

Impact of drought in the Brazilian Amazon and 2025 outlook

CRISIS OVERVIEW

In 2023–2024, the Brazilian Amazon faced severe drought conditions driven by the combination of climate change-induced temperature anomalies, deforestation, and the effects of the 2023–2024 El Niño climate pattern, which brought below-average precipitation and above-average temperatures to the region (WWA 24/01/2024; NPR 30/10/2024). This 18-month drought is considered the most intense since national drought monitoring began around 1954, with immediate and long-term impacts on both communities and the environment (PBS 10/09/2024).

The outlook for 2025 remains uncertain. By 23 January, most of the Amazon states were experiencing a below-average rainy season. Precipitation forecasts anticipate that the rainy season may not be enough to induce a full recovery from the drought or prevent the risk of widespread wildfires in 2025, especially across several parts of the Brazilian Amazon. The start of the rainy season in late 2024 was delayed and weaker than usual, and, according to Brazil's National Centre for Monitoring and Warning Natural Disasters, the Amazonian rivers have yet to return to their normal levels (Mongabay 08/01/2025; WMO accessed 20/01/2025).

In 2023–2024, drought affected 59% of Brazil, causing water shortages and a severe loss of livelihoods and crops (PBS 10/09/2024; Barrons 10/09/2024). The areas worst affected include the states of Acre, Amazonas, Mato Grosso, Rondonia, and Tocantins, which form part of the Amazon region in the northwestern and central-western parts of the country (Brasil de Fato 04/11/2024; UNICEF 18/11/2024; USAID 31/10/2024; Climainfo 26/09/2024). At least 42 indigenous territories – accounting for 53% of Brazil's indigenous areas – were affected. Data from the Integrated Disaster Information System shows that 2,850 indigenous families were affected, many becoming isolated, as rivers dried up and cut access to healthcare, nutrition, water, protection, and education (NexoJornal 07/11/2024; USAID 31/10/2024; Climainfo 26/09/2024; UNICEF 18/11/2024).

The Brazilian part of the Amazon basin encompasses 251 cities (including five state capitals), 3,671 non-indigenous localities, 161 villages, and around 2,521 indigenous villages (Santos de Lima et al. 12/07/2024). It has been estimated that millions of people have been affected in at least 130 municipalities across the country (Globo 19/12/2024). By November 2024, the drought had affected at least 745,000 people in Amazonas and Acre states alone, including 269,000 children. Of those affected, approximately 330,000 individuals residing in riverside communities and in over 2,200 indigenous villages faced the worst effects (UNICEF 18/11/2024).

The situation was worsened by wildfires, which occur annually as a result of cattle and agriculture practices. The drought has sharply increased wildfires since mid-2024, with over 27 million acres burnt by early October – a 120% rise from the same period in 2023. These wildfires affected over 680 municipalities (out of the total 5,571), around 18.9 million people, including many already affected by the drought in the Amazon region (Climate Central 30/12/2024; USAID 31/10/2024).

Living conditions and access to basic needs and services in drought-affected communities are further aggravated by the presence of armed groups that indiscriminately exploit natural resources, recruit communities for illegal activities, or force displacement (InfoAmazonia 03/08/2023; Insight Crime 08/11/2022). The combination of drought and insecurity has hampered access to the states in northwest Brazil, particularly Amazonas states. The reduced access to rivers and isolation heightens vulnerability to economic, social, and physical exploitation, including human trafficking, forced labour, and abuse. Women are particularly affected, as they often bear the financial and emotional burden when drought reduces crop yields or livestock (Insight Crime 19/11/2024).

ABOUT THIS REPORT

Aim

This report analyses the impact of the drought in Brazil, focusing on affected Amazon communities in northwest and central Brazil, primarily in the states of Acre, Amazonas, Mato Grosso, Pará, and Rondonia. The report examines the current humanitarian response, identifies key constraints, and addresses limited information, while also highlighting how armed groups involved in resource extraction worsen the region's vulnerabilities to drought. The report also provides a forward-looking analysis of the drought's expected evolution in 2025 based on seasonal precipitation and temperature forecasts.

