

# Why do people in Indonesia still live in disaster-prone areas?

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The earthquakes and tsunami in Central Sulawesi that killed more than 2,000 people in September 2018 did not only leave a deep sorrow. It made us rethink the relationship between humans, technology and nature in Indonesia.

Indonesia have seen many natural [disasters](#) from landslides, tidal waves, earthquakes and tsunami. Yet the country often fails to prepare itself for catastrophes. Is it because people are unable to use [technology](#) to help them deal with disasters? Or is it because of a fraught relationship between humans and nature?

[Our research in two areas of Indonesia, Semarang in Central Java and Aceh on the island of Sumatra](#), puts forward two important arguments in understanding relations between humans, technology and nature in responding disasters. *First*, relations between humans and nature are highly determined by the economy and policies. *Second*, development and utilisation of disaster mitigation technologies will not be optimum if the digital divide still exists.

## **Humans-technology-nature**

In its very basic understanding, technology is defined as anything that could ease humans' work. In the context of reducing the impacts of disasters, we use technology to minimise loss and destruction by identifying disaster-prone areas, saving lives, reducing [economic losses](#), and other activities to help during mitigation and post-disaster rehabilitation.

Generally, the relationship between humans and technology can be explained through [technological determinism](#). Meanwhile, relations between humans and nature are mostly seen as exploitation. Humans are deemed powerless in the face of technology, but at the same time are destructive towards the environment.

But when disaster strikes, humans and their technology could not defend themselves against nature. Relationships between these three elements are complex due to their multidimensional, contextual and temporal characters.

For example, new settlements built in disaster-prone areas around [Banda Aceh](#), [Lembang](#), [Bandung](#), and several places in [Semarang](#) reflect disharmony between humans and nature.

In Banda Aceh, [coastal areas](#) affected by the 2004 tsunami have become crowded by new settlement [for a number of reasons](#). The picture below shows an area called Ulee Lheue taken in April 2018, 14 years after being severely damaged by the tsunami.

What is happening in Ulee Lheue shows how people are overly confident that they are secure from disasters. People are relying more on their intuition instead of acquiring scientific knowledge to mitigate disasters.

We could not, however, conclude that people are merely ignorant. Social backgrounds, culture, politics, education and economic reasoning might equally contribute to uncontrolled settlements.

## **Strict policies needed**

People live in disaster-prone areas partly for economic reasons. In the case of Semarang, where tidal flooding submerges houses, [people stay due to economic factors](#). With no other skills, fishermen in Tambak Lorok, Semarang, are forced to live with disasters.

In this situation, [government policies](#) can help shape the relationship between humans and nature. Governments should take a firm position to stop people living in disaster-prone areas. But, to be able to do that, they should offer good alternatives for the people. Suggested areas for

relocation should not only be safe from disasters but also provide economic opportunities.

Government policies on [disaster management](#), through regulation and various risk-reduction programs, should help people become aware of disaster risks and of the technology and mitigation infrastructures that exist for them.

In Aceh, [a research finding by the Tsunami and Disaster Mitigation Research Center \(TDMRC\) at Syiah Kuala University](#) shows people are not aware of evacuation procedures and existing facilities to safeguard them during disasters. So, while the government builds evacuation spots and buildings in tsunami-prone coastal areas, it should also should work hand in hand to empower people. The government should educate people about the procedures and the function of evacuation buildings.

## **Digital divide**

In the context of a digital society, people are heavily dependent on information and communication technology to mitigate and respond to disasters. One of the problems in the global south like Indonesia is the digital divide.

The problem is not merely limited access. The [digital divide](#) is influenced by lack of interest in learning to use new technology, low technical capability and inefficient tools. [These contributing factors](#) should be resolved so people can adapt and use technology better in disaster management.

The problem is that many people are not interested in using these technologies. In Semarang, [CoREM](#) publishes the [Rob Calendar application](#) to help people anticipate and react to tidal floods. But not many people download this app.

Additionally, the spread of [hoaxes](#) related to [natural disasters](#) is now becoming a serious problem in Indonesia because it has disrupted concerted efforts to respond to disasters.

## Mass integrated technology

Individual access to technology, such as mobile phone ownership by people living in disaster-prone areas, does not guarantee effective disaster management if there's no collective action to maximise its use. Mass integrated technology, such as early warning systems in public spaces, is necessary.

People who manage tsunami early warning systems should embrace new technologies and feature more integrated information on earthquakes, floods, volcanic eruptions and avalanches.

We should also develop [alternative communication systems](#), such as amateur satellite or radio communication. Learning from the Palu and Donggala tsunami, communication networks were disconnected during the emergency.

At the end of the day, we need to continuously re-adjust the balance in using technology. We should not forget that humans might get entrapped by technological dependency, but we also do not want to neglect the importance of technologies in saving our lives.

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