

### CRISIS IMPACT OVERVIEW

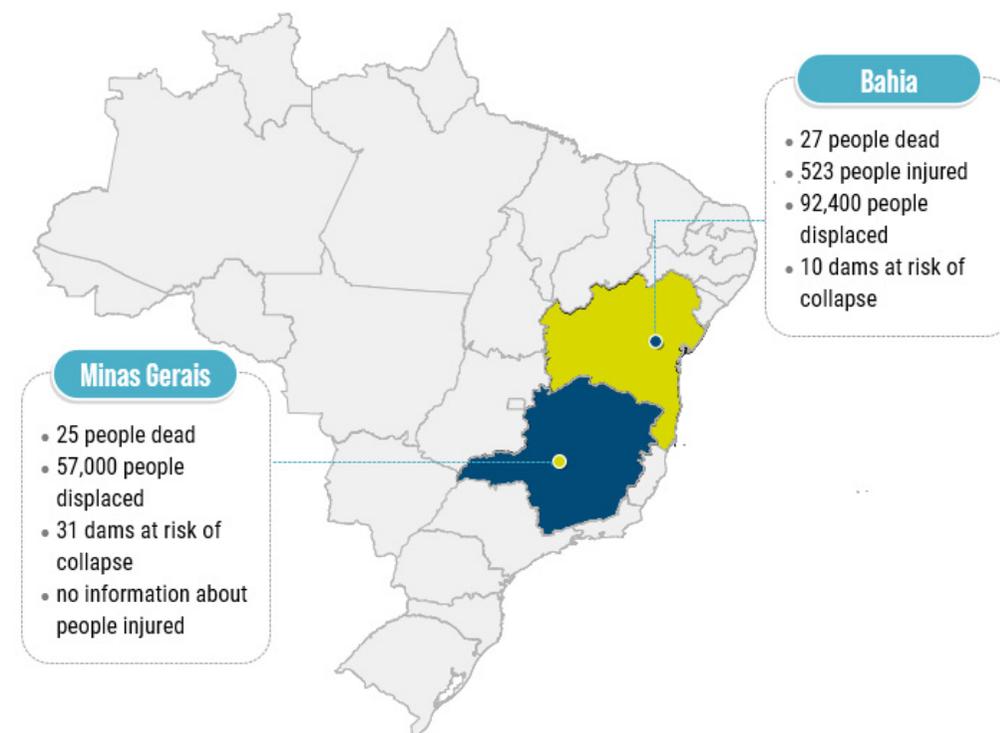
Because of a meteorological phenomenon known as the South Atlantic Convergence Zone (SACZ), the Brazilian states of Bahia and Minas Gerais have been experiencing heavy rainfall since early December. The rains have caused flooding in 164 municipalities in Bahia and 341 in Minas Gerais (UNICEF 07/01/2022; BBC 12/01/2022; CNN 08/01/2022).

As at 25 January in Bahia, 27 people had died, and 523 were injured as a result of floods and landslides. At least 92,400 people were displaced (IFRC 24/01/2022). As at 30 January in Minas Gerais, 25 people had died, and around 57,000 were displaced (Hoje Em Dia 30/01/2022). At least 410 municipalities in Minas Gerais and 155 municipalities in Bahia declared a state of emergency because of the floods (IFRC 24/01/2022; Hoje Em Dia 30/01/2022). As at 25 January, the floods and landslides had affected more than 965,000 people in both states, with over 101,000 in need of humanitarian assistance (IFRC 24/01/2022; ECHO 17/01/2022; UNICEF 07/01/2022).

The SACZ is characterised by a persistent cloud band that becomes stationary and generates heavy rainfall every October–April (Escobar and Reboita 18/12/2021). The resulting rains in 2021 began in November. Such heavy rainfall increased the levels of several rivers, which led to the bursting of two dams between 25–26 December near the municipalities of Vitoria da Conquista and Jussiape in Bahia (Firstpost 28/12/2021; IFRC 29/12/2021). On 8 January, another dam in Nova Lima in Minas Gerais state overflowed (BBC 12/01/2022).

