

SOUTH SUDAN

Impact of floods

CRISIS OVERVIEW

Since August, flash and riverine floods have been severely affecting South Sudan, as is typical during the rainy season (April–November). Most of the country had below-average rainfall in June–July. In early August, Jonglei, Northern Bahr el Ghazal, Upper Nile, and Western Bahr el Ghazal states began recording normal to above-average rainfall (ACEM et al. 22/09/2022; FEWS NET 27/09/2022; FEWS NET accessed 11/10/2022; FloodList 12/10/2022). The extent of flooding more than doubled between early August and early October, from 22,000km² of South Sudan's landmass to 48,000km² (UNOSAT 10/10/2022 and 09/08/2022).

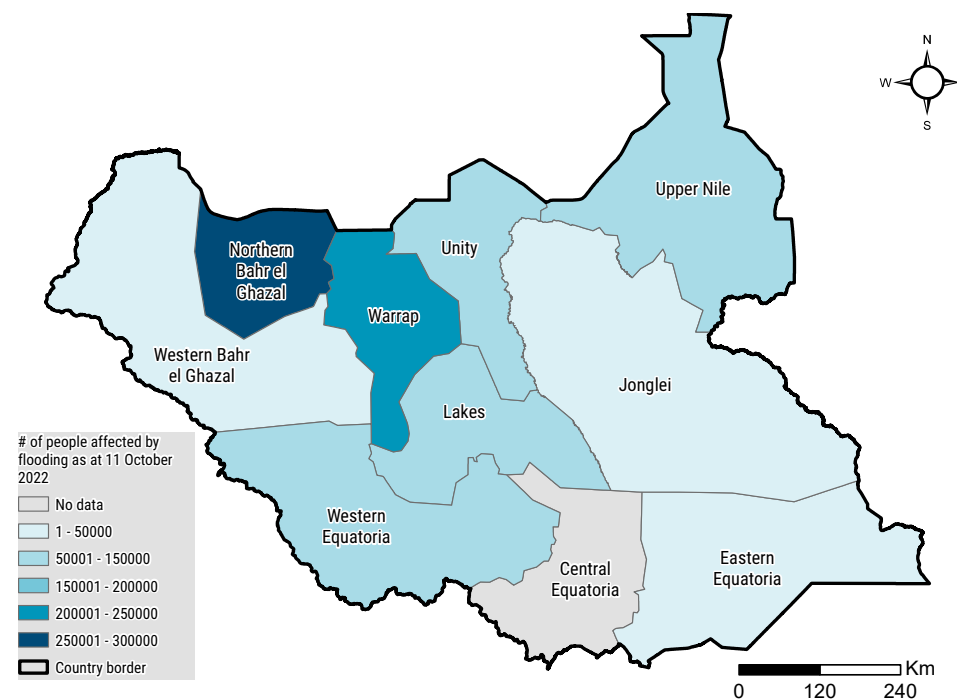
On 9 September, the Government of South Sudan declared the flood-affected states as national disaster areas (Radio Tamazuj 11/09/2022). Based on needs assessments carried out in the nine affected states, flooding had affected more than 900,000 people as at 11 October (OCHA 11/10/2022).

Nearly two-thirds of the flood-affected people live in Northern Bahr el Ghazal, Unity, and Warrap states in the north of the country. Northern Bahr el Ghazal has recorded the highest number of affected people at 252,000 – quadruple the number of flood-affected people in the state in 2021 (OCHA 11/10/2022 and 14/12/2021).

Floods have damaged or destroyed buildings (houses, schools, health facilities) and transport infrastructure (roads, bridges). There have been crop and livestock losses, which could worsen food insecurity. Flooding has affected some latrines and water sources, raising the risk of water contamination and waterborne disease outbreaks (OCHA 11/10/2022). Floods have also resulted in human deaths; in Northern Bahr el Ghazal, at least 68 people have died either from drowning or snakebites (Eyeradio 16/09/2022; Radio Tamazuj 14/09/2022).

Floods have affected IDPs, refugees, returnees, and host communities and resulted in secondary displacement for some (JRS 23/09/2022; OCHA 11/10/2022; UNMISS 12/10/2022; DRI et al. 19/09/2022).

