



Volcanic Activities, Mt. Kelud Volcano, East Java Province, Republic of Indonesia

Executive Summary

- 22 October 2007: Government maintains the status of a volcano at level 4, the highest alert level and recommended people evacuate the area immediately.
- 18 October 2007: The number of displaced people is significantly fluctuating. As of 18 October 2007, 13,440 people have been evacuated from Kediri and Blitar districts those who are living 10 kilometers radius of the volcano.
- 17 October 2007: MOH and Regional Crisis Center have already mobilized 50 medical doctors and 50 medical staff for 41 medical health posts in Kediri and Blitar in close collaboration with the support from the health centres (Puskesmas). 200,000 masks have also been distributed in Kediri, Blitar and Malang districts to both communities and health staff.
- 18 October 2007: The communities are increasing their coping mechanisms by building emergency shelters outside their houses to be used at nights and keep alert by visually monitoring the situation. In Blitar District, most vulnerable people are children under five, elderly, and pregnant women with a total number of 46,448.
- 20 October 2007: Team leader of the health mobile team from Crisis Center, MOH came back to Jakarta and have meeting between Crisis Center, MOH and WHO was organized to review the situation to identify the possible ways to fill the gaps and support the needs.



Caption: Picture of Mt. Kelud's crater lake.

Date of Incident

Wednesday, 26 September 2007.

General Information

Kelud volcanic lake is one of the most active and most dangerous stratovolcano in Indonesia. Many lives were claimed by Kelud eruptions in the past six centuries mostly due to pyroclastic flows, surges and especially lahars. In 1919 eruption, 5,160 people were killed.

Its last eruption was in 1990 killing 7 people and wiped two villages off.

Volcanic activity

29 September 2007:

Based on observations, seismic activity, deformation, visual, temperature on the crater lake and water chemistry, started 17:00 local time, Kelud upgraded to alert level III (SIAGA).

16 October 2007:

- Government raised the status of a volcano on Java Island to level 4, the highest alert level and recommended people evacuate the area immediately.
- Lake temperature measured at depth 15 meters in the middle of the lake reached 37.8 degrees Celsius.

17 October 2007

On Wednesday, 151 shallow volcanic quakes and 13 tremors were recorded.



18 October 2007

- 16 shallow volcanic quakes were recorded within a six-hour period, along with three tremors.
- The activity of the volcano is still increasing; however, the level of volcanic tremors is decreasing. The temperature of around 2.5 m³ water in the crater at the depth of 15 meters is continuously increasing from 37.8° C on 16 October to 38° C on 17 October. The deformation process of the crater is also increasing, thus the eruption is continuing to be imminent.
- The temperature of water in the crater at the depth of 15 meters continues to increase and reported to be at 38.1° C. The deformation process of the crater is still increasing.



Caption: Picture of Mt. Kelud's surroundings.

The crater lake is one reason Kelud is harder to monitor than many of the other volcanoes scattered across Indonesia's archipelago, as some of the warning signs are concealed below the water's surface. The crater lake of Kelud Volcano now closed to the public and is monitored by TV monitors and seismographic equipments so scientists can detect any change in the lake's colour, likely to turn from turquoise to white as sulphur levels increase, temperature and earthquakes.

The volcanic earthquake can be associated with tectonic earth quakes effecting near by districts. Potential landslides and flooding are additional hazards.

Location

Kelud volcano is located sharing Kediri District, Blitar District and Malang District, East Java Province; 90 km/55 miles southwest of Indonesia's second-largest city Surabaya and some 620 km/385 miles east of the country's capital Jakarta.







The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Level of Alertness

Kelud Volcano status was upgraded to the highest alert level IV (**AWAS**) since 16 October 2007.

Table showing alert level of Indonesia volcanoes and its codes:

Stages	Name	Code	Criteria	Interpretation
1	Aktif Normal	 Green	Monitoring of visual, seismicity and other volcanic event do not indicate changes.	No eruption in foreseeable future.
2	Waspada	 Yellow	Increasing activity of seismicity and other volcanic events, and visual changes around the crater.	Magmatic, tectonic or hydrothermal disturbance, no eruption imminent.
3	Siaga	 Orange	Intensively increasing of seismicity with supported by other volcanic monitoring, obvious changes of visual observation and crater. Based on observation data analysis, the activity will be followed by main eruption.	If trend of increasing unrest continues, eruption possible within 2 weeks.
4	Awes	 Red	Following the main eruption, the initial eruption begins to occur as ash and vapor. Based on observation data analysis, the activity will be followed by main eruption.	Eruption possible within 24 hours.