Between December 2021 and January 2022, the SACZ had a greater impact because of (1) heavier rainfall than forecasted by the Brazilian Meteorological Institute, (2) the La Niña phenomenon, characterised in Brazil by intense and abundant rainfall and increased river flow (Boligon Minuzzi et al. 12/2007), and (3) the passage of a subtropical cyclone on 7 December, which flooded several municipalities in Bahia (BBC 29/12/2021 and 12/01/2022; INMET accessed 21/01/2022). In Belo Horizonte, the capital of Minas Gerais state, the accumulated rainfall between 1–10 January 2022 totalled 411mm, when the average for the whole month was 329mm (INMET 10/01/2022; BBC 12/01/2022). For Salvador, the capital of Bahia, the Brazilian Meteorological Institute forecasted a cumulative rainfall of 300mm for January, when the historical average was 65mm (Canal Rural 07/01/2022; Climatempo accessed 25/01/2022). During the first ten days of January, Bahia had an accumulated rainfall of 100mm (INMET 10/01/2022).

MAP 1. People affected and damages in the states of Bahia and Minas Gerais as at 30 January 2022



Source: ACAPS using OCHA 06/10/2020, ECHO 17/01/2022, and IFRC 24/01/2022

## ANTICIPATED SCOPE AND SCALE

There are 31 dams in Minas Gerais and ten in Bahia that are in a state of emergency given the risk of collapse (Diário Do Comércio 25/01/2022; Insurance Journal 12/01/2022; O Globo 27/12/2022). In Minas Gerais, two dams have collapsed in the last six years. One of these dams collapsed in 2019 and left 270 dead in the municipality of Brumadinho (Bloomberg 11/01/2022; ECHO 13/01/2022). Dams in Brazil suffered more incidents in 2020 (44) than in 2011–2019 combined (39). Dams are probably increasingly failing because they are often not designed for the significant increase in rainfall Brazil has been experiencing recently (RSB 2021). Most of these dams are located near highly populated centres, so if they overflow or collapse, the number of displaced people, deaths, and injuries in nearby populations will dramatically increase (BNamericas 12/01/2022).

January–April are the rainiest months of the year for Minas Gerais and Bahia (Datos Mundial accessed 13/01/2022 a; Datos Mundial accessed 13/01/2022 b). The average daily rainfall is 2.7mm between May–December and 5.4mm between January–April (Datos Mundial accessed 13/01/2022 a). As at 27 January, the Cachoeira, das Velhas, Doce, Gabo Bravo, Jucuruçu, Paraopeba, and São Francisco Rivers remained at risk of flooding (Brasil de Fato 25/01/2022; O Globo 27/12/2021; Estado de Minas 12/01/2022; Metro1 10/01/2022). If the rains are sustained throughout the first months of 2022, the banks of several rivers in Bahia and Minas Gerais will likely break, increasing the number of displaced people.

## HUMANITARIAN CONSTRAINTS

In Bahia, the main roads have reopened early January after being blocked by overflowing rivers and broken dams (UNICEF 07/01/2022). In Minas Gerais, 13 roads were still completely blocked and 80 partially blocked as at 31 January 2022 (Comando de Policiamento Rodoviário accessed 31/01/2022).

As at 14 January, some villages were still flooded, and access remained limited (Instituto Guaicuy 14/01/2022; UNICEF 07/01/2022; Brasil de Fato 09/12/2022).

