



Issue: Ensuring that South-East Asian countries are well prepared for a natural disaster

Forum: Association of Southeast Asian Nations

Position: Chairs

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Introduction

ASEAN+ is one of the most at risk zones for natural disasters in the world; between 2004 and 2014 alone it experienced over half of the recorded global disaster fatalities, 354,000 out of 500,000. Natural disasters have affected over 193

million people in the region, out of which 191 million had to be displaced. The physical loss caused by these disasters has been calculated to translate into roughly \$91 billion (US dollars). Not only must it suffer from natural disasters of varied sorts (landslides, tsunamis, hurricanes/cyclones/typhoons, earthquakes, volcanic eruptions, flooding, etc.), but also due to its incredibly high population that tends to be packed densely into small landmasses, the ASEAN population is more critically hit than any other region. Furthermore, many nations in ASEAN that suffer the most from natural disasters are LEDCs and the losses are therefore so much more disastrous and can even halt development in the region. It is incredibly obvious that this issue is crucial for the proper development of all nations in the region.

MITIGATING NATURAL DISASTERS IN ASEAN

Number of reported disasters from January 2012 to July 2017



Figure 32 & Figure 4: ASEAN+ 1. A general overview of number of reported natural disasters in the ASEAN region

Definition of Key Terms

Natural disaster: An abrupt and dangerous natural event (such as a typhoon, tsunami or earthquake) that tends to cause large amounts of casualties and destruction

Typhoon/cyclone/hurricane: These three terms refer to a system of winds that rotates about a center of low atmospheric pressure, advances at a speed of about 30 to 50 km/hour, and often brings heavy rain (Merriam Webster). The terms used change based on their location, cyclones develop over the Indian or South Pacific Oceans, hurricanes develop over

the Atlantic or eastern Pacific Oceans and typhoons develop over the Philippines and western North Pacific Oceans.

Landslide: Rapid and sudden downward movement of a mass of rock and earth on a slope.

Earthquake: A sudden and violent shaking of the ground that can cause great damage, triggered by the collision of the earth's tectonic plates

Volcanic eruption: Abrupt discharge of volcanic material, gas, rocks and ash from an active volcano.

Tsunami: Large, unbroken wave caused by seismic or volcanic activity.

Flood: Overflowing of a body of water onto usually dry land (often from rivers or coastlines)

Wildfires: A destructive and rapidly-spreading fire, set alight most often in arid forests

General Overview

Natural disasters are becoming a rapidly growing problem, in part due to climate change in recent years. It is estimated that the frequency and impact overall of all natural disasters have risen by 800% between years 1975 and 2005, illustrating the true severity of the issue. Natural disasters have extremely dire consequences for communities, ecosystems and economies, a worrying factor for ASEAN countries, who are among the natural disaster hotspot of the world. ASEAN countries are prone to disasters such as fires, typhoons, floods, earthquakes, volcanic eruptions, drought, and tsunamis.

Statistically the highest risk is seismic activity, which can also prompt other disasters like tsunamis and volcanic eruptions. Arguably the other deadliest disaster is floods, due to the large amounts of rainfall and terrain that the region possesses. The mountainous terrain and the numerous rivers and lakes around which most people are situated increases both the risk of fatal floods and the amount of mortalities.

The large amounts of rainfall also affect the drinkable water supplies of the region. Disproportionate amounts of rain can cause droughts in the long term, which are especially devastating for communities. Droughts not only cause fatalities due to lack of clean water but also due to hardships carrying out agricultural processes, crippling communities both medically and economically. The rainfall is caused by the region's proximity to the equator and the mass of warm water surrounding it, which incidentally makes its southernmost parts risk regions for cyclones as well. These storms are devastating in various ways, as they are directly damaging to communities and the environment. One such way is the powerful winds, which can cause loss of planted land, livestock, lodgings or even whole towns. The winds also play a role in causing floods and landslides, which both contribute to economic and structural damage alongside loss of farming land. Floods drain away valuable minerals from farming soil while landslides directly cause loss of land, both of which crippling the rural economic staple, agriculture.

High winds are also known to aggravate coastal flooding, which is detrimental in ASEAN countries due to the high coastal population. Houses and whole towns are frequently and easily flooded, and when winds are strong enough they can turn coastal activities into tsunamis, causing a great deal of loss to the community. The increase in natural hazards is devastating to ASEAN countries not only because of the losses it poses but also because most countries are relatively poor, making recovery, rescue and reintegration of individuals and communities incredible. With risk assessment and statistics becoming more available as more research is conducted about the disasters, ASEAN countries have shifted focus to minimizing damage rather than responding to it since early 2000s. It is a growing belief that more heed should be paid to reduce the impact of inevitable disasters rather than try and rescue people or rebuild losses, proving effective so far.

All ten countries participated in the 2nd World Conference Disaster Risk Reduction in 2005 and ratified the Priorities for Action. This has enabled access to masses of data, which are being used for prediction and management of disasters. Despite these efforts, ASEAN countries have accounted for nearly half the deaths due to natural disasters globally between the years 2004 and 2014, and according to recent data mortality rate is on the rise even though new disaster mitigation techniques are being implemented.