Vulnerable Population

It is estimated that about 476,620 people may be affected once the volcano erupts. 211,732 in Kediri district and 264,888 in Blitar district.

16 October 2007

Villagers living in 10 kilometer radius have been evacuated.

Caption: Villagers living near the Mount Kelud volcano arrive at a temporary shelter in Wates village.

17 October 2007

- As the volcanic activities slow down, people living in low risk areas of the mountains are allowed to return to their homes. Vulnerable groups, elderly, disables, children and pregnant women are encouraged to remain in the temporary shelters.
- Total number of evacuated residents and health posts ready as of 17 October based on MOH and BAKORNAS is 22,154.

18 October 2007

The number of displaced people is significantly fluctuating. Below is total number of evacuated residents and health posts ready as of 18 October based on MOH and BAKORNAS:

No	District	IDPs	Health Post
1	Kediri	12,864	-
2	Blitar	576	-
	Total	13,440	41



19 October 2007

- The Indonesian Red Cross reported that as most of the villagers do not want to leave their houses fearing insecurity of their properties, local governments are mobilizing the police and army to ensure the safety and security of the people and their properties.



- OXFAM GB reported that the communities are increasing their coping mechanisms by building emergency shelters outside their houses to be used at nights and keep alert by visually monitoring the situation. In Blitar District, most vulnerable people are children under five, elderly, and pregnant women with a total number of 46,448.

Caption: Residents living around Kelud volcano.

Casualty and Damage

Up to date, no report received as yet on casualties and damages but it is expected that if the eruption occurs, it would be extremely dangerous and cause major damages to its surrounding.

Additional potential hazards to Surabaya City and surrounding areas

- Potential major earthquake, volcanic eruption and collapse of land in highly dense populated urban areas including Surabaya city as it has already been affected by gas and hot mud volcano.
- Major floods in the coming rainy season due to shallow river resulting from drainage of mud.
- Mud covered areas became larger, difficult to remove imposing weight to the ground.
- More than 50,000 cubic meters of hot mud flowing on daily basis.
- One of the most populated factories location in Indonesia leading to bio-chemical and radiation (BCR) hazards.
- Electricity and communication black out threatening security and leading to social unrest.

Health sector needs encountered

- Operational cost for health staff to closely monitor, manage emergencies, provide day to day treatment, established disease surveillance and control.
- Additional radio communication equipments to strengthen early warning and emergency information.
- On site refresher training for health staff to manage mass casualties.
- Emergency health kits.
- Personal protective measures for health staff.
- Generator and mobile water purification equipments for mobile health posts.



Caption: Operational cars.



Preparedness and Response

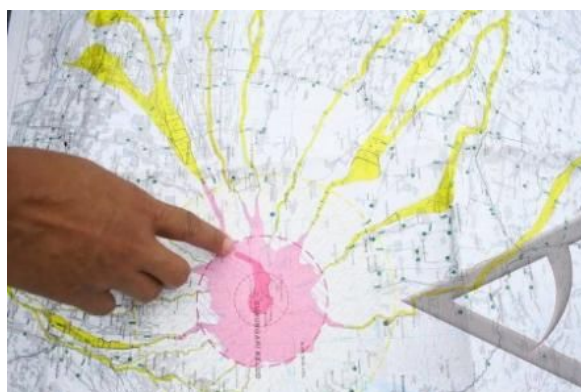
Government

3 October 2007

- In Blitar District, the local government activating emergency response posts up to hamlet levels and will conduct an emergency drill. The local government and the vulcanology office have requested the residents to be on alert and to avoid staying within a five kilometer range from the crater.
- The Chief Executive Officer (KALAKHAR) BAKORNAS PB visited Kelud volcano with his team to strengthen coordination in anticipation of the eruption.
- Ministry of Social Affairs prepared 100 tons rice at each district level and 200 tons rice at provincial level. Tents for public kitchen, clothing, ready-to-eat meals for IDPs, and 1.5 tons baby food supplement have also been prepared for distribution.

16 October 2007

- Officials have advised residents living within a 10 km (6.2 miles) radius of Kelud volcano to evacuate to the safer area
- The provincial government of East Java preparing themselves for the eruption by providing disaster contingency fund, preparing 12 spots for the flow of volcanic materials of the eruption along 10 river flows, and mobilizing vehicles and police personnel to be on stand by.



Caption: An official shows the map of the area that was passed through the Kelud mountain mudflow in the Candisewu command post, Blitar, East Java.

