

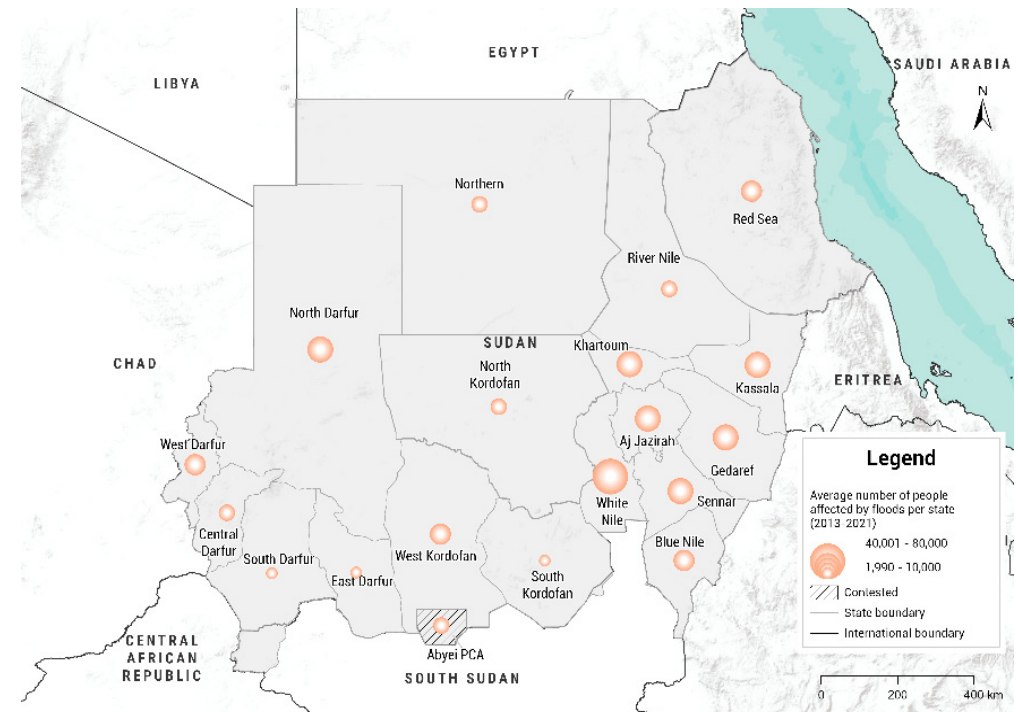
CRISIS OVERVIEW

On 15 April 2023, clashes erupted between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF) in multiple areas of Sudan. While multiple ceasefires have created temporary lulls in fighting, violence continues. As at 6 June, the conflict had resulted in at least 866 deaths and 6,000 injuries according to the Federal Ministry of Health (FMoH) (OCHA accessed 14/06/2023). Although fighting between the SAF and RSF has mainly been centred on Khartoum, insecurity has also affected urban areas along major roadways, including the east-west corridors from Kassala to West Darfur (OCHA 17/05/2023). As at 17 May, 24.7 million people were in need of humanitarian assistance, a 57% increase from the 15.8 million reported in November 2022 (OCHA 17/05/2023 and 07/11/2022). Conflict has destroyed key infrastructure, such as WASH facilities and hospitals, the capacity of which was already previously overstretched (OCHA 17/05/2023).

Alongside conflict, climate change is also affecting Sudan. According to the Notre Dame Global Adaptation Initiative, which captures a country's vulnerability to climate change and its readiness to improve resilience, Sudan is among the ten countries most vulnerable to climate change worldwide (ND-GAIN accessed 02/06/2023). In recent decades, Sudan has experienced rising temperatures, unpredictable seasonal rains, and more frequent droughts (USAID accessed 19/05/2023). The country also faces several environmental challenges, including deforestation and land degradation, which compound the impact of climate hazards (UNEP 07/10/2020). Available evidence suggests that climate change has also heightened competition for access to water sources, pastures, and traditional grazing lands. This has led to fresh cycles of intercommunal conflict, particularly in West Darfur (SIPRI 05/2022). According to UNEP research, approximately 40% of internal conflicts over the past six decades can be attributed to the exploitation of natural resources, including competition over scarce resources, such as fertile land and water (UNEP 04/11/2022).

Floods were the most frequent climate hazard in Sudan between 1980–2020 (WB accessed 19/05/2023). Between 2017–2021, floods affected an average of 388,600 people each year. The most significant flooding in recent years occurred in 2020, affecting more than 850,000 people and damaging 37,000 houses across all states (OCHA accessed 19/05/2023 a; OCHA 22/02/2021; Al Jazeera 25/09/2020). Between May–October 2022, heavy rains and flooding affected roughly 349,000 people, damaged over 48,250 houses, and destroyed 24,859 houses (IOM 06/10/2022; OCHA 08/12/2022). As at 31 August 2022, flooding had affected 15 out of Sudan's 18 states (Al-Fanar 31/08/2022). The most affected states were Central Darfur, Gedaref, Kassala, South Darfur, and White Nile (OCHA 08/12/2022).

Figure 1. Average number of flood-affected people per state (2013–2021)



Source: ACAPS using data from OCHA (accessed 19/05/2023 a)

Aj Jazira, Gedaref, Kassala, Sennar, and the states bordering South Sudan, such as White Nile, are typically vulnerable to flooding. Blue Nile River flows through Blue Nile state into Aj Jazira, Khartoum, and Sennar states, and heavy rainfall in the Ethiopian highlands drives a high volume and flow of water into the river, making it prone to flooding. In the south, Kordofan and Darfur regions have seasonal rivers mainly fed by rainfall from the Nuba and Marrah Mountains, respectively, and flash flooding can occur from heavy rainfall and uneven terrain. Typically, the central and southern regions experience more annual rainfall than the rest of the country. Blue Nile had the highest annual precipitation sums among Sudanese states between 1991–2020, while Northern state had the lowest (WB accessed 16/05/2023). In 2023, above-average rainfall is expected to reoccur in some areas already affected by past floods and other shocks,

which could create devastating humanitarian impacts on the affected people (ICPAC accessed 12/06/2023). Combined with current conflict dynamics, this is likely to further strain people's coping capacities.