Methodology

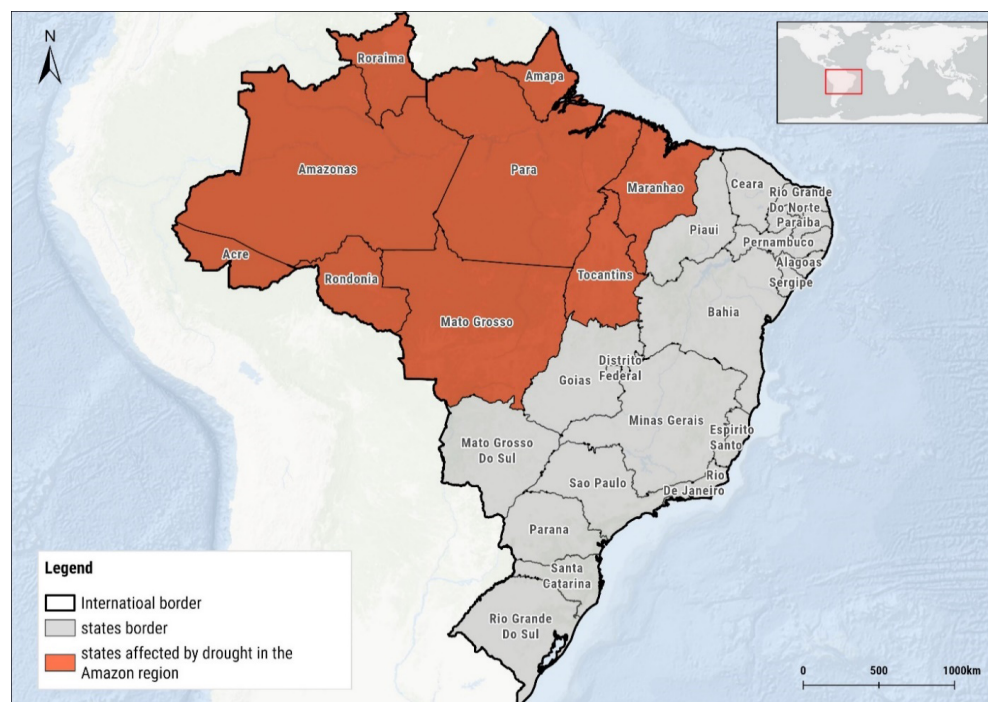
This report is based on a secondary data review of public sources.

Limitations

The information available is limited to specific regions, with data on food security, malnutrition, health, and livelihood losses being particularly scarce. While there is little information on the impact on indigenous communities, they are likely among the worst affected, as these communities reside in the most drought-affected areas. A lack of assessments means that details on the humanitarian response and access to remote communities are also not very clear.

There may be temporary workers, refugees, and migrants, particularly from Venezuela, present in the Brazilian Amazon region, but there is no information on their needs and the challenges they face during the drought.

Map 1. Brazilian Amazon region



Source: OCHA (accessed 23/01/2025)

CLIMATE PROJECTIONS FOR DROUGHT-AFFECTED STATES

Short-term projections

Above-average rainfall in January 2025: on 6 January, the National Institute of Meteorology anticipated that above-average rainfall would continue in most of the Amazon states in Acre, Amazonas, Pará, and Tocantins states despite a late start to the rainy season, the Amazon region had experienced, by December 2024, near normal precipitation, with above-average rainfall recorded in Acre, Amazonas, Pará, and Tocantins states with the exception of Roraima and Mato Grosso states, where precipitation was anticipated to be below normal (INMET accessed 20/01/2025). This rain provided relief to drought-affected communities and increased river water levels in the Amazon basin. It is necessary to monitor rainfall levels in the coming months, however, to confirm whether the region will overcome the extreme drought. The Rio Negro water level, for instance, remains significantly below the average for this time of year (INMET 14/01/2025; G1 17/01/2025; Radio Agência 15/01/2025).