Flood-affected people in South Sudan (as at 11 October 2022) and displaced people prior to the 2022 floods (as at December 2021)



Sources: OCHA (11/10/2022); IOM (06/2022)

ANTICIPATED SCOPE AND SCALE

With normal to above-average rainfall forecast to continue throughout October in South Sudan, flooding levels may continue to increase until early November (FEWS NET accessed 11/10/2022; JRS 23/09/2022; FEWS NET 16/10/2022). Uganda may also open some dams, causing an overflow of water into South Sudan and further worsening flooding (JE 16/10/2022).

There is a precedent of floodwaters taking a long time to recede and persisting into the dry season of subsequent years, as was the case in 2021 and 2022. Floodwaters in areas like Fangak and Canal/Pigi counties and parts of Unity state are likely to remain until early 2023 (FEWS NET 30/06/2022; OCHA 06/05/2022; UN 29/03/2022).

HUMANITARIAN AND OPERATIONAL CONSTRAINTS

Humanitarian organisations face physical access constraints as a result of flooded roads and damaged roads and bridges (OCHA 11/10/2022). In September, flooding damaged roads and bridges in Maban county (Upper Nile state), constraining access (JRS 23/09/2022). In mid-September, some roads in Aweil East and Leer counties also became inaccessible because of flooding (AAH et al. 14/09/2022; HFO et al. 20/09/2022). In Western Bahr el Ghazal state in early October, heavy rainfall washed off the Sofo Bridge, which connected Wau and Raja counties. The incident has cut off the supply of commodities to Raja county and affected the access of humanitarian organisations to at least 50,000 people in need (Radio Tamazuj 06/10/2022; OCHA 11/10/2022). Humanitarian organisations often have to resort to air and river transportation because of the impact of flooding on roads (HFO et al. 20/09/2022).

The level of flooding in areas like Maban county exceeded 2m and reached the ceiling of some buildings, destroying the relief supplies – including food items – of some humanitarian organisations and damaging their offices, warehouses, and staff housing facilities (JRS 23/09/2022 and 25/10/2022).

Armed conflict between military factions, revenge killings, and intercommunal violence generate insecurity in several areas of the country, affecting both aid workers' access to people in need and people's access to services and aid. Humanitarian organisations in South Sudan face access constraints related to bureaucratic impediments, looting, roadside ambushes of humanitarian convoys, and violence affecting aid workers (OCHA 16/09/2022 and 04/10/2022). In September, the majority of access incidents, including attacks against humanitarians, were recorded in Central Equatoria, Jonglei, and Unity states, with three aid workers killed in these three states. Some areas in Canal/Pigi, Fangak, and Panyikang counties were inaccessible in September because of conflict, temporarily suspending humanitarian operations (OCHA 11/10/2022).

LIMITATIONS

Access constraints made it difficult to conduct needs assessments in some areas, meaning the number of people affected could be higher than the estimated 900,000.

CRISIS IMPACT

Displacement

Flooding has displaced nearly 182,200 people: 84,400 in Northern Bahr el Ghazal state, 65,300 in Unity state, 30,000 in Western Equatoria state, and 2,500 in Eastern Equatoria state (JAM et al. 14/09/2022; AAH et al. 14/09/2022; HFO et al. 20/09/2022; DRI et al. 19/09/2022; UNMISS 28/09/2022; AVSI et al. 23/09/2022).

Some of the displaced have taken refuge in the open, under trees, or by roadsides. Others have taken refuge in public facilities, such as schools and healthcare centres, or among host communities. Displaced people living with host communities face congested conditions in houses, with some reports of an average of seven families sharing one house in Leer county. Besides needing shelter, people displaced or affected by floods also require NFIs, including plastic sheets, blankets, mats, mosquito nets, jerrycans, and cooking utensils (JAM et al. 14/09/2022; HFO et al. 20/09/2022).

People displaced by floods (as at 11 October 2022)

STATE	COUNTY	DISPLACED
Northern Bahr el Ghazal	Aweil East	67,000 (AAH et al. 14/09/2022)
	Aweil South, Aweil Municipality, and Aweil Centre	17,400 (JAM et al. 14/09/2022)
Unity	Leer	48,300 (HFO et al. 20/09/2022)
	Mayendit	17,000 (DRI et al. 19/09/2022)
Western Equatoria	Mundri West	30,000 (UNMISS 28/09/2022)
Eastern Equatoria	Magwi	2,500 (AVSI et al. 23/09/2022)
Total		182,200

Shelter and NFIs

Flooding has severely damaged many buildings, including homes. Since most houses are built with simple materials, such as straw, wood, and plastic sheets, they are prone to the damaging impact of floods. In Maban county, high floodwater levels have reached the ceilings of houses and damaged essential household items (JRS 23/09/2022). In Aweil East county (Northern Bahr el Ghazal state), flooding has damaged at least 11,000 homes (AAH et al. 14/09/2022).

