

# INDONESIA

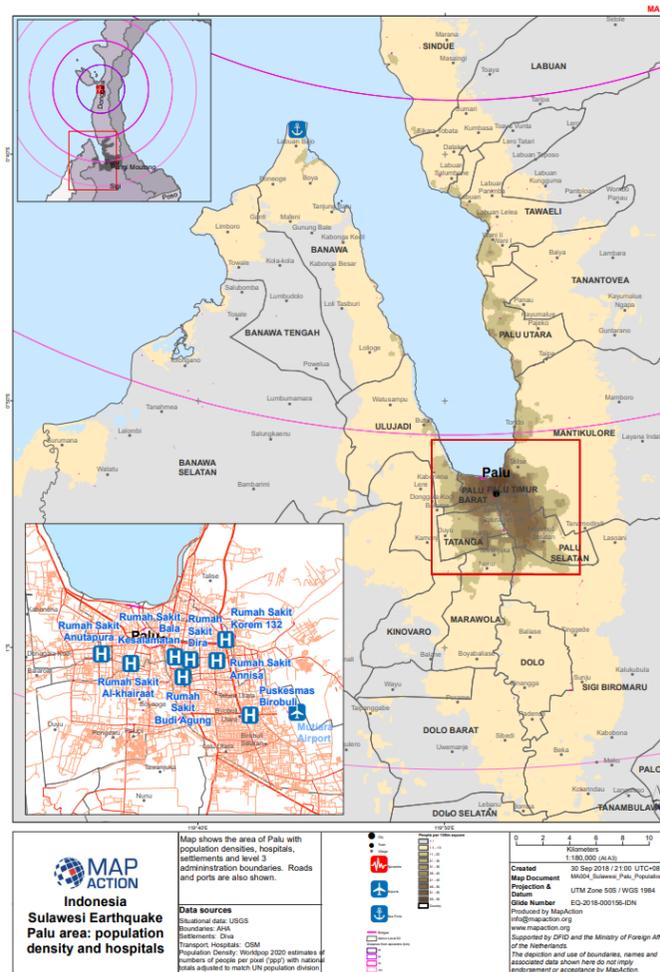
## Earthquake & Tsunami

Several earthquakes struck Central Sulawesi province from 28–29 September. The strongest had a magnitude of 7.5 and triggered a tsunami that hit land at a speed of 800km per hour with waves of up to 6m. Land liquefaction caused by the earthquake also had serious humanitarian consequences as the fate of two villages with approximately 5,000 residents remains uncertain. At least 74,000 people have been displaced and 2,010 people have died, and these numbers continue to rise. At least 616,000 people have been affected.

### NEED FOR INTERNATIONAL ASSISTANCE



### IMPACT



### Limitations

Casualty numbers vary between sources and continue to rise at the time of writing. Additionally, several different crises have affected areas of Palu and more detail about each individual crisis is merited, but beyond the scope of this briefing note.

## Anticipated scope and scale

This series of disasters continues to evolve in scope and scale. **There is a strong likelihood that the death toll and injury figures will rise further in the affected areas.** The forecasted weather increases risks stemming from waterborne and vector-borne diseases. Search-and-rescue operations are set to end on 11 October, which means the total number of dead and missing may not be confirmed for quite some time. Additionally, the Indonesian government's decision to order all foreign humanitarian workers to leave the quake zone may increase co-ordination capacity in the longer term, but it could lead to confusion, frustration and a delay in aid to the affected areas in the immediate term.

## Key priorities



**+82,000**  
displaced



**+2,000**  
fatalities



**+2,500**  
serious injuries



**+67,000**  
houses damaged or destroyed

## Humanitarian constraints



Several factors constrain humanitarian access to the affected areas. These include blocked roads to more remote parts of Donggala; the risk of landslides and further land liquefaction; bureaucratic restraints such as the ban on international aid staff in the disaster zone; and a bottleneck at Palu airport.

## Crisis impact

On 28 September, a 7.4 magnitude earthquake and at least 494 aftershocks hit the regency of Donggala, in the province of Central Sulawesi, Indonesia. The largest earthquake, in combination with a landslide on the ocean floor (seaslide), triggered a near-field tsunami that struck Palu Bay in Palu city and the western coast of the Donggala regency. The tsunami struck land at a speed of 800km per hour with waves of up to 6m. The earthquake also triggered significant levels of land liquification across an estimated 430 hectares of land in the Balaroa, Petobo and Biromaru areas of Palu. Local infrastructure has been devastated. The earthquake and tsunami caused mudslides in areas of south Palu city and on 3 October, Mount Soputan in North Sulawesi erupted (AHA Centre 08/10/2018, BNPB 03/10/2018, The Jakarta Post 01/10/2018, IFRC 29/09/2018).