The rainy season typically occurs between June–September, with the rains and flooding peaking from August–September (OCHA 08/12/2022). Heavy rains often result in the Nile and its tributaries and Gash River overflowing, leading to flooding and landslides that damage property, infrastructure, and crops, compounding humanitarian needs (Al Jazeera 18/08/2022). Localised flash floods from the heavy rains are also common, particularly in areas with pre-existing poor drainage and a lack of proper water management facilities. Although the duration of localised flash floods is shorter than riverine flooding, they often cause substantial damage and disruption to areas in catchment and drainage zones, including agricultural and urban areas (UNOSAT 28/08/2016).

Drought is also a recurrent hazard in Sudan. Studies show that if current rainfall patterns persist, the Sahara is projected to advance southwards at a rate of 1.5km per year, shifting the agroclimatic zone southwards and reducing the suitability of land for agriculture in large parts of Sudan (UNEP 07/10/2020). Sudan is inherently dry, and its precipitation follows a highly seasonal pattern, with the majority of rainfall occurring within just two or three months of the year. This pronounced unevenness in rainfall distribution poses a continuous risk of both severe dry spells and prolonged droughts (JRC 17/06/2019). The most significant drought in recent years occurred in 2015, affecting most of the country, including Darfur region, North and West Kordofan, Aj Jazira, Kassala, Khartoum, Northern, River Nile, and White Nile states (FEWS NET 17/12/2015). Below-average and poorly distributed rainfall particularly affected subsistence farmers and pastoralists in Kassala, West and South Kordofan, and White Nile states (WFP 07/10/2015).

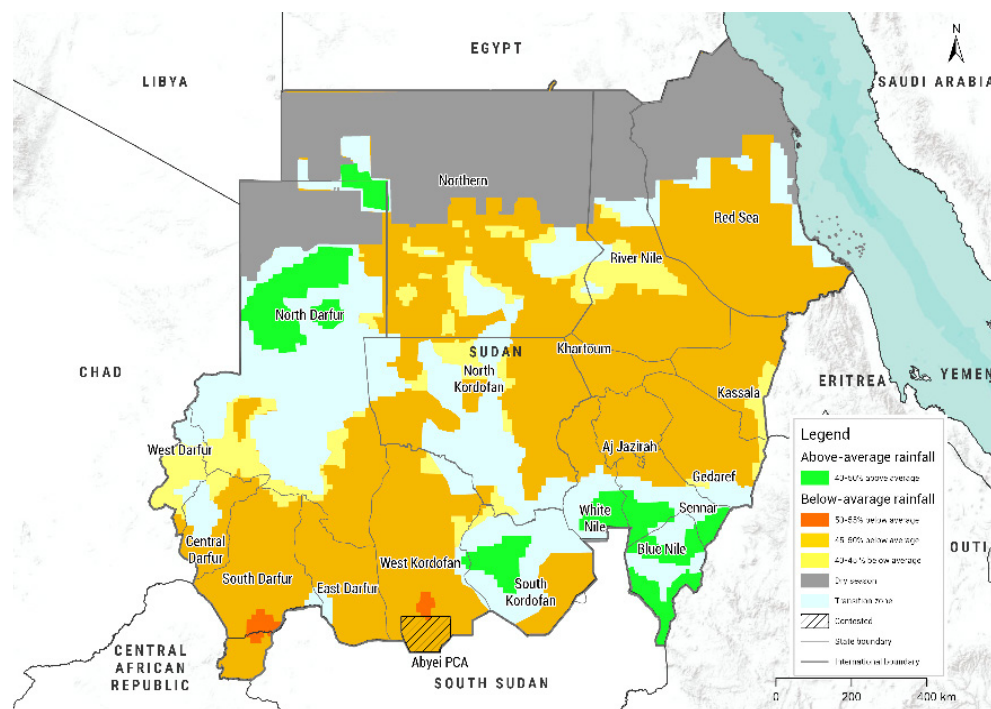
INFORMATION GAPS

- Baseline information, such as population census data, is not up to date.
- Access constraints have hindered primary data collection in conflict-affected areas; a detailed understanding of the current humanitarian needs in these areas is limited.
- There is a lack of publicly available information on the impact of localised droughts in Sudan.
- A breakdown of the number of people affected and or displaced by the 2015 drought per state is not available.
- Up-to-date information on the number of functional health facilities in each state is not available.

JUNE–SEPTEMBER 2023 PRECIPITATION FORECASTS

Precipitation forecasts for June–September 2023 anticipate above-normal rainfall in the northern areas of North Darfur, parts of South Kordofan, and most of Blue Nile, Sennar, and White Nile states, increasing the risk of flooding in these areas. The same forecasts indicate a probability of below-normal rainfall in Darfur region and in North and West Kordofan, Aj Jazira, Gedaref, Kassala, Khartoum, River Nile, and Red Sea states (ICPAC accessed 09/06/2023 a).