## CRISIS IMPACT

### Shelter and NFIs

Floods and landslides have displaced at least 147,700 people in Bahia and Minas Gerais (ECHO 13/01/2022). As at 11 January, the Brazilian State had activated 36 temporary shelters, housing 10,000 IDPs (Estado de Minas 11/01/2022). The rest of the displaced people stayed in makeshift shelters or the homes of relatives or acquaintances (UNICEF 07/01/2022; Folha de S. Paulo 27/12/2021; Estado de Minas 11/01/2022). Some schools have also been used as temporary shelters. These schools do not have sufficient kitchen facilities, beds, and bathrooms for the displaced population (Educação 11/01/2022; UNICEF 07/01/2022). Shelters have been working at maximum capacity, making social distancing difficult, and there has been a shortage of hygiene items, toilets, and gender-segregated showers (UNICEF 07/01/2022). Many families are unable to return to their homes because their houses remain flooded, are damaged, or are at risk of collapsing. Approximately 36,000 people are expected to remain in temporary shelters for several weeks until their homes can be rebuilt (AgênciaBrasil 15/01/2022; Poder360 16/01/2022; O Globo 12/01/2022).

### WASH

Floods caused damage to water and sewerage systems, putting the affected population at risk of waterborne diseases (IFCR 29/12/2021). Shelters are contaminated with solid waste and plastic, and there is stagnant water on roads and public spaces, putting community members at risk of vector-borne diseases (UNICEF 07/01/2022). Poor sanitation systems have led to cases of diarrhoea in some areas of Bahia and Minas Gerais (IFCR 29/12/2021). Existing shelters lack safe drinking water and sufficient hygiene and sanitation facilities for displaced people. UNICEF has reported a lack of sanitary towels, nappies, soap, and other basic sanitation items for women (UNICEF 07/01/2022).

### Health

Medical centres have focused on treating over 523 people injured by the floods (ECHO 03/01/2022). The capacity of medical centres is not at its limit yet, but facilities are struggling to provide emergency care (IFCR 29/12/2021).

There is a risk of transmission of diseases such as dengue and Zika resulting from the shortage and a lack of use of repellent. Other diseases, such as influenza A and COVID-19, are also likely to spread, as there is a shortage of soap, disinfecting alcohol, and masks.

People seeking help in health facilities because of respiratory infections increased by 400% as the number of flu and COVID-19 cases rose between November–December (UNICEF 07/01/2022; *Criativa* 21/12/2021). Normally, during the rainy season, there is an increase in respiratory infections in Brazil. Medical staff in Bahia and Minas Gerais say that given the floods, they expect an increase in people needing treatment for other illnesses, which could affect their capacity to provide care (*Criativa* 21/12/2021; *Folha de S. Paulo* 23/12/2021).

The occupation of intensive care and nursing care beds by COVID-19 patients in Minas Gerais exceeded 70% in January – a situation that had not occurred since April 2021. This development also prompted the authorities to raise a red alert (O *Globo* 12/01/2022). As at 31 January, intensive care bed occupancy for COVID-19 patients was at approximately 84%, but medical authorities confirmed there were enough beds to face the increase of cases (O *Tempo* 31/01/2022; O *Globo* 27/01/2022). In Bahia, the occupancy of hospital beds was over 93% in the paediatric sector and over 74% for adults (O *Globo* 31/01/2022). In both states, medical authorities said the high percentages were the result of an increase in seasonal flu cases aggravated by the attention required by those injured by floods (*Correio* 17/01/2022; *BNews* 18/01/2022).

### Food insecurity

Food security is compromised, as 75% of the territory affected by the rains is rural, and most of the land in the affected states is used for food production (O *Popular* 10/01/2021). Some municipalities in Minas Gerais and Bahia are already experiencing food shortages because of the destruction of their crops (*Record TV* 19/01/2022; *Correio* 06/01/2022). There are about 100 road connection points obstructed by floods and landslides, making it difficult for commercial goods to enter the affected zones (O *Globo* 20/01/2022).

