



## SITUATION UPDATE NO. 2 M 7.4 EARTHQUAKE & TSUNAMI Sulawesi, Indonesia

No. **2**

Sunday, 30 September 2018, 17:00 hrs (UTC+7)

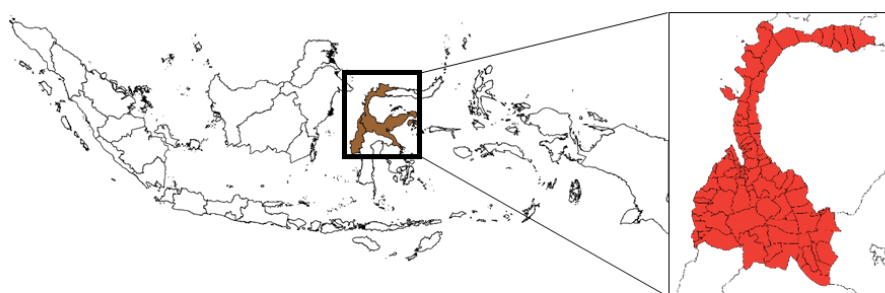
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### M 7.4 EARTHQUAKE & TSUNAMI IN SULAWESI, INDONESIA

Correct as at 30 September 2018



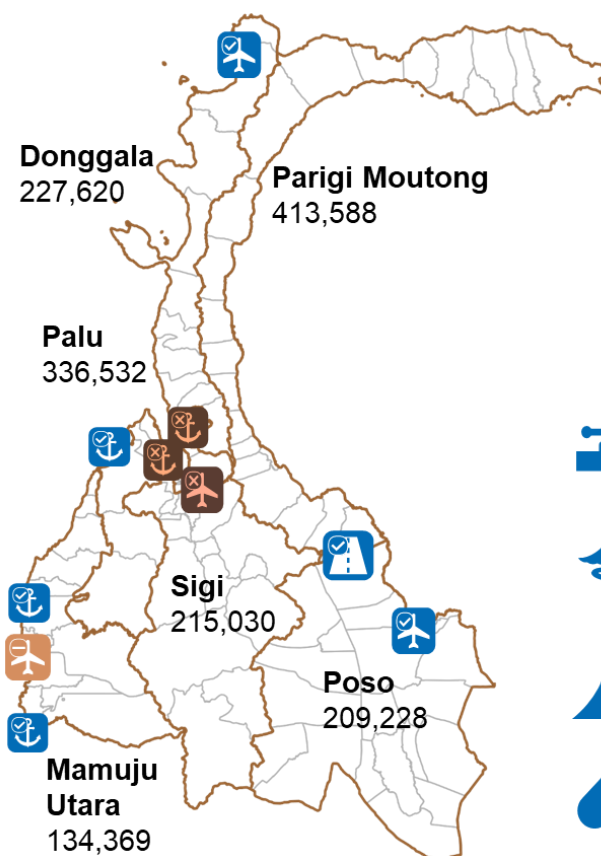
ONE ASEAN  
ONE RESPONSE



#### Affected areas:

- Donggala
- Palu
- Parigi Moutong
- Sigi

#### Population census (2010)



16,732  
displaced



832  
fatalities



24  
camps



540  
injuries



1,536,367  
potentially affected

#### Initial needs identified:



NFI



- Food
- WASH
- Medicines
- Primary health care
- Psycho-social support
- Nutrition
- Feminine hygiene kits
- Non-food items