Figure 2. Rainfall forecast from June–September 2023



Source: ACAPS using data from ICPAC accessed (09/06/2023 a)

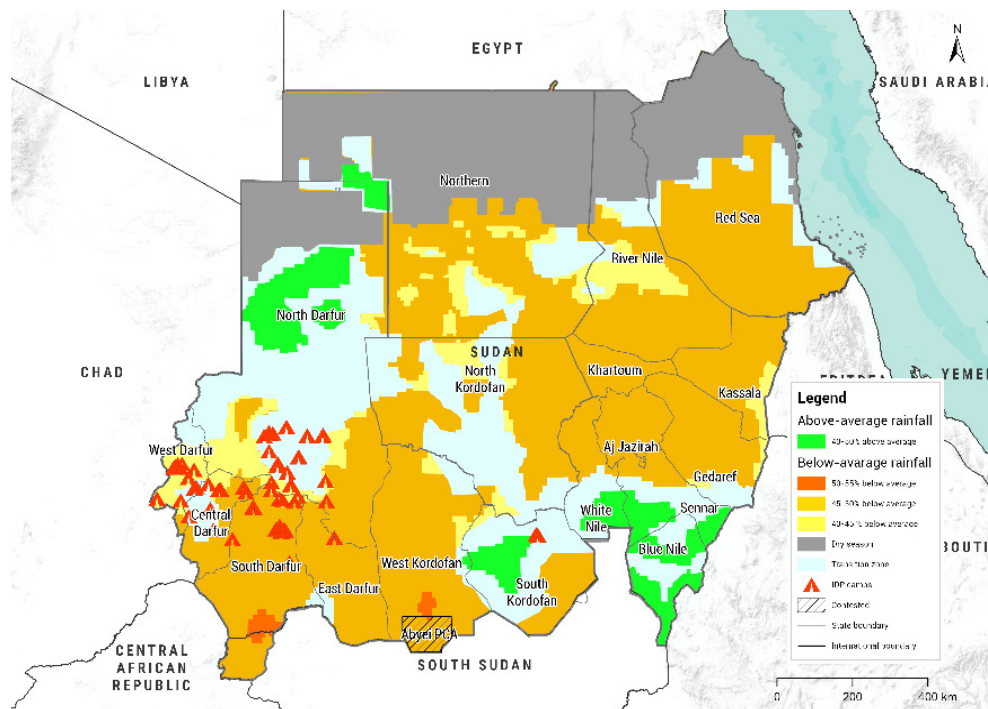
Temperature forecasts for June–September indicate a very high probability of above-normal temperature in the north of the country, as well as a high probability of above-normal temperature in central and southern Sudan (ICPAC accessed 09/06/2023 b).

High temperatures may compound the negative effects of below-normal rainfall, aggravating the risk of drought. High temperatures also affect the planting and harvest season and increase the need for access to water and grazing land, resources that are at their most limited.

The start of El Niño conditions was officially declared on 8 June (NOAA 08/06/2023). In 2015, El Niño significantly affected the rainy season in Sudan, delaying the onset of the rainy season, delivering below-average rainfall, and causing intermittent dry spells (OCHA et al. 21/02/2016). With the above forecast, there is an increased likelihood of disruptions to agricultural production and an increased potential for added stress on households. Food insecurity was already high before the conflict started in April 2023, with 16.8 million people facing acute food insecurity (WFP 05/05/2023). Further shocks related to irregular seasonal rains are expected to worsen the food security situation, decrease the availability of household coping mechanisms, and increase displacement.

HUMANITARIAN ACCESS CONSTRAINTS

Figure 3. Map of rainfall forecast between June–September 2023 and locations of IDP sites



Sources: ACAPS using data from ICPAC (accessed 15/06/2023); OCHA (accessed 15/06/2023)

Multiple access constraints, including bureaucratic impediments and aid diversion, insecurity, and poor infrastructure, characterise the operational environment in Sudan.

Conflict currently aggravates all these factors, which are expected to further deteriorate during the rainy season for the following reasons:

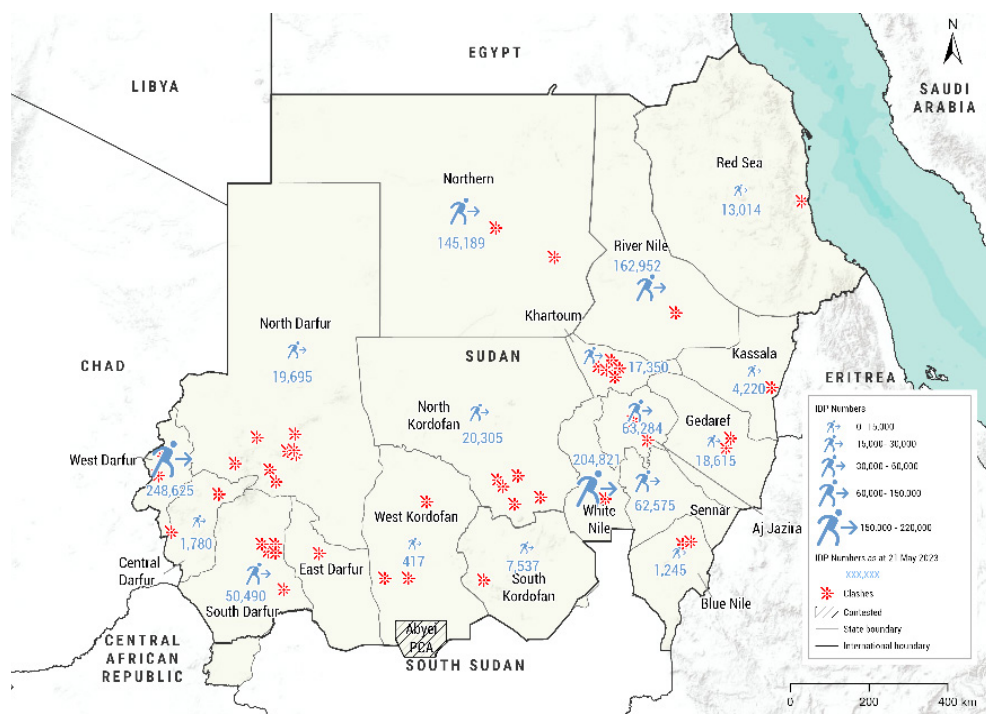
- The extreme weather patterns that occur during the rainy season, including flooding, often damage roads and bridges and disrupt humanitarian access to affected populations (IOM 06/10/2022).
- Remote areas, including refugee and IDP camps, could become inaccessible during the rainy season. For example, as at 30 March 2023, Aj Redis 1 refugee camp in White Nile state was only accessible by canoe and remained surrounded by stagnant water from the burst banks of White Nile River (UNHCR 30/03/2023). The coming rainy season is expected to aggravate disruptions to humanitarian access and basic needs in the camp.
- In 2020, the Sudanese Government declared the country a natural disaster area and imposed a three-month state of emergency to address the impact of flooding (Al Jazeera 18/08/2022 and 25/09/2020). Considering the sensitivities of the current conflict, authorities over different states can use states of emergency can be used to impede or divert aid and further constrain access to affected populations, many of whom are already unreachable because of insecurity and violence (IOM 16/05/2023). As at 30 April 2023, there were states of emergency in White Nile and Gedaref states to contain the impact of the conflict (UNHCR 28/04/2023; Crisis24 03/05/2023). From October 2021 until May 2022, there was a nationwide state of emergency to contain protests following the military coup (DW 29/05/2022). Emergency restrictions are regularly used in response to localised insecurity and civil unrest, such as in Ed Damazine, Blue Nile, announced in October 2022; South Kordofan announced in January 2023; West Darfur announced in April 2023; and West Kordofan announced in February 2023 (AA 21/10/2022; Africa News 24/01/2023; The National News 11/04/2023; Crisis24 27/02/2023).
- Access constraints are expected to be felt more severely in Khartoum as well as Darfur and Kordofan regions as a result of the significant presence of armed groups and insecurity (IOM 16/05/2023). On 11 May 2023, representatives of the SAF and the RSF signed the Jeddah Declaration of Commitment to Protect the Civilians of Sudan, recognising the obligation to facilitate humanitarian assistance to affected people under international humanitarian and human rights laws (OCHA accessed 19/05/2023 b). Considering the widespread violations of human rights and humanitarian law already committed by then, along with the failure of previous ceasefires, there is a risk of both parties failing to honour the commitment to protect civilians. Between the signing of the declaration and 7 June, there were 16 reports of attacks on health facilities (OCHA 07/06/2023).
- Bureaucratic impediments also constrain the movement of humanitarian staff and supplies across Sudan (OCHA 07/06/2023; WHO 14/06/2023). Prior to the April conflict, humanitarian responders faced impediments to importing food assistance, nutrition commodities, medical supplies, and other relief items, limiting principled humanitarian access to people in need and delaying the delivery of humanitarian assistance (ACJPS 16/02/2023; OCHA 26/02/2023).