Heavy rains and the subtropical cyclone of 7 December caused flooding, which led to crop losses and prevented the harvesting and replanting of crops (O *Popular* 10/01/2021; *Hoje Emdia* 06/01/2021). In Minas Gerais, producers of vegetables have lost large parts or all of their production, leading to reduced availability and higher food prices (*Hoje Emdia* 06/01/2021). The total surface area for crop production affected was unknown as at 31 January. The main food security risk is linked to the fact that most of the production in this area is for subsistence farming or for local markets (O *Popular* 10/01/2021). The destruction of roads and bridges may further restrict access to food for the population (*IFCR* 29/12/2021; O *Popular* 10/01/2021).

## AGGRAVATING FACTORS

### COVID-19 and seasonal flu

Amid a new wave of COVID-19 cases, floods in Minas Gerais and Bahia could put a strain on healthcare. Since the end of December, COVID-19 cases in Bahia and Minas Gerais have increased. Minas Gerais went from 200–400 cases per day in early December to 28,505 new cases on 31 January 2022. Bahia went from 500–600 cases per day in early December to 6,305 new cases on 31 January 2022 (O *Globo* accessed 31/01/2022). Although more than 70% of the population in Bahia and Minas Gerais has received at least one dose of the COVID-19 vaccine (O *Globo* accessed 13/12/2021), the floods could lead to an increase in cases and later hospitalisations, further stretching the health system's capacity to treat other diseases or injuries.

Floods have damaged stored COVID-19 vaccines in several locations, which could slow the vaccination campaign at the peak of the fourth wave of COVID-19 infections.

Similarly, medical institutions in Brazil have reported several cases of people infected with both the flu and COVID-19 (*The Sydney Morning Herald* 05/01/2022). The rainy season tends to increase the incidence of respiratory illnesses. At the same time, it limits the adoption of social distancing and protective measures against COVID-19, making an increase in respiratory illnesses likely (*The Washington Post* 04/01/2022). With this likelihood, the health system may face an increase in admitted patients over the coming weeks.

### Poverty and inflation

In Minas Gerais, at least 3.5 million people live in poverty and 1.5 million in extreme poverty. These numbers represent about 25% of the state's population (*Brasil de Fato* 24/06/2021). Bahia is the Brazilian state with the highest number of people living in extreme poverty. About 40% live in poverty and 12% in extreme poverty (*A Tarde* 12/11/2020). Poverty is much more pronounced among the rural population (*IFAD* 10/2017; *Observatório das Desigualdades* 11/05/2021). Given that most of the flooding and landslides have affected rural areas, the poor are the most affected. Road blockades and shortages of food and other goods have led to higher inflation than expected, resulting in significant increases in the price of everyday consumer goods (O *Globo* 05/01/2022). Food shortages are already evident among IDPs, and there are shortages even among the nondisplaced population because of the loss of livelihoods and rising prices (*BBC* 07/01/2022; *Hoje em Dia* 20/01/2022).