Major Parties Involved

Brunei

Brunei could be considered the safest ASEAN country in regards to proneness to natural disasters. It is situated in a seismic zone, however this activity does not present itself in violent earthquakes. In the recent years Brunei has experienced disasters such as landslides and floods, but still remains a low-risk zone. In 2006 they established a National Disaster Management Center in order to more effectively enforce DRR.

Cambodia

Cambodia is relatively vulnerable to natural disasters of all sorts. The most important natural disaster component the vast amounts of rain it receives. This causes many regional floods due to the numerous narrow rivers in the region, however the country is largely immune to coastal floods. The disproportionate rates and distribution of rainfall also causes drought to present in many regions of the country. This has been known to cause extensive damage to crops. Floods also cause landslides, furthering the economic damage. The most deaths attributed to natural disasters in the area have been from floods. Cambodia also lies on a low seismic zone but has experienced no significant activity in three decades.

Indonesia

Indonesia is arguably ASEAN's biggest risk zone for natural disasters. As it is situated very near the equator it has a large amount of forest area, making the country very prone to forest fires when coupled with the amount of heat in the region. The country is also incredibly vulnerable to seismic activity. It is situated in the Ring of Fire, making it one of the most seismically active countries in the world. Earthquakes are known to cause thousands

of deaths and millions of dollars worth economic losses. Indonesia also faces a moderate danger to drought, an important economic loss for the community.

Laos

Laos is threatened mostly by floods. Its biggest river, the Mekong, causes numerous major floods every year, as well as those caused by smaller local rivers. Cyclonic storms usually cause these floods, as well as causing millions of dollars of damage every year. Another important component is drought, which affects nearly the whole country but most notably the southern sides. While the country is in a seismic hazard zone no notable activity has been reported. Additionally, landslides may be experienced due to the mountainous terrain and large amounts of rainfall.

Malaysia

Malaysia is moderately vulnerable to natural disasters. Floods have caused notable economic loss in the region, totalling hundreds of millions each year. Similar to Indonesia, Malaysia also possesses a large amount of forest area, making it prone to forest fires. Malaysia is also on a low risk seismic zone, however no significant event has been experienced as of yet.

Myanmar

Myanmar is one of the countries most prone to natural disasters. The Bay of Bengal is an area especially vulnerable to typhoons. The country has faced numerous high scale typhoons resulting in many dozens of fatalities each time and millions of dollars of economic loss. The country also sustains high amounts of rainfall, which is a disastrous combination with its mountainous terrain and aggravates many regional floods even further. Due to these reasons landslides are also common, causing significant economic loss. Myanmar is also situated in a moderate to high level seismic zone, putting the country at relatively high risk for earthquakes and tsunamis.

Philippines

The Philippines is one of the most vulnerable countries from natural disasters. It is in the direct path of most cyclones passing through the Pacific Ocean, making risks of storms skyrocket. The Philippines is also affected by violent regional storms, causing fatalities as well as very significant economic damage. Due to the amount of rainfall and storms floods are also very common in the country, causing accompanying landslides frequently. The volatile climate makes the country very prone to drought, causing direct damage to communities. There is a significant number of volcanic eruptions in the country, spanning 16 eruptions within three decades. It is also situated within the Ring of Fire, making it one of the most seismically vulnerable countries in the world.

Singapore

Singapore is not very hazard prone. The highest risk is in seismic activity, largely due to the high level of urbanization and characteristically tall architecture in the majority of the country. The country is not very prone to flooding but still experiences small scale, fairly localized floods from time to time.

Thailand

Thailand is most vulnerable to floods. Flooding has been known to cause nearly a hundred death and several billions of economic damage in a single year. The country is also prone to

typhoons. Storm events have high fatality rates and total up to almost a billion dollars in damages. There is also a relative proneness to droughts due to irregular climate patterns.

Vietnam

Vietnam is most prone to floods and typhoons. Around a fifth of all typhoons generated in the Pacific hit Vietnam on their course, causing thousands of fatalities and billions of damage. Like many other ASEAN countries Vietnam also sees Monsoon rainfall, causing numerous floods all across the country, creating also large scale drought, mud floods and landslides on an almost frequent basis.

Timeline of Key Events

Date	Event
2004	Boxing Day Tsunami kills 230 thousand people in 14 different countries.
2005	The priorities of Action of DRR are accepted by all ASEAN countries.
2006	Brunei established a National Disaster Management Center in order to more effectively enforce DRR.
2008	Cyclone Nargis prompts the creation of ASEAN-ERAT
2009	ASEAN Agreement on Disaster Management and Emergency Response (AADMER)
2018	The size of the Krakatoa volcano is reduced to nearly half its original mass by a massive explosion.