- Following the October 2021 coup, humanitarian responders started facing increasing bureaucratic and administrative challenges, particularly in areas of active conflict (UN 20/03/2023; OCHA 26/02/2023; TNH 15/04/2022). As the coordination of the humanitarian response has moved from Khartoum to Port Sudan, access to the affected populations has become even more limited, particularly in the southern states. Humanitarian responders in Darfur region, as well as South Kordofan and Blue Nile, had already been facing bureaucratic obstructions since the eruption of insecurity in 2004 and then again in 2011 (CSIS 05/08/2020; OCHA 29/03/2023). Communication blackouts in conflict-affected areas are expected to hinder the flow of information, such as weather forecasts, to affected people (NPR 10/06/2023).

ANTICIPATED HUMANITARIAN IMPACT

Displacement of people

Map of IDPs since 15 April, as at 21 May



Source: ACAPS using data from IOM (23/05/2023)

As at March 2022, there were 3.7 million registered IDPs in Sudan. Since then, conflict between the SAF and the RSF, as well as the escalation of other intercommunal and ethnic armed conflicts, have increased displacement (IOM accessed 17/05/2023). As at 14 June 2023, over 2.1 million people had been displaced since 15 April, of whom 1.67 million were internally displaced and more than 520,000 had fled to neighbouring countries (IOM 14/06/2023). Displacement had been reported in 16 of Sudan's 18 states, with the highest numbers of IDPs being reported in West Darfur (16.95%), River Nile (14.12%), White Nile (13.56%), and Northern (11.32%) states (IOM 14/06/2023). Around 66% of the recently displaced people originated from Khartoum, followed by 17% from West Darfur, 9% from South Darfur and 6% from Central Darfur (IOM 14/06/2023).

As at 7 November 2022, there were 926,000 refugees in Sudan, with the majority being from South Sudan (OCHA 07/11/2022). Khartoum and White Nile states hosted around 60% of all South Sudanese refugees. Among the registered refugees, a significant proportion also lived in Kassala and Gedaref (GIZ accessed 22/05/2023). As at 18 June 2023, the conflict had led roughly 117,496 refugees, including nearly 113,000 South Sudanese, to return to their countries of origin (UNHCR accessed 20/06/2023). As at January 2023, there were around 70,000 Ethiopian refugees in Sudan who had fled the war in northern Ethiopia; as at 18 June, only 267 of the Ethiopian refugees had returned to Ethiopia (VOA 05/01/2023; UNHCR accessed 12/06/2023). Of the remaining refugees, around 20,000 were residing in Um Rakuba camp in Gedaref state as at May.

The fighting in Khartoum and the subsequent spread of insecurity have affected the movement of humanitarian assistance to refugees. Markets in the camps also suffer from high inflation rates, decreasing people's purchasing power and further limiting options for refugees (NRC Twitter 03/05/2023). Refugees previously residing in Khartoum are experiencing multiple displacements to areas outside the capital, where physical and administrative constraints limit humanitarian assistance. A lack of services across displacement sites has resulted in IDPs experiencing multiple displacements as they move to new locations to access humanitarian assistance (IOM 11/04/2023).

Potential flooding can further cut off humanitarian access to areas where refugees and IDPs are located. The combined impact of all these shocks is expected to have significant humanitarian consequences for displaced populations. Pre-existing displaced populations are extremely vulnerable to the impact of flooding and heavy rainfall, as they live in locations with poor infrastructure and inadequate shelter conditions, with some living in open areas. IDPs and refugees face pre-existing challenges in accessing essential items and services, such as food and healthcare, and as a result are highly dependent on humanitarian assistance.