At least 616,600 people are thought to have been affected by the earthquake, tsunami and land liquefaction (WHO 08/10/2018). Over 82,000 people have been reported displaced, many to IDP camps in Mamuju and Makassar, and 2,010 deaths have been confirmed as of 9 October. Around 10,679 people have presented severe or mild injuries (The Humanitarian Country Team Indonesia 09/10/2018, The Independent 09/10/2018, The Washington Post 09/10/2018, AHA 08/10/2018, OCHA 08/10/2018, WHO 08/10/2018). The number of casualties is expected to rise, particularly in Balaroa and Petobo, two of the worst affected areas in Palu, where 5,000 people are believed missing due to land liquefaction that caused entire villages to sink into the earth (The Guardian 08/10/2018, Benar News 07/10/2018). The deadline for search-and-rescue efforts is 11 October, after which these two areas will be designated as mass graves. Some 200,000 people in Sulawesi require humanitarian assistance, and this number is also expected to increase (The Guardian 08/10/2018, Benar News 07/10/2018, AFP 06/10/2018). Several access issues continue to pose significant challenges to humanitarian workers.

On 9 October, the Indonesian government told international aid staff working in the disaster zone to leave the area. International staff not working in partnership with local NGOs must adhere to the strict registration requirements set out by the Indonesian government or leave (The Telegraph 9/10/2018, The Guardian 9/10/2018).

**WASH:** The Indonesian government has identified water treatment kits as a priority need (OCHA 08/10/2018). Initial assessments suggest 37% of IDPs have no access to clean water (WHO 08/10/2018). The primary water sources previously used by the local communities were boreholes, many of which may now be contaminated as the tsunami and effluent waters are likely to have seeped into borehole openings. Reports suggest a number of wells have also been damaged (AHA Centre 07/10/2018). In addition, water pipes were damaged in urban areas in Palu and Donggala (The Humanitarian Country Team Indonesia 09/10/2018). The tsunami destroyed a large part of Palu's sanitation infrastructure (Al Jazeera 07/10/2018).

**Shelter & NFI:** Current estimates suggest that roughly 66,926 houses have been damaged, almost 99% of which are located in Central Sulawesi (AHA Centre 07/10/2018). The extent of damage to these houses is not yet clear, however. In Balaroa and Petobo, the two areas severely affected by liquefaction, mud has covered around 430 hectares (4.3km<sup>2</sup>) (AHA 08/10/2018). People are reportedly sleeping outside at night and returning to their homes during the day, and more emergency shelters are required (The Humanitarian Country Team Indonesia, 09/10/2018).

The supply of fuel, which was critically low in the days following the earthquakes and tsunami, has now improved and now covers around 70% of local demand (Logistics cluster 07/10/2018). The government of Indonesia has requested tents, generators and shelter kits as a priority need (OCHA 08/10/2018).

**Health:** Some 2,549 people were severely injured and 8,130 people have presented mild injuries across Central Sulawesi (WHO 08/10/2018). Some of these individuals now have badly infected wounds, but reports indicate antibiotics are available (AFP 06/10/2018). Around 68% of assessed health facilities in and around Palu bay are reportedly not functioning (AHA Centre 07/10/2018).

Diarrhoea, skin rashes and respiratory infection appear to be the biggest health issues affecting survivors. The unhygienic conditions in makeshift shelters contributes to these conditions (IRIN 09/10/2018, Al Jazeera 07/10/2018, Benar News 5/10/2018). However, serious threats from tuberculosis, waterborne diseases including cholera and vector-borne diseases such as malaria pose significant health risks (WHO 4/10/2018). The number of corpses in the rubble, though not presenting a risk to the general population, could pose risks of bloodborne viruses infecting the many search-and-rescue teams that are removing and handling them. The decomposing bodies also present health risks, as they encourage disease vectors such as rats and mosquitos (AFP 06/10/2018).

Psychosocial support interventions are required as trauma from the earthquakes and tsunami have left children and adults struggling to cope (AHA Centre 08/10/2018, Save the Children 07/10/2018).