## Unplanned urbanisation

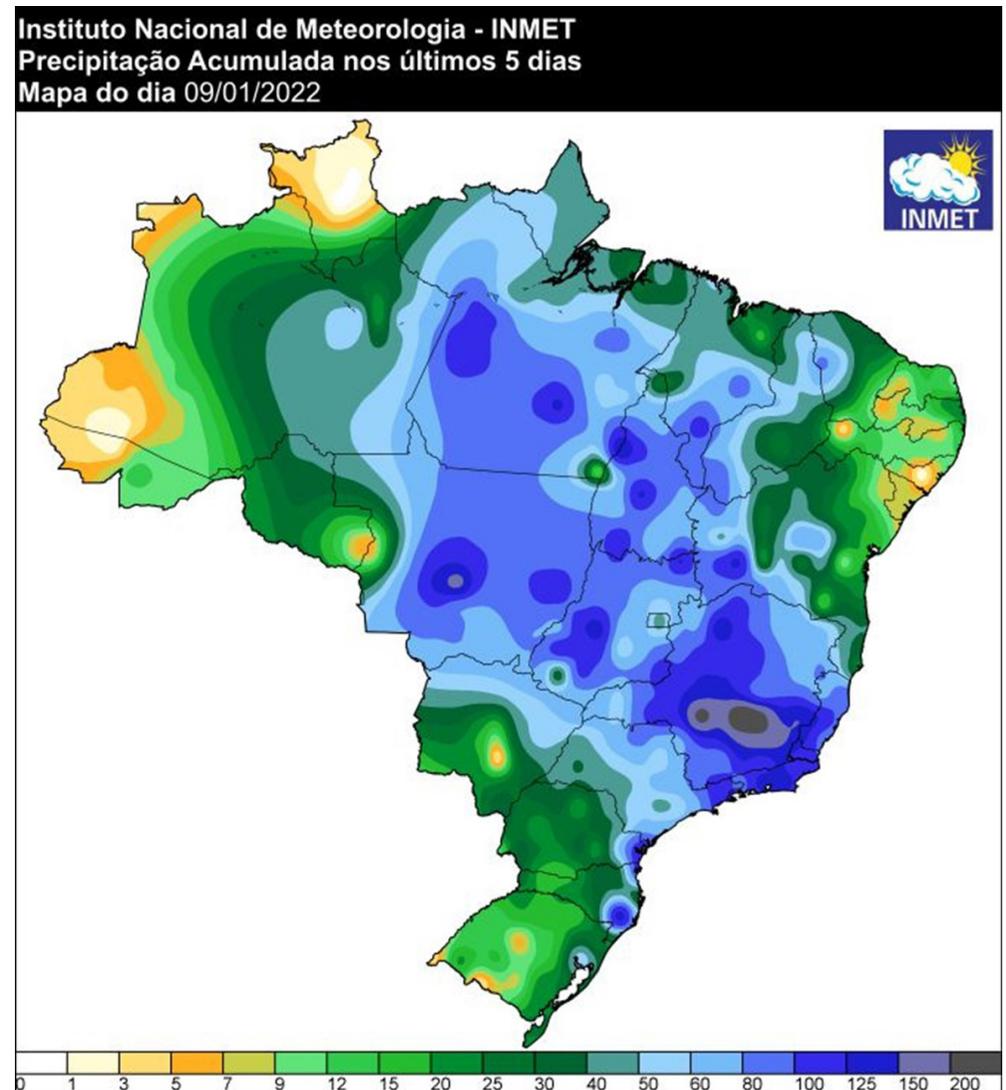
The cities of Belo Horizonte and Minas Gerais have undergone major urban expansions over the last 30 years. Space for new buildings has been created by covering water corridors that previously allowed excess rainfall to flow into rivers. Since the new constructions do not provide areas for rainwater run-off, it worsens flooding in the face of natural phenomena such as SACZ. As recently as 2020, the Legislative Assembly of Minas Gerais passed a bill that requires new buildings to provide space for water run-offs (O Globo 29/01/2020; Edição do Brasil 07/02/2020; Oliveira Castro et al. 26/11/2015).

In more rural areas, many villages are built in an unplanned manner, without permits and often in areas at risk of flooding or landslides, which increases the risk of collapse of the structures and injuries or deaths for the affected population in the event of natural disasters (Borges de Hora et al. 08/2009; Estado de Minas Gerais 27/09/2016).

## LIMITATIONS AND INFORMATION GAPS

As at 31 January, the Governments of Bahia and Minas Gerais had conducted two damage assessments (one in December and one in mid-January). That said, the situation is changing daily, with rainfall continuing. A severity assessment is difficult given this dynamic situation. The allocation of governmental resources is based on official damage assessments, so newly affected groups might not receive assistance before the Government conducts a new assessment (IFR 24/01/2022). Some NGOs have criticised the Brazilian Government for its handling of the crisis. The Government, in turn, rejects this criticism as politically motivated. The lack of up-to-date assessments is also likely to lead to the underreporting of the number of people affected (GRI 14/01/2022; JC 28/12/2021).

MAP 2. Accumulated rain between 5–9 January 2022 in Brazil



Source: INMET 10/01/2022