

Niger

1. Country overview

Landlocked in the Sahel, Niger is a country that is particularly vulnerable to climate change and the risks that ensue with rising temperatures and unpredictability of rainfall (UNDP 2021). Three quarters of Niger are made up of the Saharan desert, thus classifying the country as mostly arid and partly semi-arid (Wouterse 2017). It is primarily located on a plateau averaging 500 meters (m), though peaks at 2022 meters (at Mount Idoukal-n-Taghes) (Potsdam Institute and GIZ 2021).

Niger has a population of 22 million (2018 estimates) (ND-Gain Index 2021). It is among the fastest growing populations in the world, increasing by almost four per cent annually. It is also one of the poorest countries globally, with an average GDP per capita of \$404 US dollars (USD) (Potsdam Institute and GIZ 2021).

The economy of Niger is made up predominantly of agriculture, which accounts for 40 per cent of its GDP (World Bank 2020). In 2019 GDP growth was 6.9 per cent, and 1.9 per cent in 2020. The decrease was as a result of the COVID-19 pandemic and decrease in foreign investment from China and Europe (AFDB 2021).

The country has been experiencing chronic food insecurity for a number of decades; this is exacerbated by political insecurity, climate change, and epidemics (Food and Agriculture Organization (FAO) 2021a.) The country rates 189 out of 189 in the Human Development Index, making it the lowest in the world (UNDP 2020). 74 per cent of the population are living in multidimensional poverty (UNDP 2020).

In terms of security, Niger sits precariously balanced between several armed conflicts. This positioning means it frequently receives people displaced by conflict from its neighboring countries (IDMC 2021). In recent years, Niger has also been described to have a growing



Figure 1: Map of Niger. (Central Intelligence Agency (CIA) 2021)

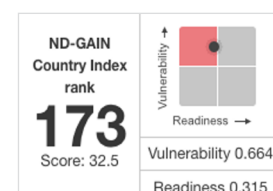


Figure 2: Niger's ND-GAIN Ranking (ND-GAIN 2021).

jihadist threat in several regions, where conflicts between government and militants have spread across the borders of Burkina Faso, Mali and Nigeria (IDMC 2021).

1.1 Climate

Classified as an arid and semi-arid country, Niger sees little rainfall, annually figures reach between 100-700 millimeters (mm) (Wouterse 2017). The rainfall patterns show precipitation occurring almost exclusively between the months of June-September, this period is highly reliant on the West African monsoon and the changes in the inter-tropical convergence zone (ITCZ) (Bharwani 2020). The rain period is even shorter in the North (Potsdam Institute and GIZ 2021). In general, temperatures range between an average of 18-31°C, however extremes of 49.5°C have been recorded (Bharwani 2020).

The country is categorized into three distinct climate zones: desert, intermediate zone (largely pastoralist), and semi-arid (Potsdam Institute and GIZ 2021).

1.2 Climate change

Historical Climate

Temperature

Mean temperatures generally range from 21.9°C to 36.4°C (World Bank 2021). Temperature records show an increase of 0.6–0.8°C between 1970–2010 (United States Agency for International Development (USAID) 2012). This is slightly higher than the global average.

There has also been an increase in the number of warm days/nights and a corresponding decrease in the number of cold days/nights during the same time period (World Bank 2021).

Projected climate

Temperature changes are expected to be 1.5 times more in the Sahel region of the world than anywhere else (USAID 2017). A 3–6°C rise in average temperatures is projected to be seen by 2100, with +4°C in Continental Sahel (USAID 2017).

The projected range of temperature increase is between 2.0–4.6°C by 2080. The most extreme increases will be found in the South West (Potsdam Institute and GIZ 2021).

There is projected to be a decrease in frequency of days and nights that are considered 'cold'. Models suggest that 'cold' nights will not occur at all by the 2090's (World Bank 2021). 50 additional 'very hot days' will be present by 2080 (Potsdam Institute and GIZ 2021).

Precipitation and water distribution

The Sahel region, including Niger, has observed a decrease in rainfall since the 1960s. This has led to several droughts; of particular importance were the droughts in the years 1966-1967, 1973-1974 and 1983-1984 (Bharwani 2020).