17 October 2007

- A BAKORNAS PB team led by Chief Executive Officer (KALAKHAR) visited the affected areas to strengthen coordination with SATKORLAK PB East Java and SATLAK PB (District Coordination Unit for Disaster Management) of Kediri and Blitar.
- A coordination meeting was held by BAKORNAS PB at the Crisis Center BAKORNAS Jakarta led by the Deputy for Emergency Response and attended by relevant government institutions to coordinate the emergency supplies distributed to the affected areas.
- SATLAK PB Kediri has prepared four IDPs camps in four sub-districts equipped with clean water services and food supply from the community and the Office of Social Affairs at district level. They also prepared field kitchen, 14 platoon tents, 10 family tents, and two health posts.
- The military (TNI) has established six field kitchens in four IDPs camps in Kediri District.
- The Office of Social Affairs East Java has mobilized two mobile field kitchens to Kediri District.
- Health Office of Kediri District has mobilized health community centres (Puskesmas) in four sub-districts.
- Department of Social Affairs also provided blankets, kitchen utensils, plastic mats, and mattresses through SATLAK PB Kediri and Blitar districts.
- Local government has organized two Crisis Centres, one in the district of Blitar and the other in the district of Kediri.
- Telkomsel, the largest telcoms provider in Indonesia, has established free phone and internet access in the Governor's Office.



Caption: Villagers defy volcano warning.

18 October 2007

- The local government of Kediri District has already mobilized 281 vehicles for evacuation. Additional two buses, four trucks, 17 other vehicles were mobilized on 17 October 2007.
- BAKORNAS PB Chief Executive Officer (KALAKHAR) chaired a coordination meeting of SATLAK PB in Blitar District and emphasized the needs for command posts and temporary shelters with supporting facilities.

19 October 2007

- SATLAK PB Kediri has set up 20 evacuation centres and mobilizes personnel to arrange logistics to those evacuation centres. They also conducted an activity involving community and religious leaders to advocate the need for the community to return to their evacuation centres.
- PMI Kediri Branch is supporting SATLAK PB Kediri to prepare meals for the IDPs. Other PMI branches in Blitar, Malang, and PMI East Java Chapter are monitoring the situation and put on stand by all personnel, equipments, and stock of relief items based on the need.

UN – NGO/INGO – Donor Response

- OXFAM GB deploys an Emergency Response Team to conduct a rapid assessment in Blitar District from 18 to 23 October 2007 to assess the current situation of communities highly at risk, identify the gaps in assistance provided by the government and other stakeholders, provide quick response when needed, and identify potential partners.
- WFP's NGO partner in the region, YAPSI, is participating fully in all coordination meetings with local authorities, and will be prepared to respond with emergency assistance if needed.
- UN Joint Mission reported that government authorities have sufficient resources to respond to the most likely eruption, and emergency scenario. However, in case any eventual eruption is more powerful than scientists currently predict, external assistance may be required. The evacuees are temporarily located in tented compounds in the cities of Kediri and Blitar. No food assistance necessary at this stage because government already has sufficient stock and good logistics arrangement. Major roads are not affected, and distribution can be done without problems.
- UN Joint Mission found that the government's response capacity appeared stronger in Kediri than in Blitar district, in terms of both organizational set-up and availability of emergency stocks. The government emphasized that SATKORLAK is the coordination focal point for all entities within the government, and also including NGOs and any other external agency. It also reported that local authorities have focused efforts on establishing stocks of food and drinking water, and are confident that local supplies are sufficient for the time being. They have also set up water and sanitation facilities in all evacuation points. It was also noted that the government has not yet developed any post-eruption plan to deal with potential medium and longer-term problems, like loss of homes, employment, and farming land.



MOH – WHO Indonesia

2 October 2007

- MoH – WHO team lead by Chief Crisis Centre MoH accompanied by MO, EHA-WHO conducted rapid assessment in the potential vulnerable areas. The team met with the Surabaya Regional Crisis Center team including professionals from hospitals, PHO and DHOs to strengthen emergency preparedness and response activities. Needs identified and emergency supplies and operation cost provided for the initial phase. Necessary preparation and emergency information system was activated by the local teams base on the contingency plan and monitoring check list. Additional needs were identified and communicate back with Crisis Center, MOH.
- Total of 288 health facilities are on alert status for both Kediri and Blitar district. The break down is as follows:

List of health facilities prepared and providing health services in Kediri District