Food and livelihoods

Between 4–8 October, an estimated minimum of 16,500 hectares were flooded based on satellite imagery. In Northern Bahr el Ghazal, the state worst affected by flooding, around 45% of cropland has been submerged (UNOSAT 10/10/2022). Floodwaters have destroyed staple crops, including sorghum, groundnuts, and legumes (JAM et al. 14/09/2022). The crisis has also killed several livestock animals and submerged pasture in some areas. Some affected households have sold livestock because of the challenges associated with keeping the animals during floods (AAH et al. 14/09/2022; HFO et al. 20/09/2022). Affected communities need fishing kits as they increasingly use fishing as an alternative source of food and livelihood (AAH et al. 14/09/2022).

Floods have disrupted access to markets and livelihood activities after severely damaging or making some major roads and bridges impassable. Damage to transport infrastructure has cut off key supply and trade routes to some areas, driving up the prices of basic food items (JRS 23/09/2022; OCHA 12/10/2022). Food prices in the capital city, Juba, increased by 32% in September compared to August (OCHA 12/10/2022).

WASH

Floods have either damaged or affected the functionality of some WASH facilities. Waste spills out from flooded latrines, raising the risk of contaminating water sources. Open defecation practices, with faeces sometimes carried out in floodwaters, further raise this risk. Flooding has also submerged several boreholes and water pumps, making them unusable or causing their water to become contaminated and unsafe for consumption (JRS 23/09/2022; JAM et al. 14/09/2022; HFO et al. 20/09/2022). The situation has resulted in people's increased reliance on surface and river water for drinking and cooking despite the water being unsafe (JAM et al. 14/09/2022). The contamination of water sources during the flooding season raises the risk of the spread of waterborne diseases, such as cholera, hepatitis A, and hepatitis E. The country has been facing hepatitis E outbreaks since 2015. The current hepatitis E outbreak started in January 2019, with more than 3,300 cumulative cases recorded in the Bentiu IDP camp in

September 2022. There is also currently a cholera outbreak in the country, declared by the Government in May 2022, with most suspected cases reported in Rubkona county (Unity state). The cholera outbreak could spread to new areas through the increased contamination of water sources (WHO 24/09/2022; WHO et al. 20/09/2022; South Sudan MOH 07/05/2022). Flood-affected areas need water treatment tablets, soap, containers to fetch and store water, and support with borehole rehabilitation (JAM et al. 14/09/2022).

Health

The impact of the floods has damaged some health facilities, making it difficult for both patients and medical personnel to reach these facilities safely. In Maban county, only one out of nine health facilities is accessible (JRS 23/09/2022). The floods have damaged an estimated 52 health facilities countrywide (AA 12/10/2022). Water stagnation and the contamination of water sources for drinking and cooking have increased acute watery diarrhoea cases among children under five years of age (JRS 23/09/2022; JAM et al. 14/09/2022). Since some displaced people sleep out in the open, malaria, pneumonia, and rheumatic fever cases have increased. There is also a higher incidence of snakebites, which require anti-venom for treatment. At least five people have died because of snakebites in Warrap and Bahr el Ghazal states. From January–September, there were more than 600 reported cases of snakebites, including three fatalities, in Tonj North and Gogrial East counties in Warrap state (JAM et al. 14/09/2022; Radio Tamazuj 29/09/2022). There is a shortage of essential medicines and medical supplies in some health facilities, including in Aweil South, Aweil Center, and Leer counties partly resulting from the rise in patients requiring treatment for various illnesses associated with the flooding season (JAM et al. 14/09/2022; HFO et al. 20/09/2022).

The death of loved ones and loss of property and livelihood activities are likely to increase the number of people needing mental health and psychosocial support (JRS 23/09/2022; JAM et al. 14/09/2022).

Education

The floods have either damaged schools and learning materials or made it difficult for students to reach schools safely (JRS 23/09/2022). In Northern Bahr el Ghazal, many school buildings were temporary structures unable to withstand the impact of floods. Some displaced people have also taken shelter in schools, disrupting learning for children in host communities (JRS 23/09/2022; JAM et al. 14/09/2022). Other schools have closed because of safety concerns, with schoolchildren facing the risk of drowning as they travel to and from their classes (JAM et al. 14/09/2022). Children from displaced families have temporarily dropped out as their families have moved farther away from their schools. In Aweil East county, flooding has affected education for more than 5,000 children (AAH et al. 14/09/2022).