SITUATION UPDATE

## 1. HIGHLIGHTS

- a. On Friday (28/09) at 13.59 hrs, an earthquake with a strength of 5.9 SR and updated to 6.0 SR Lok: 0.35 LS, 119.82 BT (The epicenter was at land 61 km north of Palu), Depth: 10 km shook the Kab. Donggala, Prov. Central Sulawesi. Earthquake with magnitude 7.7 magnitude strength which is then updated by BMKG to magnitude 7.4 shook the Palu City and Donggala, Central Sulawesi at 17:02 hrs causing more damages. Earthquake epicentre was recorded at 10 km depth, 27 km northeast of Donggala, Central Sulawesi.
- b. Tsunami struck Talise beach in Palu City and beaches in Donggala and some settlements and buildings on the beach. Assessment and data collection on the number of victims are still underway.
- c. According to the population census data of 2010, 1,536,367 are potentially affected by this event across 6 regencies and 85 districts. Initial reports (as at 30 September) have estimated 832 casualties with over 540 injuries and 29 missing across 934 affected villages. There are currently over 16,732 displaced persons being housed with 24 evacuation sites. Note that this figures are still expected to rise. Currently, 264 bodies have been recovered with 87 disaster victims being identified by National Police.
- d. A total of 170 aftershocks has occurred after the Donggala M 7.4 earthquake as at 30/9/2018 at 00:00 (UTC+7). The conditions of Palu and Donggala City are pitch black as electricity is still out and fuel is scarce. According to the population census data of 2010, **1,536,367 are potentially affected** by this event across 6 regencies and 85 districts. Initial reports have estimated 384 casualties with over 300 injuries. Rapid assessment is currently underway.