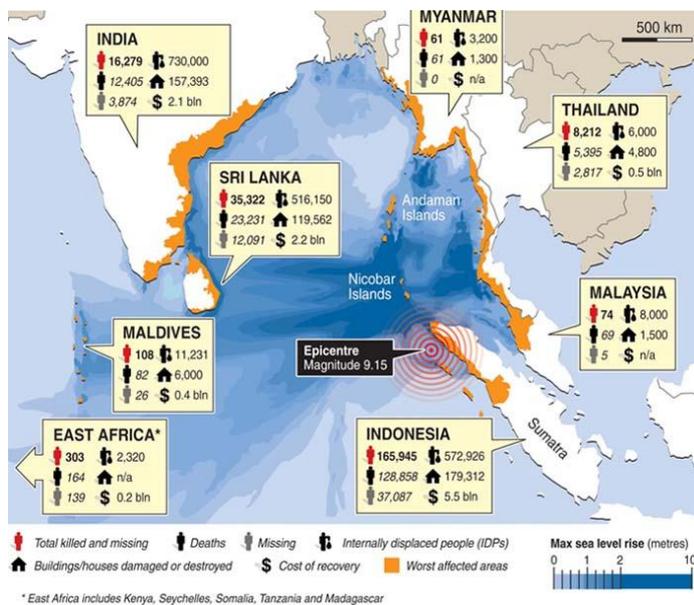
Previous attempts to resolve the issue

After the catastrophic typhoon of 2008 (cyclone Nargis) that hit Myanmar and caused a disastrous amount of deaths (130,000 people lost their lives in the aftermath), ASEAN decided that new measures needed to be instituted. ASEAN, fearing another disaster, created the ASEAN-ERAT (ASEAN Emergency Rapid Assessment Team) to assess disasters and, based on their assessment, recommends the appropriate course of relief action. The benefits of this organisation were that is reduced confusion and delays in the procedure of response, and it acted as a liaison between ASEAN and non-ASEAN nations. This meant that the nations hit by the natural disasters are much less dependent on foreign

Western aid. ASEAN-ERAT had, as of 2016, been deployed on ten operations, including the Haiyan and Rammasun typhoons and the Bohol earthquake.

Another measure set up by ASEAN is the ASEAN Agreement on Disaster Management and Emergency Response (AADMER), which was signed by all ASEAN

members in 2005 and went into effect in 2009. The agreement sets up a legal framework for a united and coordinated response to natural disasters. ASEAN put this in place as they strived to learn from the disastrous consequences of their indecision about relief provision after the infamous Boxing Day tsunamis in 2004 which caused an estimated 227,898 deaths over 14 countries. The tsunamis went down in history as some of the most catastrophic natural disasters in world history, as not only did they kill thousands, they also



massively disrupted development, trade and the economies of the countries they affected that lacked the resources to recover properly.

Possible Solutions

Whatever solution is proposed, it is clear that it must be an entirely collaborative effort, as this issue doesn't have a one-size-fits-all solution. The differences in development level within the region (between LEDCs like Indonesia and Myanmar, NICs like India and China and MEDCs like the USA and Japan) also mean that the effects of natural disasters also vary from nations to nations, as well as their individual capacity for preparing for natural disasters. Based on the previous organizations created to aid nations suffering from the aftermath of natural disasters, further efforts should be made in order to remove any possible bias seen in the action of these coalition groups (aid tends to come slower to poorer countries in the association). In a different field, the association could invest UN funds into research programs to help predict the occurrence and magnitude of any and all natural disasters, in order to properly warn their populations of oncoming threats. This can be done by advancing funding and development in fields of scientific research and innovations.

An early warning system should be developed in the region in order to predict the location, magnitude and estimated timing of all possible natural disasters. There are many instances in which these were not put in place and a natural disaster occurred, killing thousand and that could have been prevented by a warning. The main and most recent example of this is the Krakatoa eruption and tsunami in Indonesia the 22 December 2018. The Krakatoa volcano is an incredibly deadly active volcano on an abandoned Indonesian

island. However, clearly not enough monitoring of the volcano was carried out, as on the 22 December 2018 a massive eruption occurred that reduced the size of the volcano by two thirds. This eruption is linked with the 2018 Sunda Strait tsunami which, by the 31st December 2018 had a reported death toll of 437, with 14,059 injured.



Figure 3: Scientists believe that the massive landslide caused by the eruption played a large role in the effects of the tsunami

Finally, one possible long-term solution is to remedy the extreme natural disasters occurring more and more frequently is to move towards fixing climate change through various environmental treaties that are not part of the issue. This is important to bear in mind since many of the more recent natural disasters are either caused or amplified by climate change and human action on the planet: typhoons are more frequent and disastrous,

floods occur more frequently as well, as do droughts, landslides, and wildfires.

Appendix/Appendices

Further reading that can definitely help identify the main risks and measures in place to prevent these risks is the Synthesis Report on Ten ASEAN Countries Disaster Risks Assessment (December 2010) from the ASEAN Disaster Risk Management Initiative: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwixvKva497fAhXmxoUKHd9AB7MQFjACegQIBBAC&url=https%3A%2F%2Fwww.unisdr.org%2Ffiles%2F18872_asean.pdf&usg=AOvVaw0REqlvP15pGfkoZ8KnN4pX

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