IOM's Emergency Event Tracking reported 97,227 newly displaced people across Sudan during the previous rainy season between May–October 2022 (IOM 06/10/2022). Increasing rainfall during the upcoming rainy season in Blue Nile, North Darfur, Sennar, South Kordofan,

and White Nile states is expected to drive displacement and worsen the living conditions of those displaced, increasing their humanitarian needs and dependency on the limited humanitarian assistance available. The 3.1 million people already living in camps in Darfur prior to the start of the conflict are expected to be particularly vulnerable to the impacts of rainfall and flooding (OCHA 07/11/2022; ICRC 28/04/2022). If flooding affects West Darfur, cross-border displacement to Chad is anticipated to increase, adding pressure to an already stretched humanitarian response in Chad.

Impact on access to WASH services

As at 17 May 2023, 14.9 million people in Sudan needed WASH assistance, an increase from the 11 million reported in November 2022 (OCHA 17/05/2023 and 07/11/2022). As at February 2023, over 25% of households in Sudan reported that water points were not functioning in their locations, and 28% reported that water quantity was insufficient to meet their basic needs, and 26% having to travel one hour or more to fetch water (OCHA 26/02/2023). As at 7 June, water supply in Khartoum was at a critical level, with parties to the conflict seizing four water stations in the capital (ECHO 07/06/2023).

Around 72% of the population shared basic sanitation facilities with other households (OCHA 26/02/2023). A lack of access to clean and safe water has led people to use river water for bathing, drinking, and laundry (BBC 20/04/2023; OCHA 23/08/2022). Sudan has the highest ratio (30%) of people practising open defecation in the Middle East and North Africa region, an indicator of socioeconomic issues, such as poverty and a lack of access to basic services (OCHA 26/02/2023; The Brogen Project 24/03/2020). The practice of open defecation is more prevalent in rural areas and poses significant health risks related to the transmission of diseases, such as cholera, diarrhoea, dysentery, and polio.

As at 1 September 2022, more than 1,000 water sources and 2,500 latrines were damaged in 15 states affected by flooding that year (OCHA 01/09/2022). The 2020 flooding damaged more than 1,800 water sources (OCHA 22/02/2021). Flooding resulting from the forecasted above-average rainfall in June–September 2023 is expected to deteriorate the already poor WASH conditions in certain areas, such as North Darfur and South Kordofan. Flooding can be expected to submerge and destroy latrines, particularly in IDP and refugee camps where WASH infrastructure is already insufficient and often in poor conditions. Access to safe water can be expected to become increasingly difficult because of compromised drainage systems contaminating water sources and damaging hand pumps and boreholes. An absence of access to clean water can result in the transmission of dysentery and other diseases. In areas where delayed rains and higher temperatures are forecasted, access to water could also be compromised, resulting in increased pressure on the limited WASH facilities available with similar humanitarian consequences.

Increased risk of disease outbreaks

Vector-borne diseases

Sudan is considered a high-risk country for vector-borne diseases (OCHA 26/02/2023; MSF 04/05/2023). In 2022, the number of malaria cases crossed the epidemic threshold in 14 states, with 1.9 million cases reported across the country (WHO 31/12/2022; OCHA 20/12/2022 and 26/02/2023). Between July–December 2022, coinciding with the rainy season, roughly 4,800 suspected cases of dengue fever were reported in ten states, and Khartoum reported dengue cases in 2023 for the first time (WHO 31/12/2022; OCHA 20/12/2022). In 2019, an increase in vector-borne disease outbreaks was linked to heavy rainfall across Sudan, particularly in Darfur, Gedaref, Kassala, North Kordofan, and Red Sea states (OCHA accessed 19/06/2023). Stagnant and contaminated waters from flooding act as breeding environments for mosquitoes, increasing the risk of vector-borne diseases, such as malaria, dengue, and chikungunya (OCHA 26/02/2023; CDC accessed 18/05/2023; Radio Dabanga 06/10/2022 and 08/03/2023). Affected people also lack proper shelter conditions and NFIs, such as mosquito nets, which are necessary to prevent the spread of vector-borne diseases (UNICEF 05/02/2022). Above-average rainfall will increase the risk of the epidemic transmission of those diseases in states situated along rivers and in flood-prone areas facing pre-existing challenges in accessing safe water and sanitation (WHO 15/10/2019).

Polio

On 16 December 2022, Sudan declared a new polio outbreak in West Darfur, five months after declaring an end to the previous 2020 polio outbreak (UNICEF 28/02/2023; WHO 18/09/2022). This came after the country experienced widespread flooding during the rainy season in 2022. Polio is highly infectious, transmitted from person to person or through contaminated water or food, and can lead to permanent paralysis or death. It is common in areas that practise poor hygiene practices. Though it can affect anyone, children under five years old are particularly vulnerable to contracting the disease. Polio is not curable but can be prevented through vaccines. As at 5 May 2023, the looting of humanitarian cold chains in South Darfur led to the spoilage of over one million polio vaccines intended for children (Reuters 05/05/2023). South Darfur was among the most flood-affected states in 2013, 2020, and 2022 (OCHA 06/08/2013 and 25/09/2022; The Guardian 05/09/2020). Considering the forecasted increase in rainfall for the June–September 2023 period and consequent high probability of flooding, there is a heightened risk of new polio outbreaks, particularly in Darfur region and for populations displaced to Chad.