Protection

Displaced women and girls face heightened risks of gender-based violence, including sexual violence, since they walk long distances in search of water and firewood. They also lack privacy since many places of refuge are overcrowded. The disruption of livelihoods as a result of flooding has placed girls at risk of early marriage. There are some unaccompanied minors in flood-affected areas, with some reports of parents abandoning their children since they can no longer provide for them (JAM et al. 14/09/2022).

COPING STRATEGIES OF FLOOD-AFFECTED COMMUNITIES

The adoption of alternative sources of food and livelihoods: when the impact of flooding destroys crops or leads livestock to die from diseases, some affected people collect wild plants, such as water lilies, for eating. Collecting water lilies can be dangerous as they are often in crocodile-infested waters (The Guardian 30/11/2021). As traditional sources of livelihood activities become increasingly unsustainable, other people resort to fishing (JAM et al. 14/09/2022; OCHA 27/02/2022).

Internal displacement: some people move to higher ground – to areas that are not flooded – where they sometimes sleep in the open. In some instances, it is difficult for people to find areas on higher ground nearby given the extremely high levels of flooding. IDPs may also face secondary displacement when their places of refuge on higher grounds also become flooded, forcing them to seek alternatives (The Guardian 30/11/2021; JAM et al. 14/09/2022).

Cross-border displacement: when it becomes increasingly challenging for displaced people to find higher grounds, those near the border with Sudan sometimes choose to take refuge in Sudan (The Guardian 30/11/2021).

Change in transhumance patterns: as some of their typical seasonal grazing areas become flooded, livestock herders seek alternative grazing areas. Since the 2020 flooding, nomadic livestock herders have been migrating through the Equatoria states in search of pasture for their livestock. This setup has resulted in competition over resources and conflict with farming communities (NUPI/SIPRI 07/03/2022).

Use of unsafe water sources, such as surface and river water: flooding makes it more difficult to access safe water for drinking and cooking. Some boreholes are no longer safe for use after being submerged in floodwater (OCHA 27/02/2022; JAM et al. 14/09/2022).

Building dykes: in some areas, local communities, sometimes with the assistance of humanitarian organisations, have built mud or sandbag dykes to keep floodwaters out. These dykes are prone to damage from erosion or destruction by livestock. They need

regular repairs to keep floodwaters out longer. This setup is not always sustainable partly because repairs need to be consistent over a lengthy period (The Guardian 30/11/2021; Gov't of the Netherlands 22/03/2022; UNMISS 12/10/2022).

AGGRAVATING FACTORS

Past flooding

A combination of heavy rainfall within the country and in neighbouring countries, high water levels in lakes upstream, and limited river system management cause flooding in South Sudan (OCHA 06/05/2022).

Severe floods affected South Sudan in 2019, 2020, and 2021, making 2022 the fourth consecutive year of severe flooding. Areas in the north around the Sudd wetlands are more prone to flooding (JRS 23/09/2022). Floodwaters could take several months to subside after the rainy season ends in November. In 2021 and 2022, floodwaters had not fully receded by April, which is when the rainy season begins again in some parts of the country. Between 20–24 April 2022, water across 9,700 km² of landmass had not significantly receded, particularly in Jonglei, Unity, and Upper Nile states. Long-standing floodwaters increase the likelihood of consecutive years of flooding (OCHA 06/05/2022; UN 29/03/2022; UNOSAT 13/06/2022).

Long-standing residual floodwaters give flood-affected communities limited time to recover and leave them with inadequate resources to face subsequent cycles of flooding (Cordaid 23/11/2020). They also prolong the period of displacement for IDPs and result in longer recovery periods for affected populations (OCHA 14/12/2021; UNHCR 29/03/2022). By August 2021, 100,000 people from Twic East displaced by the 2020 floods were still taking refuge in Bor, Mangalla, and Mingkaman IDP camps (OCHA 31/08/2021). By July 2022, nearly 58,000 people displaced by the 2020 flooding in Guit and Rubkoba counties were still in IDP sites in Bentiu town (IOM 30/09/2022). Some people face displacement yearly because of flooding (UNHCR 29/03/2022).