**Food:** Initial assessments found that food appears to be an ongoing need even though relief efforts are ramping up. People report have no food or running out of food. Supply into the worst affected areas has been relatively limited and low-quality foods are being sold at high prices due to strong demand (The Humanitarian Country Team Indonesia, 09/10/2018 AHA Centre 07/10/2018).

Emergency communal kitchens have been established at a number of sites. However, a lack of sanitation, toilets, water supply and food hygiene are causing concern about health risks related to mishandling of food. There are also reports that some IDPs are drinking water that is not boiled (WHO 08/10/2018).

**Education:** Some 2,736 schools have been damaged in Central Sulawesi, according to the Ministry of Education; however, disaggregated data on their level of damage is not available (AHA 08/10/2018). Some schools have reopened simply to count how many pupils are safe (The Guardian 08/10/2018). At least 22 teachers have been killed across Palu, while 14 remain missing (Reuters 08/10/2018).

**Protection:** Several children were reportedly separated from their caregivers during the tsunami. There are reports of children turning up alone at hospitals (BBC 01/10/2018). A general lack of law and order may increase the vulnerability of certain groups, while limited resources may lead to fighting among civilians.

### Impact on critical infrastructure

The telecommunications network is slowly being brought back up to full service, with 2G and 4G networks now operating at about 60% of full capacity in and around Palu (AHA Centre 07/10/2018). Electricity is also gradually being restored across the city (Logistics cluster 07/10/2018). Fuel shortages have been vastly reduced and local businesses and shops are slowly beginning to reopen (OCHA 08/10/2018).

### Humanitarian and operational constraints

Access continues to be a significant issue for humanitarian organisations, owing to both bureaucratic restraints as well as physical ones. Landslides remain a major risk in some of the most highly populated areas of central Sulawesi (Map Action 07/10/2018). Access to Palu continues to be difficult and the four districts of Kulawi, South Kulawi, Paloko and Pipikoro are still isolated from assistance (WHO 08/10/2018). A number of bridges have collapsed and infrastructure is severely damaged (Reuters 04/10/2018). Storage space at Palu airport is limited and some goods are being stored on the tarmac, which is creating a bottleneck for the onward delivery of relief. (Logistics cluster 07/10/2018)

Following several bureaucratic measures to limit the presence of foreign aid workers in Indonesia, including prohibiting them from deploying straight to the field and making registration in Jakarta mandatory, all humanitarian staff working for an international NGO were forced to withdraw from the disaster-affected area as of 9 October. International NGOs may provide aid, but must coordinate through pre-existing local partners or the Indonesian Red Cross. Concerns have emerged about the wellbeing of local staff and their capacity to continue such high-intensity operations without relief periods that would be provided by international staff (The Guardian 9/10/2018, AHA Centre 08/10/2018).

## Aggravating factors

### Recent earthquakes and volcanic eruptions

Indonesia, which is part of the 'Pacific ring of fire', has been hit by several earthquakes in the past two months as well as volcanic eruptions and tsunamis in recent years (The Guardian 30/09/2018). In August, several major earthquakes killed up to 550 people in Lombok regency (The Guardian 30/09/2018). The Indonesian national disaster agency released a statement on 1 October, reminding the media that thousands of survivors from the Lombok and Sumbawa earthquakes were still in need of humanitarian assistance (BNPB 01/10/2018). Multiple humanitarian disasters are stretching the resources of the Indonesian government. Indonesia has suffered the most casualties from tsunamis in the world, and roughly 90% of all earthquakes strike the country (UNDAC 01/10/2018).

Mount Soputan, located in North Sulawesi, erupted on 3 October, creating a 4,000m volcanic ash column (BNPB 03/10/2018). The eruption did not produce any direct humanitarian impacts, but the sequence of natural disasters in the area is likely to re-traumatise the local population and increase the need for psychosocial as well as traditional medical interventions.

### Weather

Above-average rainfall and warmer-than-average temperatures are expected between 1–15 October in Central Sulawesi, as the rainy season begins in late October. These weather conditions will favour the breeding conditions for mosquitos, which increase the vectors for blood-borne diseases such as malaria and chikungunya. WHO predicts an increase in the transmission of these diseases in the coming weeks. The wet weather may also encourage mudslides. (WHO 08/10/2018, AHA Centre 07/10/2018, Indonesia Travel accessed 09/10/2018)

### Population density

The tsunami hit the most heavily populated districts on the bay of Palu (MapAction 30/09/2018). The shape of the narrow bay around which Palu is built intensified the force of the tsunami waters as they hit land (Deutsche Welle 30/09/2018; Time 30/09/2018).