- e. Current immediate needs preliminarily identified are:
  - I. Search and Rescue
  - II. Food, ready-to-eat meals and public kitchens to support dietary needs
  - III. Fuel needs - damaged Fuel terminal facilities have disrupted supply affecting logistics
  - IV. Body bags for disaster victims and disaster victim identification
  - V. Medical supplies
  - VI. Psycho-social support
- f. Based on the ASEAN's Joint Disaster Response Plan (AJDRP), the potential basic needs identified are:
  - I. Food (ready-to-eat meals) which are halal certified
  - II. Water, Sanitation and Hygiene (WASH)
  - III. Primary healthcare including first aid and psycho-social support
  - IV. Nutrition needs
  - V. Medicines
  - VI. Feminine hygiene kits
  - VII. Non-food items



- g. Land/road lane from Palu-Poso and Palu-Mamuju are accessible now. The status of the nearest airports and seaports are:

**Airports updates:**

- a. Palu airport: opened and priority will be given to emergency, SAR and humanitarian flight.
- b. Mamuju airport: Tower building damaged but still functioning
- c. Toli-toli airport: Normal
- d. Poso airport: Normal
- e. Luwuk Banggai airport: Shifting of tower but still functioning

**Ports updates:**

- f. Pantoloan Port (Kota Palu): most severely damaged compared to other ports
- g. Wani port: Building and docks were damaged
- h. Ampana Port, Luwuk Port, Belang-belang Port, Majene Port: In good condition with no damage reported

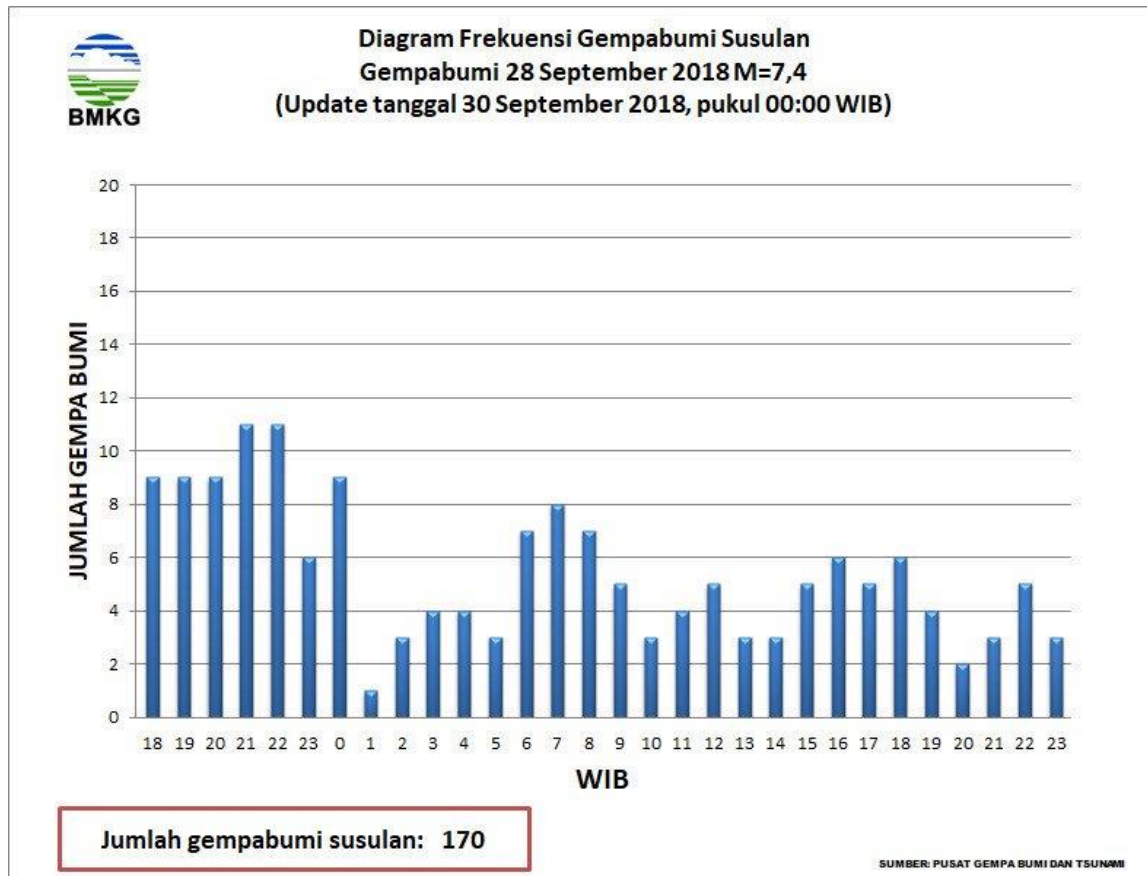
## 2. SUMMARY OF EVENTS, FORECAST AND ANTICIPATED RISK

