves, infectious diseases, flooding, reduced water quality and availability, and food insecurity (USAID, 2017). The country's high dependence on small-scale rainfed agriculture and low adaptive capacity, weak healthcare 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 heatwaves, causing serious health impacts on vulnerable populations, especially the elderly, children and individuals with pre-existing health conditions (Sorgho *et al.*, 2021). Heat-related deaths will increase from around two to 100 per 100,000 people annually by the end of the century (Potsdam Institute for Climate Impact Research, 2020). Climate change is also expected to increase the risk of flooding and hence flood-related mortality, reduce water quality and destroy agricultural lands, infrastructure and homes (USAID, 2017). Six out of Burkina Faso's 13 regions are affected by the water crisis (MSF, 2021). During the rainy season water is more plentiful, but using surface water for cooking and drinking comes with its own dangers. Lack of clean water access results in the spread of skin infections, parasitic diseases, waterborne diseases, and vector-borne diseases (MSF, 2021; Sorgho *et al.*, 2021). Malaria is especially expected to be impacted by climate change because both temperature and rainfall patterns are key factors impacting the abundance of mosquitoes and the duration of the malaria transmission season. Climate variability and change have already been associated with malaria transmission in most West African countries, including Burkina Faso (Diouf *et al.*, 2021). Furthermore, respiratory infections, diarrhoea and water shortages leading to malnutrition 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 for Climate Impact Research, 2020). In addition, declines in crop yields affect child nutrition and survival (Belesova *et al.*, 2018). Finally, climate change is anticipated to increase mental health risks and psychological disorders (Sorgho *et al.*, 2021).

## 2.3 Ensure sustainable water supplies

### Water, Sanitation and Hygiene (WASH)

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 silts up rivers, increasing the turbidity of water and contaminates it with pollutants. Climatic risks also damage water infrastructure increasing the risks of contamination of water supplies still further (*ibid*).

According to the ND-GAIN Index (2022) ranking, Burkina Faso is extremely vulnerable to water-related stressors. The country has four permanent rivers: Mouhoun River (Black Volta), Benjari River (Oti River), Komoe River and La Mare aux Hippos. Non-permanent rivers include Nakambe (White Volta) and Nazinon (Red Volta) (FAO, n.d.). In the country's north, there are no year-round rivers (Belemtougri *et al.*, 2021; USAID, 2017). This means that people in the north have to rely on intermittent water from wells and household tanks for their water needs. Many people depend on rainfall and surface water sources, which are vulnerable to climate change because of the unpredictable weather patterns it brings (MSF, 2021). Accordingly, any climatic crisis – for example, drought – is likely to become a water crisis in Burkina Faso (Water Aid, 2021).

Climate change-induced droughts and temperature increases, coupled with population growth, will likely lead to a decline in per capita water availability (Potsdam Institute for Climate Impact Research, 2020). Given the limited groundwater resources in the country, the projected declines in infiltration due to heavy rainfall (increasing runoff potential), temperature increase and the increased incidence of drought will exacerbate the existing water crisis (USAID, 2017). In 2021 alone, six of the 13 regions in the country were affected by water crises due to drought (MSF, 2021). Water insecurity and poor sanitation in these conditions disproportionately affect women because of biological, social, economic and political factors as well as gender norms and rules, such as that women are responsible for water collection (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). This is expected to increase the risk of waterborne diseases such as cholera and diarrhoeal disease (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 per cent of GDP (Traore *et al.*, 2022). Moreover, 86 per cent of the population relies on small-scale subsistence agriculture (crops and livestock) for their livelihoods (USAID, 2022). The three most widely 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 a declining distribution in rainfall will likely impact agricultural production, incomes and livelihoods as well as 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, price 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 by impacting soil microbial communities (Li *et al.*, 2023) and increasing susceptibility to erosion because dry soils have lower absorption capacities when rain finally falls. 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 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 – totalling 9 million hectares (ha) of productive land – has been degraded, mostly due to desertification. The most recent estimates project an increase of the degraded land to 360,000 ha per year (FAO, 2021).

Climate change will affect not only agricultural crops 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 (WFP, 2018). Currently 40 per cent of its population are living below the poverty line and most people depend on a singular season of rain-fed agriculture indicating high vulnerability to climate-related shocks. It is estimated that 2.7 million people will face acute food insecurity during the lean season between June and August in 2024 (WFP, 2024).

## 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-state armed groups and, increasingly, by environmental degradation and a changing climate. In 2018–2021, the number of Internally Displaced Persons (IDPs) increased from 47,000 to 1.6 million – a thirtyfold increase (IDMC 2023). Alongside this, Burkina Faso hosts more than 22,700 refugees and asylum seekers, mainly from Mali (UNHCR, 2021a).

**Internal displacement puts additional burden on regions already struggling with diminishing 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 highest levels of displacement and violence, with tensions exacerbated over shrinking water sources and arable land (UNHCR, 2021b). A recent modelling on global drought-induced migration suggested an increase of 200 per cent under the current Paris Agreement targets. If international cooperation fails and unrestricted policies towards greenhouse gas emissions prevail, this model projects that total migration will increase by almost 500 per cent (Smirnov *et al.*, 2022).

**Heatwaves reduce the probability of international migration from Burkina Faso** because adverse climatic conditions reduce the resource base needed for financing an international move (Nawrotzki & Bakhtsiyarava, 2017). 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, 2021b).

### Potential needs of 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).

## Protection

Though researchers balk at drawing direct and explicit correlations between climate change and violence (Yahaya Ibrahi, 2020), 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 (ReliefWeb, 2020). Furthermore, 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 (ReliefWeb, 2020).

## 2.6 Policy

### Relevant information from the [Nationally Determined Contribution \(NDC\)](#) (2021)

**Emissions target:** The commitment represents a cut in greenhouse gas emissions of 29.42 per cent compared to a ‘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 measures in the health and infrastructure sectors as well as on gender research are lightly mentioned. The NDC proposes a budget of 2.8 billion US dollars to achieve the unconditional adaptation objectives (almost double the mitigation budget).

**Inclusion of DRR:** The NDC is expected to have positive impacts on DRR – 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–Germany cooperation.

### Relevant information from the [National Adaptation Plan](#) (2021)

**Area of focus on adaptation:** Mainstreaming climate change 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 growth, food security, sanitation, public health and natural ecosystem regeneration. The detailed DRR measures focus on mainstreaming, awareness, risk monitoring, floods, insurance and financing.

**Key stakeholders:** Global Water Partnership, Japan, UNDP, GEF.

There is currently a gap in national policy in terms of climate, partly filled by the regional (ECOWAS) environmental policies. The NAP includes the 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 (GCF) readiness activities and regional projects 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 apply directly for climate finance from [the GCF](#), but they can be an implementing partner for an accredited entity (Climate Centre, 2022a).

National Societies can also 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 the 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

Climate Centre. (2022a). *Fact sheet on climate finance*. Red Cross Red Crescent Climate Centre. <https://www.climatecentre.org/wp-content/uploads/Fact-Sheet-on-Climate-Finance.pdf>

Climate Centre. (2022b). *Entry points for National Societies on climate finance partnerships*. Red Cross Red Crescent Climate Centre. <https://www.climatecentre.org/wp-content/uploads/Entry-Points-for-Climate-Finance-Partnerships.pdf>

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