Cholera, measles, and other infectious diseases

A lack of access to proper WASH and health services and low immunisation rates drive outbreaks of infectious diseases, such as cholera and measles (OCHA 07/11/2022). Cholera has been endemic in Sudan since 2016, with the latest outbreak reported in 2019 when 278 suspected cholera cases and eight deaths were reported in Blue Nile and Sennar states (WHO 15/10/2019; OCHA 06/10/2019). The outbreak was reported after widespread flooding began in July 2019, affecting 15 out of 18 states (WHO 15/10/2019; OCHA 06/10/2019). Other diarrhoeal diseases, respiratory tract infections, and skin diseases are also commonly reported among flood-affected communities. Damage to shelters and WASH facilities limits hygiene options, elevating the risk of disease outbreaks that the already fragile health system may not be able to contain. Heavy rainfall is forecasted in 5 out of 18 states between June–September 2023 (ICPAC accessed 09/06/2023 c). As conflict also affects some of them, their capacity to manage the impact of rainfall and flooding could be reduced, and the transmission of infectious diseases could increase.

Lack of access to health facilities and services

As at 17 May, 11 million people were in need of health assistance across the country, an increase from the 10.1 million reported in November 2022 (OCHA 17/05/2023 and 07/11/2022). Before the April conflict, access to healthcare was already severely constrained throughout Sudan, which faced a shortage of facilities, personnel, medicine, and equipment. As at November 2022, 81% of people in Sudan had to walk more than two hours from their homes to access health services (OCHA 07/11/2022). As at 2017, the physician-to-patient ratio in Sudan was 0.3 to 1,000, compared to a global average of 16 to 1,000 (WB accessed 18/05/2023).

The 2022 floods damaged over 500 health facilities, with the majority being in Aj Jazira, Central Darfur, and South Darfur states (OCHA 05/09/2022 and 01/09/2022). During the 2020 flooding, water and debris damaged over 2,600 health facilities (OCHA 22/02/2021). Flood damage to health centres and hospitals further constrains the health system's ability to respond to disease outbreaks, which often occur right after floods.

In Darfur region, 25% of health facilities were not functioning as at June 2019, mainly because of electricity shortages (OCHA accessed 12/06/2023). Insecurity has further disrupted the provision of health services, particularly in the Darfur region where mass looting, arson and pillaging of critical healthcare infrastructures have been reported since 24 April (The Guardian 27/04/2023; Al Jazeera 05/05/2023).

The current conflict has had a significant impact on the provision of health services, specifically in Khartoum, as violence has targeted health facilities and staff and disrupted supply chains (OCHA 17/05/2023; Al Jazeera 26/04/2023). Between 15 April and 8 June, around 46 attacks on healthcare, resulting in 8 deaths and 18 injuries, were verified by WHO (WHO

14/06/2023). Since 15 April, more than 67% of hospitals located near conflict areas in Sudan have been reported out of service, with 60 out of 89 main hospitals across the country shut down (OCHA accessed 14/06/2023). Around 70% of health centres in Khartoum were non-functional as at 5 June (WHO 05/06/2023). Flooding is expected to further limit people's access to health facilities through physical impediments to movement and damage to already limited infrastructure, particularly in Khartoum and other areas that face active conflict, such as Darfur and Kordofan regions.

Disruption of medical supplies

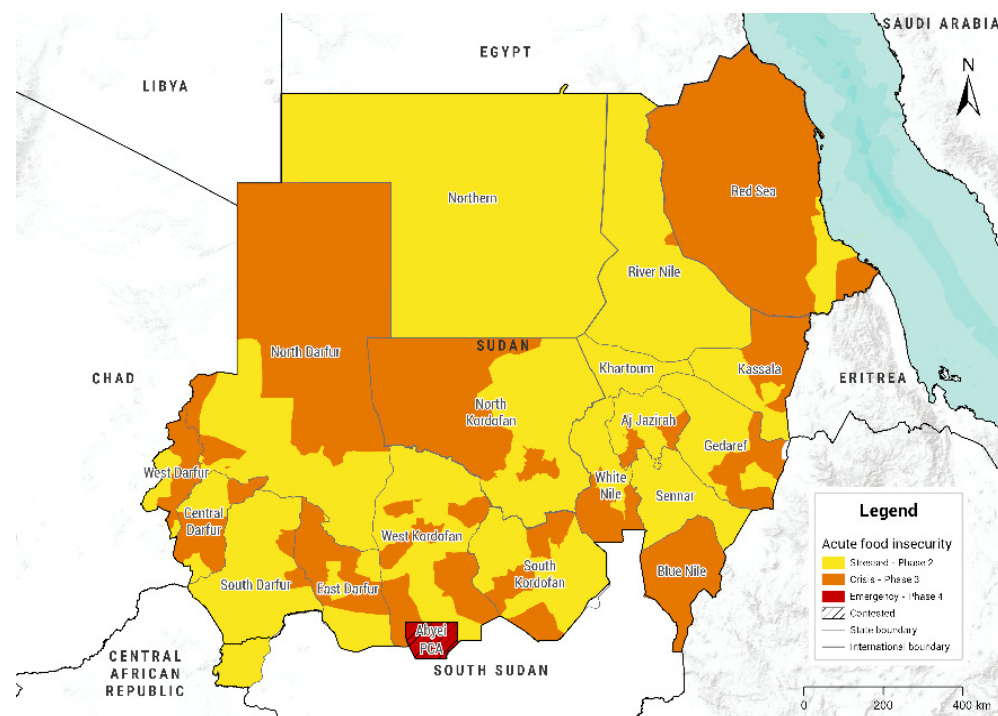
Prior to the current conflict, Sudan was unable to maintain a steady supply of medicine and medical resources because of poor macroeconomic conditions and a lack of hard currency (OCHA 26/02/2023 and 07/11/2022). A 2022 survey found that an average of 31%, 30%, and 51% of critical medication was respectively available in public, private, and humanitarian-supported health facilities (OCHA 26/02/2023). Aid and medical supplies were mostly dispatched from Khartoum, and laboratory tests and other aspects of health provision were performed in the capital, where there was a highly centralised health system (UNICEF 11/05/2023; OCHA 17/05/2023). During the 2022 flooding, the affected population lacked access to basic medicine and first aid kits (Al Jazeera 12/08/2022). Insecurity is expected to continue disrupting this supply chain in Khartoum, with several health facilities, labs and warehouses being occupied, affecting conflict-affected and flood-prone states (WHO 14/06/2023). Furthermore, humanitarian-run facilities require permission from SAF to resupply, which is being frequently blocked in RSF-controlled areas (Al Jazeera 16/05/2023; MSF 19/06/2023).