**a. *Earthquake source, mechanism, and intensity information***

A powerful M 7.4 earthquake occurred on 28 September 2018, 17.02 hrs UTC+7 in Central Sulawesi Indonesia. The earthquake epicentre was located at 0.18 South and 119.85 East, 26 km north to the Donggala Regency, at a depth of 10 km ([BMKG](#)). Based on the location of the epicentre and depth of hypocentre, the earthquake was resulted due to Palu Koro fault. According to the observed fault movement, the earthquake was generated due to deformation with a strike-slip mechanism ([BMKG](#)). The earthquake exposed more than 310,000 people Donggala Regency (VII-VIII MMI), more than 350,000 people in Palu and Mapaga (VI-VII MMI), Gorontalo and Poso (III-IV MMI). Figure 1 below exhibits earthquake source, fault lines across Sulawesi, and seismic intensity generated ([BMKG](#)).

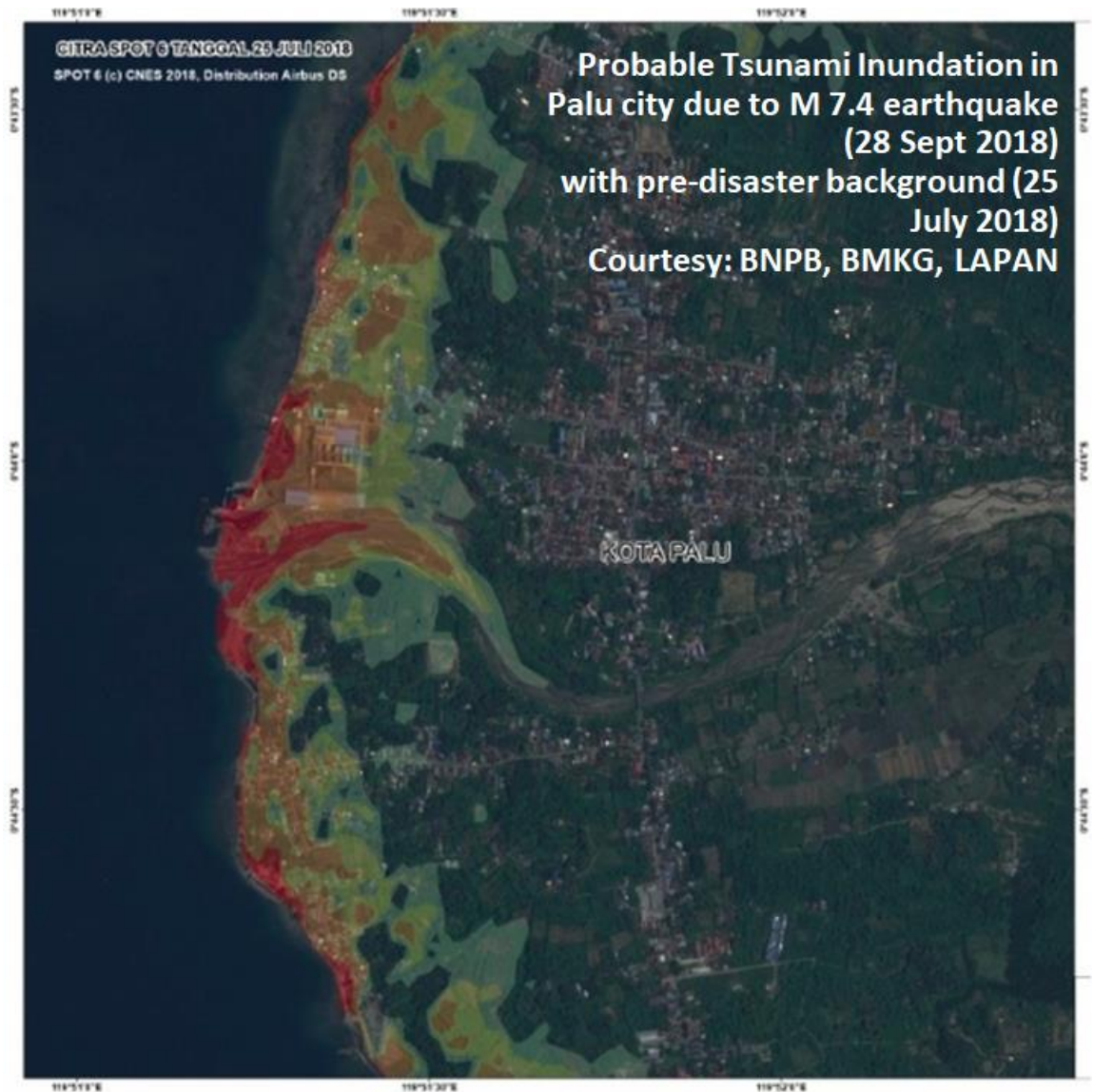
- b. A total of 170 aftershocks (Figure 1) has occurred after the Donggala M 7.4 earthquake as at 30/9/2018 at 00:00 (UTC+7). Aftershocks with moderate-to-strong magnitude are still expected in the area due to tectonic setting in Sulawesi Inland. In the hilly areas, due to existing fault-lines, aftershocks may trigger landslides. In addition, as stated in point X above, there is a likelihood that sediment across Palu Bay has not been solidified. Thus, humanitarian partners on the ground need to be aware of potential liquefaction and landslide in the coastal areas if another strong earthquakes occurred. As can be seen in the figure below, red lines indicate updated fault lines across Sulawesi Island, which may move again due to instability.