La Niña conditions began in early January 2025 and are expected to persist through February–April: La Niña typically brings above-average rainfall to Brazil's northern and northeastern regions, while the central-southern states face drier conditions and heatwaves. This year, the effects may be weakened by above-average global temperatures (NOAA 21/01/2025; Argus 16/01/2025).

During the February–April period, rainfall is likely to be near or above average across northern parts of the Brazilian Amazon: Amapá, northern and central Amazonas, and northern parts of Pará state will experience this thanks to typical La Niña patterns. The southeastern states of the Brazilian Amazon, however, including Maranhão, Mato Grosso, Rondonia, and Tocantins, are likely to receive below-average precipitation. In the southern parts of the Brazilian Amazon, temperatures are also expected to remain above average during the same period (WMO accessed 20/01/2025; IRI accessed 20/01/2025).

Long-term projections

Recovery from drought conditions may be slower than anticipated: in the worst drought-affected states, recovery may not even happen at all (Brasil de Fato 06/01/2025). Between January–October 2024, temperatures in the Amazon region were up to 5.1° C above what is considered normal for these months, causing severe damage to nature (The Guardian 22/01/2025; InfoAmazonia 23/11/2024).

Drought conditions make the soil dry and compact: since the start of the drought, the soil has become less absorbent, delaying the replenishing of ground water and making areas experiencing above-average precipitation or extreme precipitation events more susceptible to flooding and landslides (Agência Brasil 05/01/2024; INMET accessed 14/01/2025; G1 04/01/2024). This may affect lives and livelihoods, including causing infrastructure damage, crop losses, and livestock losses (Amazonas Atual 06/01/2024). Drought conditions are likely to increase displacement to urban centres and other regions of Brazil.

HUMANITARIAN ACCESS

Increased rainfall, which is set to last until March, has raised river water levels, improving navigation in certain areas. Water levels are crucial to access conditions, as rivers provide access to many areas of the Amazon region. As such, drought conditions are a significant challenge, potentially causing rivers to dry up (G1 17/01/2025; Radio Agência 15/01/2025; Jornal Nacional 15/11/2024). By 22 January, many rivers' water levels remained below average for this time of year, and affected areas in states such as Maranhão remained inaccessible via river as a result (O Globo 100 22/01/2025).

The poor road network limits access to some areas of the Amazon region, compounded by a lack of local government presence in remote areas (Vocativo 20/08/2024). Most people in the region have to walk at least one hour to reach the nearest road (Santos de Lima et al. 12/07/2024). Acre, Amazonas, Pará, and Rondonia are the states where access is most affected.

Above-average rainfall in some parts of Amazonas, Pará, and Tocantins states is expected to cause power outages, falling trees, flooding, and electrical discharges, further affecting access (Radio Agência 15/01/2025; Agência Brasil 05/01/2025).

There are reports of an expanding armed group presence across various states, which could further strain areas already affected by drought and constrain humanitarian access. The presence of armed groups also increases the risk of forced community displacement, both indigenous and not, as well as the risk of child recruitment and protection challenges (UNICEF 18/11/2024).

IMPACT OF DROUGHT

WASH

Between August–December 2024, drought caused water to become scarcer across the Amazon region. Indigenous communities depend on rivers for drinking water and, in some villages in northeast Brazil (Amazonas, Pará, and Rondonia states), people drilled artesian wells to adapt to the low river water levels. The water stream such wells provided, however, was not enough to meet community needs (Brasil de Fato 04/11/2024; TV Brasil Youtube 26/10/2023). This coping strategy was also likely used in other regions, but information and assessments to that effect are limited.