Aggravation of food insecurity and lack of access to agriculture

As at March 2023, 16.8 million people were acutely food-insecure because of a combination of increasingly high costs of living, poor economic conditions, and intercommunal conflict (WFP 05/05/2023). As at 5 May, the number of acutely food-insecure people was expected to increase to 19 million for the rest of the year; the Humanitarian Response Plan indicated that 19.9 million people would be in need of food security and livelihood assistance in 2023 (WFP 05/05/2023; OCHA 17/05/2023). The states forecasted to have the highest levels of food insecurity are West Kordofan (64%), West Darfur (64%), Blue Nile (57%), Red Sea (56%), and North Darfur (54%) (WFP 05/05/2023).

Sudan is also heading into its annual lean season, which typically lasts from June–September. During this time, 40% of the total population in parts of Aj Jazira, Blue Nile, Gedaref, Kassala, North Darfur, North Kordofan, Red Sea, South Darfur, South Kordofan, West Kordofan, and White Nile are expected to face Crisis (IPC Phase 3) levels of acute food insecurity (FEWS NET accessed 19/06/2023). Reduced agricultural output, disruptions in market access, and conflict further affect food security levels.

Figure 4. Map of IPC-projected acute food insecurity from June–September 2023



Source: ACAPS using data from FEWS NET (24/03/2023)

Lack of access to agriculture

Rainfall, the primary determinant of national food crop production in Sudan, holds significant importance, as approximately 90% of cultivated areas rely on rain-fed agriculture (FAO 28/02/2020). Given that more than 40% of the population depends on agriculture for their livelihoods, climate hazards have had significant consequences on both rain-fed agriculture and pastoralist communities (WFP 01/06/2021).

Planting for the main harvest season typically occurs in June. According to a forecast for June–September, there is a slight likelihood of below-average rainfall across much of the country. This could potentially affect production in rain-fed areas for the upcoming season (EC accessed 09/06/2023). Dry conditions may affect millet production in South Darfur, West

Darfur, and West Kordofan (USDA accessed 09/06/2023). El Niño conditions may pose additional challenges for the agricultural and pastoral sectors (NOAA 08/06/2023). In 2015, the effects of El Niño led to delayed planting and water scarcity, affecting crops and pastures (OCHA et al. 22/02/2016). Aside from weather concerns, there are further concerns about the negative effects of the current conflict on agricultural activities. The conflict started during the land preparation period for most seasonal crops (FEWS NET accessed DD/MM/2023). Insecurity and restricted access to farming inputs may have affected both land preparation and planting, increasing the risk of below-average harvests later in the year. The looting of banks and the resulting cash shortage is likely to disrupt the financing of agricultural inputs, which may lead to a decrease in production, particularly in areas where agriculture is irrigated and semi-mechanised (FEWS NET 24/05/2023). Even before the conflict, recurrent climate shocks have been affecting farmers by limiting access to agricultural inputs and disrupting transport and market infrastructure, contributing to low agricultural productivity in the country (CARE 15/05/2023).

The 2022 flooding damaged over 5,100 hectares of agricultural land and killed more than 4,800 livestock (OCHA 08/12/2022). In 2020, flooding led to the loss of nearly 100,000 livestock and damaged 26% of cultivated land (OCHA 22/02/2021). As at 2020, only 37.2% of land in Sudan was used for agriculture, and only 11.2% was considered arable (WB accessed 15/05/2023). Conflict and insecurity have already damaged farms, killed livestock, and forced pastoralists, agropastoralists, and farmers to abandon their crops, affecting their livelihoods (OCHA 17/05/2023). Further damage from flooding to crops and arable land, along with the impact on livestock, may affect the long-term food security of households as well as food availability throughout Sudan. In areas affected by conflict, high temperatures, or drought-like conditions, farmers face challenges during the planting season that began at the end of May (CARE 15/05/2023). Disruptions to planting will affect food production and harvest in 2023, worsening the already high food needs across Sudan.

Supply chain interruptions and limited market access

The fighting in Khartoum has had a ripple effect on trade, creating price hikes in rural areas, particularly as market dependency has increased while food stocks have been decreasing (FEWS NET accessed 19/06/2023). The shortage and increased cost of fuel have contributed to supply challenges, and farmers have been unable to transport their produce to markets (Africanews 17/05/2023). The destruction and looting of markets have driven reductions in the availability of and access to food supplies, especially in Darfur region (FEWS NET accessed 19/06/2023). The prices of food and other basic commodities have increased by 400% as a result of the conflict disrupting supply chains (OCHA 17/05/2023). Macroeconomic conditions, including inflation rates that exceeded 300% in 2022, have been driving high levels of food insecurity even prior to the conflict, meaning people's purchasing power was already limited then (WB accessed 15/06/2023).

The flooding in 2022 disrupted food supply chains and damaged shops and bakeries, affecting people's access to staple foods (BBC 23/08/2022; Al Jazeera 12/08/2022). As flooding significantly affects access to markets and supplies through infrastructure damage and physical impediments, prices may become further inflated in affected areas, aggravating food consumption gaps. Disruptions to banking services resulting from the current conflict are likely to further worsen household purchasing power (FEWS NET accessed 19/06/2023; Al-Monitor 19/05/2023). Households previously able to afford staple foods may become dependent on humanitarian aid or support from their community.