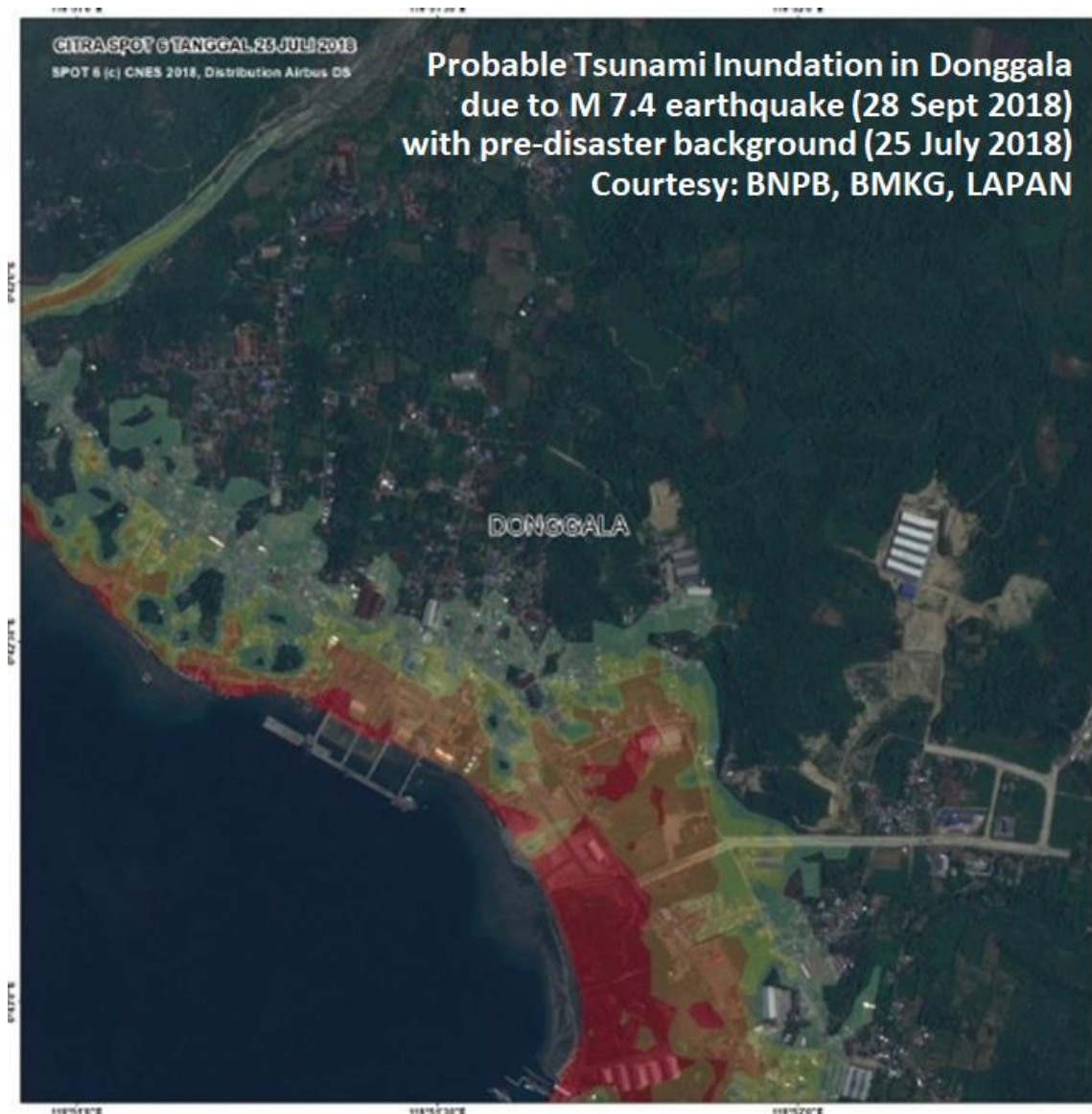
**Figure 1: Frequency of aftershocks**

- c. [PVMBG](#) is forecasting the potential area for land movements in Indonesia in September 2018 compared to August 2018 will tend to experience a slight increase in potential in most parts of Indonesia starting from parts of the islands of Sumatra, Java, Kalimantan, Bali. The Indonesian region, which in general remains to be watched out for, especially in the area of roads and settlements in hills, mountains, and along river streams.
- d. **Tsunami warning, evacuation, tsunami height, and inundation area.**  
 Based on experts judgement (ITB, LIPI, and BPPT), as cited by BNPB, the tsunami was triggered by a combination and amplification of water body displacement generated by both the M 7.4 earthquake and a seaslides (landslide in the ocean floor at around 200-300 meters below sea surface. The seaslides occurred since sediment from rivers across Palu Bay has not been solidified, and thus collapsed when the earthquake occurred. Thus, based on the various video observation the first wave of the tsunami was rather muddy (water body from the Palu Bay) followed by second wave with a clearer water as it was brought from the outer Makassar Strait.
- e. This also explains the strike zone of tsunami, which concentrated in Palu bay and western sea of Donggala Regency (orange and yellow areas in Figure 2 of AHA Centre Situation Update #1). Furthermore, the images below (Figures 2 and 3) exhibit a probable tsunami inundation areas generated by BMKG with pre-disaster background imageries dated on July 2018 for Palu City and Donggala City.