People in northeast Brazil usually collect and store rainwater; for example, the community of Assuncao in Amazonas state collected rainwater in October–November 2024, but not enough to meet the community's drinking, cleaning, and washing needs (Brasil de Fato 04/11/2024; Amazonia Latitude 22/03/2024). In many drought-affected states, the little water that indigenous communities can access often comes from rivers or wells, which tends to be contaminated by the chemicals used in large-scale agricultural production and unsafe for drinking (Intercept 18/11/2024; France 24 27/08/2024). Communities often drink muddy water from rivers that have not yet dried, boiling it in an attempt to eliminate impurities while using a common cloth as an improvised filter (UNICEF 18/11/2024). Drinking from unsafe water sources heightens the risk of waterborne disease.

Health

By November 2024, at least 720 health centres in drought-affected areas of Brazil had become non-operational, as there were insufficient supplies. Hospitals cannot maintain necessary cleanliness and safety standards without a reliable water supply, and many were inaccessible as a result of low river water levels (UNICEF 18/11/2024). By 23 January 2025, it was unclear whether all the affected centres remained closed, but health facilities in Manaus reported overcrowding in the first days of January (G1 02/01/2025). There is concern that these facilities may become overwhelmed, as people who delayed care because of access issues are now seeking services.

Limited access to health facilities has posed a severe risk for women with complicated pregnancies and individuals requiring urgent medical attention. The prolonged drought combined with wildfires has also affected air quality, resulting in respiratory problems such as asthma, rhinitis, sinusitis, respiratory viruses, and throat infections, especially among

children and older people, with doctors reporting an increase in patients with blocked noses, nasal discharge, cough, sore throat, sneezing, and shortness of breath (O Globo 10/05/2024; Wilson Center 07/10/2024; Radio Agência 12/08/2024). Amazonas is the most affected state, but Corumbá in Mato Grosso do Sul is the most affected municipality, where around 4,245 heat spots have been identified. Wildfires have caused at least 3,500 cases of severe respiratory diseases countrywide, with symptoms including cough, throat irritation, shortness of breath, and asthma (CNN 16/09/2024; Agência Brasil 09/09/2024).

Mental health

Prolonged drought has also been associated with mental health conditions such as anxiety, depression, suicide, and post-traumatic stress disorder (APA 05/2023). These risks are further aggravated by the stress and trauma created by armed groups and limited access to health centres. Between 2019–2022, Brazil recorded a total of 535 suicides among indigenous people. The highest number of cases occurred in Amazonas (208), Mato Grosso do Sul (131), and Roraima (57). The exact reasons for these deaths are not fully known, but research posits that they are likely associated with pollution, land exploitation, and forced displacement to the cities (openDemocracy 21/10/2024; InfoAmazonia 18/01/2018).

The threat of drought becoming more intense each year is making people afraid for their futures. Many have reported anxiety around their community's potential isolation and interrupted access to health, education, and assistance services caused by low river water levels making transportation progressively more difficult. There is also fear of worsening armed group violence, both within families and against communities, regardless of the drought (Nexo Jornal 14/11/2024).

Food security and malnutrition

There is little to no information on food insecurity in the Amazon region of Brazil, but the drought and lack of transportation suggest that food is likely to be scarce. Low river flow has significantly restricted the transport of goods and staple foods, further aggravating the challenges faced by indigenous communities heavily reliant on river transportation and nature for their livelihoods. Reduced river and lake water levels have also severely affected fishing, a critical source of both income and food for many communities. The drought has also affected livestock farming, as dried-up pasturelands cannot sustain livestock (Brasil de Fato 04/11/2024).

According to UNICEF, the combination of drought and wildfires has increased both chronic and acute malnutrition risks, particularly for children aged two–five and pregnant and breastfeeding women, as they cannot access the additional nutrition they require (UNICEF 18/11/2024).

While there are no recent estimates of the level of food insecurity in Brazil, 28% of households (21.6 million) countrywide were food insecure in 2023, of which 3.2 million people (4.1%) faced severe food insecurity (IBGE 30/04/2024). In 2023, around 25.4% of Amazonian households were classified as mildly food insecure, 8.2% faced moderate insecurity, and 9.1% (113,000 people, including children) suffered severe deprivation in food consumption (Vocativo 25/04/2024). This indicates that, prior to the current drought, many people were already suffering malnutrition, making them more vulnerable to the health and food insecurity effects of the 2024 drought.