Prolonged flooding has damaged thousands of hectares of farmland and resulted in a lack of food, causing nearly 800,000 livestock deaths from 2019 to 2021. Around 80% of the South Sudanese population practices subsistence farming as their livelihood, leaving them vulnerable to extreme weather events. Seasonal agricultural activities are no longer possible for many subsistence farmers (USAID 05/2019; OCHA 31/08/2021; UN 29/03/2022; UNHCR 29/03/2022). Prior to 2019, South Sudan also experienced flooding during the rainy season, but it was less disruptive and allowed flood-affected communities to recover faster and resume their livelihood activities quicker afterwards (UNICEF 31/12/2019; UNHCR 29/03/2022).

Internal displacement

Around 2.2 million people were internally displaced across South Sudan as at December 2021. Prior to the 2022 flooding, Warrap and Unity states had the highest number of IDPs. By December 2021, 24% of IDPs in South Sudan were living in displacement sites, while the rest lived among host communities (UNHCR 10/09/2022; IOM 26/07/2022). Armed conflict, intercommunal violence, and floods drive displacement, with many people experiencing repeated displacement. Unfavourable conditions in places of origin – including conflict or violence, the limited provision of basic services, and long-standing residual floodwaters – often delay people's return to their places of origin, leaving many in protracted displacement. Some host communities welcome IDPs and are willing to share their resources, but doing so overstretches their limited resources and erodes their resilience and coping capacity (OCHA 27/02/2022; IDMC accessed DD/MM/2022; IOM 30/09/2022).

Health/disease outbreaks

Only 8% of health facilities countrywide are fully functional, while 53% are moderately functional. There is a high prevalence of diseases like malaria and acute watery diarrhoea, and leprosy remains endemic in South Sudan (OCHA 27/02/2022). The Government declared a cholera outbreak in March 2022. By 24 September, there were 337 cases, all in Unity state, with the majority reported in the Bentiu IDP camp. Inadequate access to safe drinking water as a result of flooding could lead to an increased incidence of cholera (WHO 24/09/2022). The country is also on alert for a possible Ebola outbreak given the current outbreak in neighbouring Uganda. The constant cross-border flow of people between the two countries presents a risk for the possible spread of the virus. An Ebola outbreak in South Sudan is likely to overwhelm the already limited health services in the country (The EastAfrican 21/09/2022, Sudans Post 20/09/2022).

Conflict/violence

The Revitalised Agreement on the Resolution of the Conflict in the Republic of South Sudan was signed in 2018 to end conflict on a national level, but conflict and intercommunal violence remain active in some parts of the country. In flood-affected areas, cattle rustling, revenge killings, and armed conflict between different factions of the Sudan People's Liberation Army-in-Opposition continue to disrupt livelihoods and drive displacement and high levels of humanitarian need (UNMISS 18/09/2022; TNH 18/10/2022).

Because of armed conflict, intercommunal violence, and tensions related to the limited availability of economic and natural resources, civilians suffer from physical and psychological

violence, including abductions, sexual violence, the looting and destruction of their property, and killings (OCHA 27/02/2022; UNMISS/OHCHR 06/09/2022). Conflict also contributes to humanitarian access constraints across the country (OCHA 16/09/2022, 04/10/2022, 11/10/2022).