In 2020 Niger faced some of the worst flooding in its history, which affected over 1.5 million people (FAO 2020)

Characteristics of rainfall are changing; events are less frequent and have a shorter duration but exist with more intensity (World Bank 2021). Between the years of 2000-2009, average rainfall was recorded to be below average by 8 per cent (World Bank 2021).

Uncertain precipitation projections due to high inter-annual variation, but inter-annual and spatial variability are expected to increase (World Bank 2021).

The annual sum of precipitation is uncertain, though tending towards slight to stronger increases. However, in the future, dry periods will become dryer and wet periods wetter (Potsdam Institute and GIZ 2021).

Heavy precipitation events will increase in frequency and severity (Potsdam Institute and GIZ 2021).

2. Humanitarian sectors and climate change

With an ND-GAIN score of 32.5, ranking it 173rd, Niger has high vulnerability and low level of readiness (ND-GAIN 2021). As the second most vulnerable country, according to the ND-GAIN assessment, Niger is in a position of high vulnerability to face the issues climate change is already bringing. These are elaborated in greater detail in the following sections

2.1 Water and habitat

When climate related impacts are combined with geo-political considerations, geographical constraints, unfettered agricultural practices, pollution, poor land management, and land degradation, it culminates in a concerning state of affairs for water management in Niger. The high vulnerability of Niger's water sector is reflected in their ND-GAIN rankings; of 169 countries considered, Niger comes in at 168. This means that only Sudan is ranked as more vulnerable than Niger for water security (ND-GAIN 2021).

Ninety per cent of the renewable surface water resources of Niger originates outside of its borders, most prominently via the Niger River which flows through the southwest of the country (USAID 2012). This increases Niger's vulnerability in the context of the fragile and deteriorating security situation in the Sahel.

The average flow of the Niger River has seen a sharp decline throughout the 20th century, from 32 billion cubic meters (m³) per year (on average) from 1930- 1960, to 23 billion m³ in the late 20th century (USAID 2012). Further threats to the Niger River's water access emerge from upstream dam development as well as the intensification of water use for agricultural purposes, to the extent that Niger's dam capacity is ranked at 0.999—the worst score (ND-GAIN 2021; Potsdam Institute and GIZ 2021). Other sources of water, such as Lake Chad, are also at risk due to a changing climate, with the surface of the lake shrinking from 25,000 square kilometers (km²) (1960s) to just 1800 km² in 2010 (Potsdam Institute and GIZ 2021).

These developments have had a profound impact on water quality and quantity. The surface disappearance of large swathes of Lake Chad has affected the food and water security of more than 50 million people in Niger and bordering countries (Potsdam Institute and GIZ 2021). When population growth is factored in, it is projected that per capita water availability will plummet by 85 per cent by 2080 (compared to year 2000) (Potsdam Institute and GIZ 2021).

Hydropower efforts are another victim of a changing climate. Though Niger is investing heavily in building capacity—currently constructing the Kandadji Dam—projected variability in rainfall and climate conditions could render this a very unpredictable and unreliable investment (Potsdam Institute and GIZ 2021).

The floods experienced in 2020 were an example of the magnitude of which extreme events and rainfall unpredictability can impact Niger. Thousands of hectares of cropland were destroyed, livestock perished and more than 69,000 households lost their livelihoods (FAO 2021a). The fact that the majority of the country's economy is dependent on rain-fed agriculture means that

drought and water insecurity will have major impacts on livelihoods. Despite data on the projections for the future in terms of precipitation being uncertain, the predicted changes in intensity of rainfall mean that agriculturally productive soil is expected to suffer (FAO 2021).

2.2 Economic security

Agriculture is both a mainstay of the economy and livelihoods, as well as being an unstable and high-risk undertaking. In Niger, climate impacts are compounding non-climate issues such as poverty, limited economic diversification, and population increases to drive increases in livelihood vulnerability.

Four out of every five people employed are reliant on agriculture, which is primarily rainfed and subsistence, with less than one per cent of arable land irrigated (Potsdam Institute and GIZ 2021). This renders livelihoods—and the wider economy—highly susceptible to a changing climate. Climate-sensitive staple crops such as maize will decline—though some models do show certain crops such as millet, cow peas, and groundnuts will benefit from climate change. Agro-ecological zones are projected to shift, necessitating that subsistence farms adapt their crops accordingly (Potsdam Institute and GIZ 2021). Further, transhumance and pastoralist lifestyles—a historic coping mechanism for drought years—are no longer able to be relied upon due to the increasing variability in rainfall patterns (Potsdam Institute and GIZ 2021).