Education

By November 2024, over 100 schools in indigenous areas and 1,700 schools in non-indigenous areas had closed because of lack of water or inaccessibility (UNICEF 18/11/2024; El País 08/11/2024; Climainfo 26/09/2024). By January 2025, it was unclear whether schools had reopened. Challenging geographical conditions, insufficient state support, and, in some cases, communities' desire to remain isolated meant that, even prior to the drought, access to education was already restricted in many Amazon communities (UNICEF 18/11/2024; Climainfo 26/09/2024).

For some children of the Guarani Mbya indigenous community in the state of Mato Grosso, school is where they receive a daily meal and find protection from forced recruitment and other risks, making it a vital resource for these communities. Drought hinders these children's ability to reach schools, disrupting not only their education but also their access to food and security (Intercept 18/11/2024). While the number of children affected by drought in Brazil is not available, UNICEF estimates that over 420,000 children have been affected by dangerous water scarcity levels and drought conditions across Brazil, Colombia, and Peru, including impacts on education, health, and food security (UNICEF 06/11/2024).

Protection

Water scarcity increases protection risks, particularly for women and children, as they are forced to collect water in areas often controlled by armed groups, leaving them vulnerable to recruitment and exploitation (UNICEF 18/11/2024). During the high-water season, 89% of non-indigenous localities (2,981) are located more than 5km away of the nearest major body of water, while 92% of indigenous villages (2,310) tend to be situated within 5km of bodies

of water (Santos de Lima et. al 12/07/2024). Given that springs and wells have dried up or are contaminated, however, people (often women) are forced to walk longer distances, exposing them to more protection risks – including abuse and gender violence – and causing increased anxiety (Nexo Jornal 14/11/2024).

The states of Brazil's Amazon region are affected by armed groups, drug traffickers, and illegal gold miners, who invade protected areas and indigenous territories to exploit natural resources. These groups take advantage of the region's remote geography and limited state presence to carry out their activities, resulting in restricted community mobility and constrained humanitarian access (InfoAmazonia 03/08/2023; Insight Crime 08/11/2022). Communities' isolation as a result of violence or lack of transportation also makes women more vulnerable to domestic violence (Nexo Jornal 14/11/2024).

Culture and traditions

Drought also affects cultural traditions and rituals, as environmental hazards affect communities' routines, daily life, food production, ritual calendar, and transmission of ancestral knowledge. Nature plays a central role in the customs and traditions of indigenous peoples and water scarcity threatens their sacred territories, posing a risk to both physical and cultural survival (UNICEF 18/11/2024; Imaflora 19/08/2024).

Livelihoods

Drought disrupts key activities in the Amazon, including fishing and agriculture. In Manaus, slowed river flow causes blockages that reduce sunlight for algae, affecting water oxygenation and increasing acidity. This lack of oxygen and higher acidity kills fish crucial to local nutrition and livelihoods (BNC 16/11/2024; Jornal Nacional 15/11/2024; Healthline 16/09/2020).

Drought may also drive people to engage in illegal gold mining or other activities to generate income, especially when traditional livelihoods such as fishing and agriculture are disrupted by the lack of river water. Some indigenous communities have been forced to lease their lands to armed groups for drug plantations or mining. Those who resist risk being killed. In 2023, the Yanomami indigenous people in Roraima were attacked by miners, alongside the Guajajara people in Maranhão and the Tembé and Turiwara peoples in northeast Pará, where armed violence has also been recorded (CIMI 21/07/2024; Azmina 30/07/2024; InfoAmazonia 03/08/2023).

The second corn crop season in Mato Grosso, Pará, and Rondonia, typically harvested between June–September, is benefitting from the current rainy season (USDA accessed 16/12/2024). The prolonged drought conditions experienced in 2023–2024, however, mean

that farmers and pastoralists may require more than one season to recover their losses and restore livelihoods, particularly smallholder farmers with limited access to productive inputs. Temperatures are also expected to remain above average in this same period, potentially increasing evapotranspiration and reducing soil moisture, leading to below-average yields (IRI accessed 16/12/2024).