Farmer-herder conflicts

Intercommunal conflicts between farmers and herders over access to fertile lands usually spike after the rainy season. As the rainy season ends around September, herders let their livestock graze on unharvested farmlands, destroying significant amounts of crops every year and leading to escalated tribal conflicts, especially between Darfurian farmers and Arab herders (Radio Dabanga 17/02/2023). Competition over environmental resources, land contestations, heightened political mobilisation, and the militarisation of ethnic identities between Arab and non-Arab communities drive the conflicts in Darfur (Al Jazeera 26/02/2023; Al 24/04/2023). The negative impact of excessive or delayed rain on access to food and other basic needs may worsen tensions between communities. Continued insecurity, mobilisation, and militarisation as the current conflict spreads, combined with the heightened humanitarian needs during the rainy season, can contribute to larger-scale conflict between the Darfurian farmer and Arab herder communities.

RESPONSE CAPACITY

Since the war started in Khartoum in April 2023, the humanitarian response has moved its base to Port Sudan, further away from areas that require humanitarian assistance (UN 24/04/2023; TNH 15/05/2023). The main government body that manages all humanitarian work in Sudan, Humanitarian Aid Commission, has suffered severe operational interruptions. Internal processes have become largely dysfunctional, as most governmental work take place in Khartoum, meaning operational responders rely on area-specific coordination and access based on negotiations with local responders and controlling-authorities (Al Jazeera 16/06/2023). The RSF and SAF have reportedly stolen and diverted aid, restricted access to aid, and imposed rent-seeking impediments on aid providers (Al Jazeera 16/06/2023).

Conflict, including the looting and destruction of supplies, has severely constrained humanitarian capacity (OCHA 07/06/2023; UN 01/05/2023; WHO 14/06/2023). Conflicting parties looted one of WFP's largest logistical bases in Africa located in North Kordofan, important for the provision of food to 4.4 million people in Sudan and South Sudan, in mid-April. WFP

has estimated its losses to exceed USD 60 million (OCHA 07/06/2023; UN 02/06/2023). As at 7 June, at least 162 vehicles from humanitarian organisations had been stolen, and 61 offices and 57 warehouses had been looted (OCHA 07/06/2023). On 15 April, clashes between the SAF and the RSF in North Darfur killed three humanitarian workers and injured two, temporarily suspending WFP's operations in Sudan (Reuters 16/04/2023). Although their activities resumed on 1 May, insecurity to humanitarian workers continues to affect operational responders' field presence and capacity to respond to humanitarian needs (IOM 21/04/2023; Politico 01/05/2023). Under significant operational constraints, humanitarian organisations may face difficulties accessing and responding to the needs of people affected by the outcomes of the rainy season. A lack of capacity to meet the increasing needs of people will contribute to the devastating impacts of various shocks on the population (Sudan INGO Forum 18/06/2023).

Despite significant needs arising from flooding in 2020, a lack of funding meant that only 22% of the affected population received assistance from the Government or NGOs by the end of the flooding season (FAO 09/10/2020). The limited presence of international organisations in certain areas of Sudan, such as West and North Kordofan, Northern, River Nile, and Sennar states, combined with the lack of resources and capacity of local organisations, challenges immediate flood responses in some areas (OCHA 04/06/2023). The Sudanese Red Crescent Society (SRCS) is present in all 18 states of Sudan, with a strong local volunteer network of 40,000 people known as the National Society. The SRCS has been known to play a critical role in the flood responses in the country, even reaching remote areas (IFRC 09/09/2022).

Key figures highlighting the severity of flooding in Sudan

STATES	NUMBER OF DISPLACED PEOPLE SINCE 15 APRIL 2023 (AS AT 16 MAY 2023) (% OF TOTAL NEWLY DISPLACED PEOPLE)	PEOPLE EXPERIENCING FOOD INSECURITY I.E. IPC 3 OR WORSE – IN 2022	PEOPLE IN NEED (BASED ON THE 2023 HUMANITARIAN NEEDS OVERVIEW)	NUMBER OF PEOPLE AFFECTED BY 2022 FLOODS	NUMBER OF PEOPLE AFFECTED BY 2020 FLOODS	NUMBER OF PEOPLE AFFECTED BY 2013 FLOODS
White Nile	212,265 (25.2%)	602,700	0.93 million	34,357	38,305	32,735
West Darfur	156,565 (18.6%)	816,334	0.90 million	17,354	68,770	960
River Nile	116,445 (13.8%)	213,493	0.28 million	16,572	33,225	19,680
Northern	112,510 (13.3%)	153,472	0.15 million	18,046	12,560	4,520
Aj Jazira	59,175 (7%)	940,034	1.07 million	8,715	61,315	52,975
South Darfur	45,490 (5.4%)	861,986	1.60 million	79,937	17,435	18,440
Sennar	41,635 (4.9%)	436,558	0.50 million	5,379	65,095	8,900
Khartoum	26,845 (3.2%)	1,714,906	2.12 million	2,741	102,575	184,410
North Darfur	24,300 (2.9%)	883,125	1.49 million	2,621	124,935	29,135
North Kordofan	20,930 (2.5%)	667,620	0.73 million	15,235	23,555	6,000
Red Sea	14,925 (1.8%)	431,163	0.44 million	-	50,700	20,000
Gedaref	5,870 (0.7%)	675,147	0.77 million	64,685	33,860	10,440
Central Darfur	1,780 (0.2%)	618,804	1.04 million	41,747	25,580	7,660
Kassala	1,695 (0.2%)	773,232	0.92 million	25,890	38,805	6,060
South Kordofan	1,585 (0.2%)	620,994	0.95 million	5,765	3,200	2,935
Blue Nile	1,115 (0.1%)	502,692	0.56 million	-	86,625	50,000
East Darfur	-	316,539	0.61 million	3,650	28,555	-
West Kordofan	-	424,144	0.61 million	6,030	35,780	43,100

Source: IOM 16/05/2023; OCHA 07/11/2022; OCHA 07/11/2022; OCHA accessed 18/05/2023; OCHA accessed 19/05/2023 a; OCHA accessed 19/05/2023 a