No	Health Facilities	Total (Unit)
1	Hospital	5
2	Health Centre	36
3	Satelite Health Centre	80
4	Ambulance	36
5	Private Medical Service Centre and Maternity House	42
Total		199

List of health facilities prepared and providing health services in Blitar District

No	Health Facilities	Total (Unit)
1	Hospital	4
2	Health Centre	24
3	Satelite Health Centre	24
4	Ambulance	35
5	Arm Forces Medical Clinic	1
6	District Indonesian Red Cross	1
Total		89

10 October 2007

- MOH – WHO team lead by Head of Provincial Crisis Center accompanied by MO-EHA-WHO visited again to conduct operational assessment. Technical discussion were made with different professions and community at hospital, PHO, DHO, volcanologic monitoring sites and villages and follow-up plan was modified base on the needs. MOH and WHO mobilize emergency medical supplies and health staff to support the high risk areas. Surabaya Crisis Center, technical team deployed with specialist from Dr. Soetomo Hospital to Kidiri, Pere, and Biltar district hospitals for technical assessment and on-the job training on trauma, ARI, eye infection management.



Caption: Medical supplies handover from MOH to East Java PHO



- The Regional Crisis Center in support of Crisis Center – MOH and WHO has identified Kidiri, Biltar and Pere as three possible first level command posts for health sector / cluster coordination to be activated in case of disaster.

15 October 2007

MoH with the support of WHO, dispatched 4 mobile teams equipped with emergency mobile operational vehicles to different command posts for close supervision and management.

16 October 2007

Health post, mobile medical teams and health facilities provide medical services to the evacuated communities.



17 October 2007

MOH and Regional Crisis Center have already mobilized 50 medical doctors and 50 medical staff for 41 medical health posts in Kediri and Blitar in close collaboration with the support from the health centres (Puskesmas). 200,000 masks have also been distributed in Kediri, Blitar and Malang districts to both communities and health staff.

Caption: *Night view of Kelud volcano.*

18 October 2007

MOH field operational teams, assisted by WHO have made round checks on health post and referral health facilities to strengthen the emergency preparedness and response in case Mt. Kelud erupts or subsequent earthquakes hit the area. Regional Crisis Center, Surabaya Emergency Operation Team, briefed East Java Governor about present situation. They are highlighting the possibility of subsequent earthquakes following Mt. Kelud potential eruption. Specific needs to strengthen the mobile health post and command centers were discussed.

19 October 2007

Medical services provided through health posts to evacuated population. It is challenging for the medical teams to follow-up as there is a fast, frequent and overlapping in movement of large population up and down the mountain, evacuating at the same time returning back to their homes.

22 October 2007

Team leader of the health mobile team from Crisis Center, MOH came back to Jakarta on 20 October 2007 and have meeting between Crisis Center, MOH and WHO was organized to review the situation to identify the possible ways to fill the gaps and support the needs. The major needs are as follows and are in the process of finding resources. The needs will be shared through UNTWG.

1. Continue providing refresher training courses on site in health facilities and health command posts on Disaster Management and preparing them for health sector / cluster coordination in case of disasters.
2. Strengthen emergency information system by providing essential equipments and repairing selected equipments in time.
3. Provide emergency supplies where needs are specified.
4. Provide additional support to the Regional Crisis Center, Surabaya and Provincial Emergency Team from Malang base on specific needs.

Follow-up action by MOH, Regional Crisis Center and WHO

1. Closely monitor changing situation in volcanic activities and potential earthquakes.
2. Provide on site refresher training on management of health related mass casualties management resulting from volcanic eruption, earthquake, flood, landslide, biochemical and radiation hazards.
3. Provide additional communication equipments to strengthen emergency information system.
4. Provide operational cost to support early disease surveillance and control of communicable diseases.
5. Mobilized additional emergency health kits.
6. Support mobile water and sanitation equipments and water purification tablets for IDP sites.
7. Organize health sector coordination meeting.

International appeal

So far the government has not call for any international appeal but is working in close collaboration with local authorities and all interesting partner agencies and donors to support the field operation.

Emergency Health Information Center

Information relating to the Mt. Kelud volcanic activities is available in the EHA web link <http://www.who.or.id/download/docs/eha/EHA-Info>

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Source of Information from Indonesia

Information is gathered from the following sources. This report is for reference only and should not be quoted as factual accuracy can change.

1. WHO
2. Crisis Center (PPK), MoH
3. Regional crisis Center, Surabaya
4. The Centre of Vulcanology and Geological Hazard Mitigation
5. UN System, OCHA
6. BAKORNAS
7. Local and international news media