DRIVERS OF THE CRISIS

Climate change and El Niño

The severe drought affecting the Amazon basin in 2023–2024 was largely driven by climate change, particularly through the intensification of El Niño and Southern Oscillation events and rising global temperatures. El Niño and Southern Oscillation is a recurring climate pattern involving changes in water temperature in the central and eastern tropical Pacific Ocean. El Niño, in particular, is a climate pattern involving the warming of surface water and can cause drought in some regions of the world and rain in others (NOAA accessed 13/01/2024; Natgeo 09/12/2024). While El Niño, which usually brings below-average precipitation in the Amazon region, contributed to reduced rainfall, the primary driver of the drought is the warming climate, which has made agricultural drought events significantly more likely (Climate Diplomacy 20/11/2024; Espinoza et al. 06/04/2024; WWA 24/01/2024).

Drought in the Amazon is expected to become more frequent and severe as result of climate change (Agência Brasil 17/10/2024; INPA 04/09/2024). This pattern of recurring drought will likely disrupt ecosystems, agriculture, and communities in the Amazon, creating long-term challenges for environmental stability and human livelihoods.

Deforestation and land degradation

Official data indicates that deforestation decreased in 2024 compared to 2022–2023, but still remains a widespread practice in the Amazon. In 2024, it is estimated that around 6,288km² (2,428mi²) of forest was destroyed in the Brazilian Amazon (LA Times 08/11/2024). From 2001–2020, the Amazon lost over 54.2 million hectares of forest, 9% of its total forested area, roughly equivalent to the size of France (InfoAmazonia 21/03/2023).

Deforestation alters rainfall patterns, leading to degradation even in areas far from the clearing. In Brazil, on average, for every 100 trees felled as a result of deforestation, an extra 22 trees die in more distant regions as a result of water scarcity (Wilson Center 07/10/2024). Agriculture and cattle ranching are the primary drivers of deforestation in the Brazilian Amazon. Cattle ranching, in particular, is responsible for 80% of the region's

current deforestation, while soybean farming also contributes significantly (DGB accessed 13/12/2024; IISD 07/02/2024). In 2023, 44.5% of Brazil's cattle (104.3 million heads) were found in the Brazilian Amazon, affecting endemic nature and biodiversity (Haddad et al. 07/06/2024). Deforestation is also carried out by armed groups, who use the land for illegal construction and crops (InfoAmazonia 24/08/2023).

Mining

Between 2019–2023, the Brazilian Government allowed mining and agribusiness to grow within indigenous reserves and conservation units (El País 12/12/2021; Mongabay 31/12/2019). Illegal mining, particularly illegal gold mining, has become a recurrent activity in northern Brazil, especially on the borders of the Venezuelan Amazon, Suriname, and Guyana. Illegal miners use a route through Brazil to reach the Atlantic (Insight Crime 08/11/2022; MJSP 30/10/2020). Mining has severe environmental impacts, as the activity often involves deforestation, erosion, contamination and alteration of soil profiles, and contamination of local streams and wetlands with heavy metals and toxins used to extract materials (Amazon Frontlines 01/2024; Haddaway et al. 21/02/2019). These effects make the soil more vulnerable to drought and affect its capacity to recover from extreme weather events.

AGGRAVATING FACTORS

Wildfires

Fires are common in Brazil during the dry season, usually between June–November (COIAB 09/2024). The Government allows the burning of a percentage of land for agricultural processes (France 24 01/12/2024; Mighty Earth accessed 27/11/2024). In 2024, however, the number of fires drastically increased. It is suspected that many of these were intentional fires, started with the aim of increasing deforested land for agricultural and cattle purposes. To make way for livestock, ranchers often start large fires that devastate thousands of plants, animals, and habitats; this is often the cause of wildfires (DGB accessed 13/12/2024; IISD 07/02/2024).