**Figure 2: Probable Tsunami inundation in Palu City**





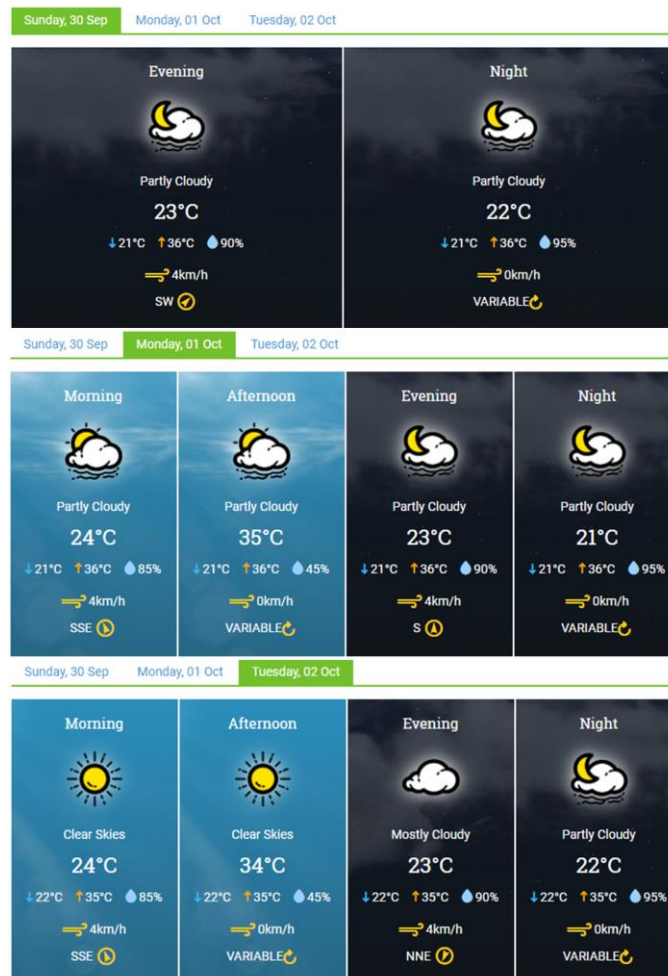
**Figure 3:** Probable Tsunami inundation in Donggala

- f. Based on historical record (Figure 4), the affected areas were struck by a tsunami in the past, i.e. triggered by M 7.4 earthquake in 1927 (Donggala Earthquake) and M 7.4 in 1968 (Tambu Earthquake), i.e. see figure below. According to Latief (2012), based on modelling and historical account to very few survivors interviewed, the 1927 earthquake potentially triggered a 10-12 meters tsunami. In addition, the 1968 Tambu earthquake may have triggered a 8-10 meters height tsunami struck Donggala Regency.



**Figure 4: Earthquake and tsunami history in Palu**

- g. Below is weather forecast for Palu and surrounding areas for the next three days. It will be updated regularly.



**Figure 5: Weather forecast for Palu and surrounding area (Source: [BMKG](#))**

### 3. ASSESSMENT OF DAMAGE, IMPACT, AND HUMANITARIAN NEEDS

- a. According to the population census data of 2010, 1,536,367 are potentially affected by this event across 6 regencies and 85 districts. Initial reports (as at 30 September) have estimated 832 casualties with over 540 injuries and 29 missing across 934 affected villages. There are currently over 16,732 displaced persons being housed with 24 evacuation sites. Note that this figures are still expected to rise. Currently, 264 bodies have been recovered with 87 disaster victims being identified by National Police.
- b. BNPB reported a total of 71 foreigners have been affected or become casualties (see below). Ministry of Foreign Affairs is handing the evacuation of affected foreigners.
  - I. 1 Singaporean (safe and evacuated to Jakarta)
  - II. 1 Belgian ((safe and evacuated to Jakarta)
  - III. 1 Korean (unknown condition, and potentially trapped in Hotel Roa-roa)
  - IV. 3 France (unknown condition)
  - V. 1 Malaysian (unknown condition)
  - VI. 1 German (safety conformed, not yet evacuated)
  - VII. 10 Vietnamese (evacuated to Mutiara Palu Airport)
  - VIII. 32 Thais (safety confirmed)
  - IX. 21 Chinese (safety confirmed at Best Western Hotel).
- c. Damage and impact listed below are constraining emergency response operations carried out by the relevant agencies and actors (BNPB):
  - I. No electricity
  - II. Unstable communication
  - III. Limited heavy equipment and manpower
  - IV. Road access to mobilise additional items
  - V. Size of the affected areas