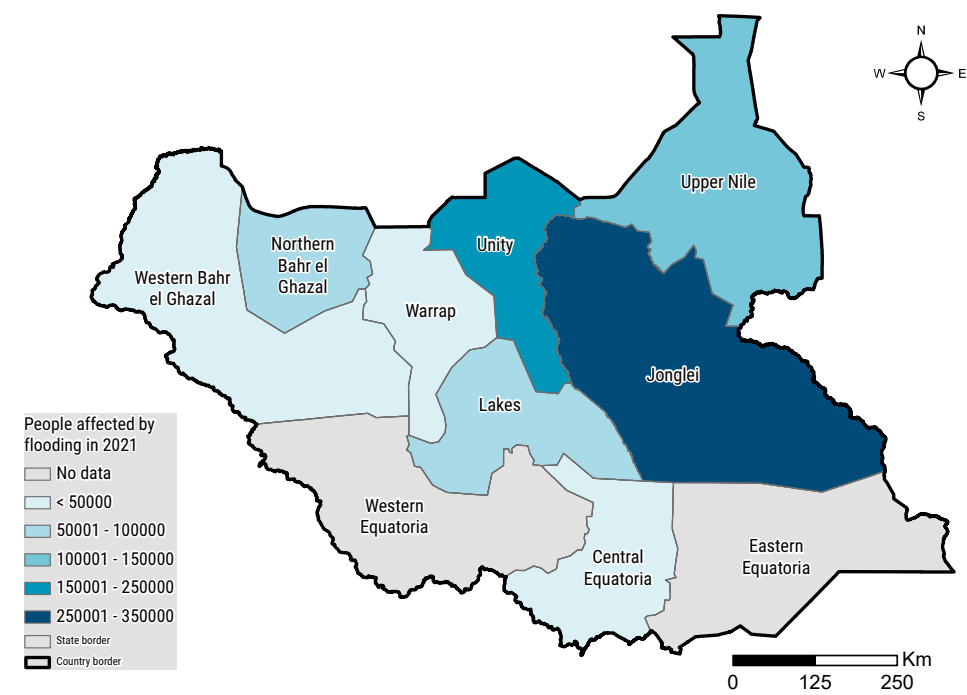
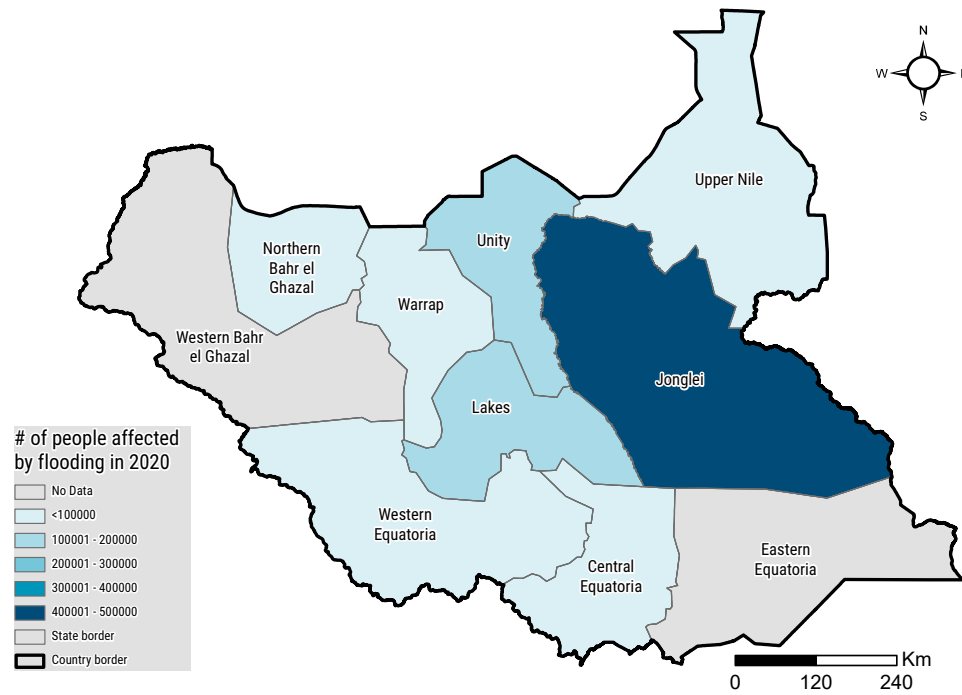
Food insecurity

7.7 million people (63% of the country's population) were projected to face Crisis (IPC Phase 3) or worse food insecurity levels between April–July 2022, with 52 out of the 79 South Sudan counties projected to face Emergency (IPC Phase 4) acute food insecurity levels (IPC 09/04/2022). Multiple drivers contribute to severe acute food insecurity in South Sudan, including conflict, flooding, displacement, pests and diseases, the economic crisis (i.e. the depreciation of the South Sudanese pound against the US dollar, fluctuation in oil prices, and residual socioeconomic impact of the COVID-19 pandemic), high food prices, and inadequate access to basic services (IPC 09/04/2022; OCHA 27/02/2022; AFDB 25/05/2022; FEWS NET 27/09/2022).