Throughout 2024, according to the National Institute for Space Research, satellite imaging detected 140,328 fires, an increase of 43.7% compared to the same period in 2023 (93,938 outbreaks) and the highest number recorded since 2007 (more than 181,000 outbreaks) (France 24 01/01/2025). This figure (140,328 fires) is 43.5% higher than the average number of outbreaks for this period between 2019–2023 (94,057 outbreaks on average) (WWF 04/12/2024). Between January–October 2024, 37.42 million acres (150,000km²) of Brazil's Amazon burnt (Rainforest Foundation accessed 13/12/2024). Wildfires affected more than 680 municipalities across Brazil (approximately 18.9 million people), resulted in the evacuation of at least 10,700 people, and caused significant damage to indigenous communities already affected by drought in the Amazon rainforest (USAID 31/10/2024).

In the Amazon, wildfires aggravate the effects of drought by destroying vegetation and making the soil less able to retain moisture. Without vegetation to slow down and absorb rain, water runs off more quickly, reducing the amount that infiltrates the soil to replenish groundwater supplies. This accelerates the drying out of the landscape, the recovery of which may take years or decades.

Armed groups

There are several armed groups vying for control over the Brazilian Amazon for illegal activities. Armed narcotraffic groups use the maritime route in Pará state, which connects the Amazon River with the Atlantic Ocean, to transport drugs, gold, and other products of illegal activities (InfoAmazonia 24/08/2024). The country's two largest criminal groups, the Primeiro Comando da Capital and the Comando Vermelho, are active in the Amazon states, vying for territorial control (InfoAmazonia 03/08/2023). Indigenous people are often forcibly displaced or choose to leave their territories to escape violence caused by armed groups, illegal mining, drug trafficking, fishing, predatory hunting, and conflicts with logging companies (Azmina 22/07/2024).

Territorial control conflict

In the southern Brazilian state of Mato Grosso, drought-affected people are also affected by violent agrarian disputes. Since July 2024, armed groups and indigenous communities have been disputing the land, with many indigenous people injured in clashes (France 24 27/08/2024). In Mato Grosso do Sul, according to the 2017 Agricultural Atlas, 92% of the land is privately owned, the majority of which is controlled by landowners and large agribusinesses. Indigenous communities have limited access to land for farming and sustaining traditional ways of life (Intercept 18/11/2024; France 24 27/08/2024). Agrobusinesses also contaminate available water, posing a further threat to communities.

HUMANITARIAN RESPONSE

On 21 January 2025, the lack of rain caused the state of Pernambuco to declare a state of emergency in 117 municipalities; other states in northeast Brazil – including Maranhão in the Amazon region – have also declared a state of emergency (O Globo 100 22/01/2025).

The Government has led the response to the current rainy season, declaring emergencies in many cities in the southeast of the country, but none in the Amazon region (MIDR 22/01/2025). There is little information on the specific response and needs in the Amazon states.

The Chico Mendes Institute for Biodiversity Conservation and the Brazilian Government implemented the Amazon Drought Emergency 2024 programme, which intends to reach 61 protected territories in the states of Acre, Amapá, Amazonas, Maranhão, Pará, and Rondonia (MMA 17/12/2024).

With regards to humanitarian assistance, UNICEF distributed food, water purifiers, and water tanks in November 2024 to aid affected families (UNICEF 18/11/2024). In this response, UNICEF prioritised five indigenous health districts (Alto 6 Rio Jurua, Alto Rio Solimoes, Medio Rio Purus, Medio Rio Solimoes, Porto Velho, and Vale do Javari) and six municipalities (Benjamin Constant, Cruzeiro do Sul, Humaita, Labrea, Tabatingua, and Tefe) in the southwest of the Brazilian Amazon (UNICEF 18/11/2024).

The International Federation of Red Cross and Red Crescent Societies usually plays an active role coordinating with the Brazilian Red Cross, UN organisations, and the Government in responding to emergencies and providing humanitarian assistance (IFRC 07/10/2024).