### 4. ACTIONS TAKEN AND RESOURCES MOBILISED

#### Response by Government of Indonesia

- a. Indonesian National Board for Disaster Management (BNPB) is coordinating with related ministries/agencies and NGO; conducting rapid impact assessment and quick emergency response. They have also informed that there will be a mass burial conducted today to avoid spread of diseases.
- b. Head of BNPB, Senior officials of BNPB and Rapid Response team of BNPB have been mobilised to Palu & Donggala via special aircraft and helicopter.
- c. Ministry of Social Affairs is coordinating the Protection and IDPs national cluster, which comprises in-country organizations (including around 18 members of HCT and national NGOs).
- d. Governor of Central Sulawesi has announced an initial 14 days of emergency response period dated 28 September to 11 October 2018. In addition, the governor elected Commander of Military Resort 132/Tadulako as Incident Commander with the Incident Command Post located at Makorem 132/Tadulako ( -0.897464°, 119.877599°), Palu city.
- e. A [web portal on BNPB's page](#) has been prepared for sharing maps, providing updates and information to public and media.





- f. Basarnas and supporting organizations for the joint search and rescue efforts divided 6 (six) operational areas:
  - I. Hotel Roa-roa; -0.902946°, 119.868549° (anticipated 50-60 people buried)
  - II. Ramayana Mall; -0.908270°, 119.876543°
  - III. Dunia Baru Restaurant; -0.909587°, 119.875826°
  - IV. Collapsed buildings across Talise beach
  - V. Balaroa residential area; -0.904885°, 119.842509°
  - VI. Others
- g. BMKG has dispatched a team immediately to Palu to conduct microseismic, macroseismic, microzonation and post-tsunami surveys:
  - I. Microseismic survey is a monitoring of a small earthquake after an earthquake for the prediction of aftershocks to end
  - II. Macroseismic survey is monitoring damage on the post-earthquake field
  - III. Microzonation survey to review the earthquake-prone areas, which are divided into certain areas
  - IV. Post-tsunami survey to review of the traces of the tsunami wave starting from the coast to the mainland

#### **Response by the AHA Centre**

- a. AHA Centre has expressed condolence to Indonesia through BNPB Indonesia and offered support from regional resources, including mobilising ASEAN Emergency Response and Assessment Team (ASEAN-ERAT), providing relief items from the Disaster Emergency Logistic System for ASEAN (DELSA) regional stockpile, and facilitating the deployment of capacities available in the region, such as from the ASEAN Standby Arrangements.
- b. AHA Centre has mobilised its In-Country Liaison Team (ICLT) to establish direct communication with BNPB on the ground and liaise with them on further recommendation from BNPB.
- c. Following consultation with BNPB, ASEAN-ERAT is currently being mobilised to gather information on the impact of the earthquake and assess the needs, in support of BNPB and BPBD's ground assessment efforts.
- d. AHA Centre has requested activation of Sentinel Asia's Emergency Observation Request (EOR) and received access from DigitalGlobe on satellite-based observation. AHA Centre and LAPAN recommended to Sentinel Asia to escalate the observation to International Disaster Charter.

#### **Response by ASEAN Member States**

- e. Government of the Philippines, through [Department of Foreign Affairs](#) expressed its condolences to Indonesia and assured the Philippines' readiness to respond and extend assistance if needed.

#### **Response by ASEAN Dialogue Partner(s) (in alphabetical order)**

- a. Swiss Development Cooperation (SDC) has signified availability to provide aid and teams to assist through AHA Centre's coordination.