INFORMATION GAPS AND NEEDS

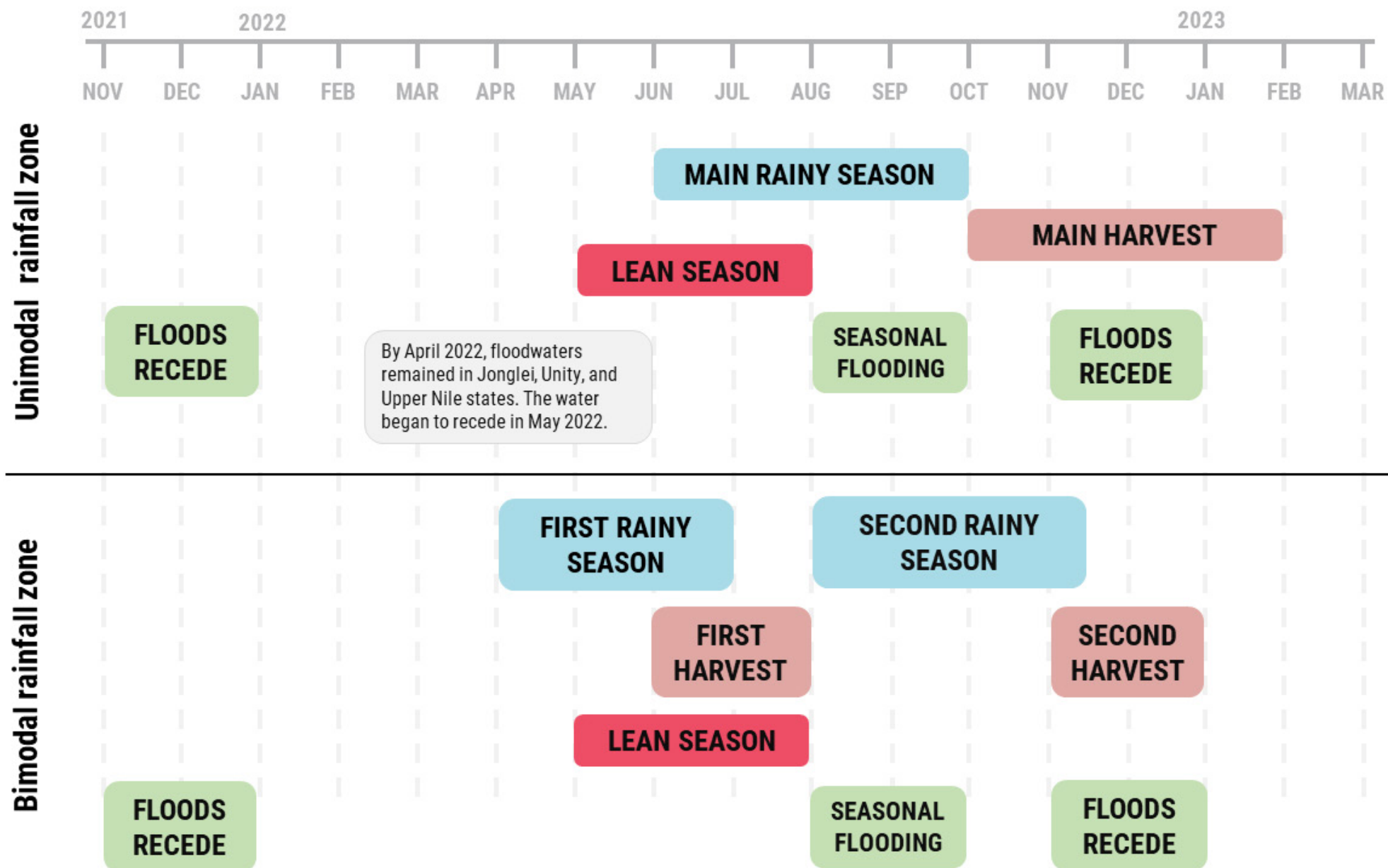
There is a lack of information on the cumulative number of flood-displaced people countrywide.

PEOPLE AFFECTED BY PAST FLOODS IN SOUTH SUDAN (2020–2021)



Source: OCHA (24/12/2020)

SEASONAL CALENDAR FOR UNIMODAL AND BIMODAL RAINFALL ZONES IN SOUTH SUDAN



Source: ACAPS using data from FEWS NET 06/2022; UN 29/03/2022; UNOSAT 13/06/2022; ACAPS Seasonal Events Dataset

Note: The unimodal rainfall zone has one rainy season. It includes Northern Bahr el Ghazal, Western Bahr el Ghazal, Lakes, Warrap, Jonglei/ GPAA, Unity/Ruweng Administrative Area and Upper Nile states. The bimodal rainfall zone has two rainy seasons. It includes Central Equatoria, Eastern Equatoria and Western Equatoria states.