### Type of housing/infrastructure

Few Indonesian building regulations address earthquake risks, and there are not enough resources or qualified construction workers to ensure that infrastructure and building construction meet quality standards. Poor-quality structures are susceptible to earthquake damage (World Conference on Earthquake Engineering 10/2008).

## Political stability and security

Christians and Muslims clashed violently in Palu in the past. Although the situation has calmed in the last decade, inter-religious strife may re-emerge in such a stressful and resource-deficient environment (TIME 07/10/2018).

## Inadequate tsunami warning system

A tsunami warning system was developed across Indonesia following the devastating tsunami of 2004. However, a multitude of factors (including insufficient funding, technical issues and poor maintenance) mean the early warning systems functioned improperly when the earthquake struck. As a result, tide gauges provided little to no warning and many individuals did not seek higher ground (Associated Press 01/20/2018).

## Key characteristics

### Demographics: Indonesia

0–14 years: 26.2% (male 33,854,520/female 32,648,568)

15–24 years: 17.1% (male 22,067,716/female 21,291,548)

25–54 years: 42.3% (male 54,500,650/female 52,723,359)

55–64 years: 7.9% (male 9,257,637/female 10,780,724)

65 years and over: 6.4% (male 7,176,865/female 9,308,056)

51% of the population lives in urban areas (CIA World Factbook 2014)

WASH: 84.3% use of improved drinking water sources (urban: 92.8%, rural: 75.5%), 58.7% use of improved sanitation facilities (urban: 73.4%, rural: 43.5%) (UNICEF 2012)

Health: infant mortality rate 47/1000, under-five mortality rate 52/1,000, maternal mortality ratio 190 per 100,000 live births (National Statistics Indonesia, 2012)

Nutrition: 13.3% acute malnutrition; 35.6% chronic malnutrition (UNICEF 2012)

Literacy: Youth literacy: 98.8% (male and female) (UNICEF 2012)

## Response capacity

### Local and national response capacity

The government of Indonesia is coordinating and leading response efforts with international backing. The Indonesian disaster management agency (BNPB) and other Indonesian organisations have significant experience responding to emergencies. The government has expressed its willingness to accept financial and in-kind assistance, coordinated according to certain criteria, but including air transportation (preferably C-130 or similar), tents (shelter kits), water treatment, electric generators and financial donations (AHA Centre 08/10/2018).

Indonesian authorities have deployed a significant number of medical personnel; however, some shortfalls remain, and they have indicated that adequate waste management of medical waste is an ongoing requirement (AHA Centre 08/10/2018).

### International response capacity

There is a significant international response to the Indonesia earthquake that involves the provision of money, goods and technical expertise from most UN agencies and cluster leads, as well as several larger INGOs and governments. The Indonesian government and military are organising all coordination of aid. Balikpapan (on Borneo island) has been designated as the base for relief operations through which all aid must be coordinated (OCHA 07/10/2018, Direct Relief 5/10/2018).

The government of Indonesia has also produced very stringent and clear guidelines on international assistance that aims to restrict foreign aid workers in the disaster zone and instead promotes the use of Indonesian staff. On 9 October, it ordered INGOs to withdraw their international staff from the affected areas to Jakarta or outside Indonesia (The Guardian 9/10/2018, AHA Centre 08/10/2018).

## Information gaps and needs

There is no disaggregated data yet on the severity of damage to houses (AHA 08/10/2018).

The liquefaction of entire villages means it will be very difficult to determine the damage and death toll in certain areas, particularly as rescue teams are being asked to stop rescue missions as of 11 October, after which the missing will be presumed dead. The number of houses and bodies underneath the mud and rubble is unknown (The Guardian 08/10/2018).

# Lessons learned

The same issues that hindered the response to the Lombok earthquake, including a lack of heavy machinery for lifting debris, affect the response in Central Sulawesi. Additionally, despite a fully operative response to the Lombok earthquake, many people in Lombok in Tenggara Barat still live in tents outside their homes because of the trauma of experiencing multiple earthquakes (IOM 19/09/2018). When observing the series of disastrous humanitarian events that have affected Central Sulawesi, early psychosocial support and a strong shelter intervention must be at the forefront of the response to ensure people feel safe to return home if they are able to do so.

# Map: population density and hospitals in Palu area