The heavy reliance on agriculture belies the unreliable state of the sector. In the past decades, the risks to agriculture have been increasing, and include: desertification, droughts, locusts, floods, crop diseases, wildfires, high winds, and decreasing soil productivity. As a result of its landscape, and over three quarters of the country being arid desert plains and sand dunes, soils generally do not have a lot of productivity and are incredibly sensitive to water and wind erosion mechanisms (FAO 2021). Additional challenges arise from low agricultural productivity and limited adaptive capacity (Potsdam Institute and GIZ 2021). These shocks decimate the economy, livelihoods, productivity, and growth, culminating in making Niger 'one of the most vulnerable countries in the world to climate change' (CCAFS 2021).

Food insecurity is already an acute issue in Niger, which ranks second last out of 189 countries when it comes to vulnerability to climate change in terms of food production and access. Only Eritrea ranks as more vulnerable (ND-GAIN 2021).

2.3 Health

Niger's health sector is highly vulnerable to climate change, ranking 175th out of 189 countries (ND-GAIN 2021). Lack of medical staff and insufficient health infrastructure is a particularly salient problem (ND-GAIN 2021).

The prevalence of diseases such as measles, meningitis and malaria are projected to couple with climate change and cause significant damage in the health sector of Niger. Annually, eight million cases of malaria are already recorded in Niger; climate change will expand the geographic area of malaria and shift malaria transmission periods (Potsdam Institute and GIZ 2021). The meningitis caseload will also increase due to decreased humidity and increased temperatures (Potsdam Institute and GIZ 2021).

Additional challenges to the health sector will arise from climate-related increases in temperature and in the number of very hot days. Under a medium/high emissions scenario, the number of very hot days in some areas of the country will total more than 300 days annually by 2080 (Potsdam Institute and GIZ 2021). The percentage of population impacted by heat waves annually will rise from 1.7 per cent in year 2000 to an estimated 12 per cent in 2080, tripling the number of heatwave related deaths. And the economic impacts will be close behind; up to 11 per cent of the GDP will be exposed to heat waves by 2080 (Potsdam Institute and GIZ 2021).

Climate change brings significant challenges to the sanitation sector. Increased frequency and severity of floods and droughts can contaminate water supplies and increase the spread of water-borne diseases (Potsdam Institute and GIZ 2021). Reduced availability of drinking water will also have detrimental effects on health. According to UNICEF, only 56 per cent of the population of Niger has access to a source of drinking water (UNICEF 2021). With increasing droughts, and the country's low capacity to act, this number could increase. It would be remiss not to mention the impacts that extreme weather and climate change can have on availability of food and water, threatening agriculture-based livelihoods and contributing to increases in food insecurity and in poverty, which in turn have cascade impacts on health and well-being (Potsdam Institute and GIZ 2021).

2.4 Protection

The impact of climate change on the security situation in the Sahel is a widely recognized and documented issue (OECD 2010). The confluence of climate and non-climate stressors is producing a volatile and deteriorating security situation in Niger, with a coup attempt as recently as March 31, 2021 (BBC 2021). Stressors such as increased temperatures, increased hazard risk of drought and floods, increased desertification and evapotranspiration, decreased access to water and pastoral lands, population growth, historic tensions between tribal and state government, historical grievances between tribal groups, increased and a weak social protection system have been contributing to 'persistent, though localized, conflict' in Niger (USAID 2014) - though arguably, the recent insurgency spillover from Boko Haram, conflict in the Lake Chad area, influx of refugees, and challenge to the first peaceful transition of power since the 1960s constitutes an escalation and broadening of conflict beyond the local.

When it comes to displacement, it is difficult to extract conflict from environmental hazards in the Sahel region. Both the triggers and drivers of displacement are increasingly complex and entangled. Both slow onset and rapid onset hazards already lead to the displacement of people in Niger every year. Flooding is one of the major causes of displacements in the last few years; IDMC records 121,000 displacements during the year of 2019 as a result of flooding (IDMC 2021).