#### **Response by the Humanitarian Country Team**

- a. The Humanitarian Country Team (HCT) convened today, 30 September in Jakarta to discuss on the need to have a coherent, structured, coordinated assessment covering various sectors (logistics, health and displacement);



- b. WHO and UNFPA is working closely with Ministry of Health (Pusat Krisis Kesehatan) to support requests from sub-clusters. Rapid health assessments will be conducted in support to Ministry of Health based on agreed template covering several sub-clusters.
- c. WFP is currently working through their national offices to support the operations. However, logistical challenges remain and is limiting the movement of teams.
- d. IOM and UNICEF is working closely with Ministry of Social Welfare to support the displacement tracking, social welfare and psycho-social needs. UNICEF is also working closely with the Ministry of Education through the safe schools development programme to support the needs on the ground.

#### **Response by Other Humanitarian Partners**

- a. Télécoms Sans Frontières (TSF) is deploying emergency telecommunications equipment to support the communications requirements.
- b. Direct Relief stands ready to provide support, i.e. medical supplies and equipment, through AHA Centre's coordination.
- c. MapAction is also on standby to provide remote mapping support through AHA Centre.
- d. Médecins Sans Frontières (MSF) is mobilising team to support assessment and will be supporting mental health needs with the relevant government agencies.
- e. World Vision Indonesia (WVI) is supporting evacuation efforts and assessment of affected areas
- f. PKPU is mobilising team from Makassar to support assessment.
- g. MDMC is establishing post at PWM Sulawesi Tengah office and providing medical services.
- h. LPBI NU has deployed a medical team.
- i. Mission Aviation Fellowship (MAF) is supporting remote internet connectivity and is currently dispatching a team
- j. Open Street Map data for Palu City and Donggala Regency are available at Humanitarian Data Exchange and updated on daily basis at 2300 hrs UTC+7. The datasets include buildings, road, point of interest, waterways. OSM tasking managers are available here,
  - I. OSM Tasking Managers for Donggala Regency available here:  
<http://tasks.openstreetmap.id/project/45>
  - II. OSM Tasking Managers for Palu city available here:  
<http://tasks.openstreetmap.id/project/78>
- k. Save the Children, through their local partners are currently travelling by boat from Makassar to access the worst affected communities, and will support on assessment of the government. Their stockpiles are also on stand by for deployment: stockpiles of relief items available for distribution, including plastic sheeting and ropes for



temporary shelter, hygiene kits and jerry cans, as well as education supplies to help get children back to school.

- I. The Indonesian Red Cross – Palang Merah Indonesia (PMI) – is coordinating with the International Federation of Red Cross and Red Crescent Societies (IFRC), the International Committee of the Red Cross (ICRC), and Partner National Societies with offices in country towards outlining a detailed response for an emergency response as available information points toward significant humanitarian needs. A loan from IFRC's Disaster Relief Emergency Fund (DREF) is in the pipeline, to support a planned scaled-up response, to enable immediate mobilizing of supplies, equipment and personnel to address immediate humanitarian needs in the most affected areas.

#### **Response by Private Sector Partners**

- a. The Philippine Disaster Resilience Foundation, a consortium of private sector corporations, has signified its readiness to support the emergency response operations.
- b. Temasek Holdings is currently in contact with the AHA Centre to provide potential assistance.

## **5. RECOMMENDATIONS AND PLAN OF ACTIONS**

#### **AHA Centre's plans**

- a. The AHA Centre will organise a Briefing and Coordination Meeting tomorrow, 1 October, at the Emergency Operations Centre of the AHA Centre. The briefing will inform participants about the latest situation update as well as an overview of the response of the Government of Indonesia and humanitarian partners.
- b. AHA Centre has expressed condolence to Indonesia through BNPB Indonesia and offered support from regional resources, including mobilising ASEAN Emergency Response and Assessment Team (ASEAN-ERAT), providing relief items from the Disaster Emergency Logistic System for ASEAN (DELSA) regional stockpile, and facilitating the deployment of capacities available in the region, such as from the ASEAN Standby Arrangements.

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#### **Prepared by:**

AHA Centre - Emergency Operations Centre (EOC) and ASEAN-ERAT Information Management Team in cooperation with MapAction.

## **ABOUT THE AHA CENTRE**

The AHA Centre - ASEAN Coordinating Centre for Humanitarian Assistance on disaster management - is an inter-governmental organisation established by 10 ASEAN Member States – Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam - to facilitate the cooperation and coordination among ASEAN Member States and with the United Nations and international organisations for disaster management and emergency response in the region.

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