This is likely to grow. Changes in rainfall, temperature, and general unpredictability of rainy seasons are projected to lead to increased frequency and severity of disasters such as flooding and drought. Undoubtedly this will severely affect not only health and wellbeing, but can also incite competition for scarce resources and inflame intercommunal tensions (IDMC 2021).

In total 195,000 people are currently internally displaced in Niger as a result of conflict and violence (IDMC 2021), as well as 221,000 refugees (International Commission of the Red Cross (ICRC) 2020). This number is growing; the United Nations High Commissioner for Refugees (UNHCR) reports 11,000 refugees arrived from Nigeria in the first quarter of 2021 alone (UNHCR

2021). Further, Niger's geographic position is such that it is central to the migrant route across the African continent (Purdue 2021).

Protection crises are also emerging through the impacts that climate change is having on the livelihoods and lifestyles of livestock herders in Niger. These pastoralists must grapple with competing and compounding threats: shrinking pasture as desertification increases, decreased access to water as sources dry up, insufficient fodder or crops to sustain their livestock or themselves as agricultural yields plummet, and increased disease prevalence as these stressors erode the health of their livestock (ICRC 2020). These climate-related developments in turn impact the socio-economic fabric of society, in which tensions soar as herders compete for scarce resources and access, armed groups line traditional transhumance routes, and population growth exerts additional pressure on resources (ICRC 2020). Historical and cultural considerations must also be factored in; the Tuareg people feel these impacts especially acutely, as they have a long history of marginalization that interacts with their livelihood dependence on pastoralism (USAID 2014). When left unaddressed, and combined with threats to their lives and livelihoods, this creates a troubling context for recruitment by extremist groups (Wesch and Rheinbay 2021).

Finally, it is important to note that escalating conflict in the area is further affecting people through constraining their access to humanitarian support, as more and more organizations are unable to access the area due to the rising violence (ICRC 2020).

In this way, climate related impacts are fueling the deterioration of the security situation in the area, as well as increasing food insecurity, driving displacement, and threatening the livelihoods of millions across Niger.

In addition, people in detention frequently have heightened vulnerability to natural disasters due to: spatial marginalization resulting from prison locations on hazard-prone land and/or isolation from emergency evacuation services; limited to no connections to social networks, which are crucial aspects to hazard resilience; and political marginalization, including lack of policies and services to prevent disaster impacts on imprisoned populations (Gaillard and Navizet 2012). These vulnerabilities, coupled with more frequent and intense disasters due to climate change, may leave prison populations in especially precarious positions to hazards such as extreme heat and flooding.

2.5 Policy

In 2012, Niger proposed the National Policy on Climate Change (PNCC), which was adopted in 2013. This is a framework intended for mitigation and adaptation to climate change and brings together institutional, judiciary and operational actions to achieve several objectives (Grantham Institute 2021). The main pillars of the policy are around:

1. Improving knowledge and communication of climate change issues.
2. Reinforcing adaptation and resilience for communities.
3. Increasing mitigation actions.
4. Pursue the integration of climate change issues within other sectors.
5. Build capacity in the population, and;
6. Promote and create green jobs in the economy (Grantham Institute, 2021).

One of the overarching objectives of Niger is to move beyond the short term, immediate needs and focus on medium- and long-term planning for climate change issues (UNDP 2021).

In September 2016, Niger ratified the Paris Agreement and submitted its (Initial) Nationally Determined Contributions (INDCs); the NDCs identified supporting agriculture, livestock and forestry sectors as high priority (UNDP 2020). In addition to these priorities, the country motioned an intention to focus on water resources, transport, and public health sectors (World Bank 2021).

In terms of regional policy, regional coordination to address climate change related issues is not strong (USAID 2018). However, some efforts exist that support Niger in tackling climate change stressors. The Economic Community of West African States (ECOWAS) encompasses a number of nations, including Niger. ECOWAS is working towards a coordinated effort to integrate climate smart agriculture into regional and national policy. Furthermore, the Niger Basin Authority (NBA) is part of a transboundary river basin organization working cohesively with a number of states for the protection and restoration of shared water sources (USAID 2018).

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