



Activity Sheet: Guide Questions for the Presentation

Members: _____ Score: _____

Group: _____ Grade and Section: _____

Instructions:

Study the case studies assigned to your group. Based on the material and your prior knowledge of the event, discuss among yourselves, and answer the questions below. You have five minutes per group to present your answers.

1. Why did the event become disastrous? Identify the factors cited below.

a. **location** of affected areas

b. **conditions that make a community prone to the damaging effects of a hazard** such as poor construction of buildings, lack of public awareness, and limited preparedness

c. **strengths and resources within a community that can reduce the effects of a disaster**, such as infrastructure, institutions, human knowledge and skills, and leadership and management

2. What could have been done in or by the community to avoid or limit the impacts of disasters?



Case Study 1. Super Typhoon Yolanda



Residents walk on a road littered with debris after Super Typhoon Haiyan battered Tacloban city.

Source: <https://garsidej.wordpress.com/igcse/hazardous-environmnets/typhoon-haiyan/>



A ship washed ashore by storm surges during the height of Super Typhoon Haiyan (Yolanda) sits atop crushed houses in Tacloban, Leyte in November 25, 2013.

Source: <https://news.abs-cbn.com/focus/multimedia/slideshow/11/07/18/yolandas-path-then-and-now>

Description of Disaster

On November 8, 2013, Super Typhoon Yolanda (international name: Haiyan) makes landfall in Eastern Samar and passed through the central Philippines, leaving a trail of destruction in its path. As a Category 5 storm with wind speeds sustained at approximately 306-314 kph, it made at least 6 landfalls in less than 20 hours. Yolanda brought with it a massive 5-meter-high storm surges in Tacloban City, Leyte, which caused 90 percent destruction of the island.

Tacloban City is a highly urbanized city in the northeastern part of Leyte island. Considered as the premier urban area in Eastern Visayas, it has been home to 221,174 persons and 45,478 households. It has been a center of commerce, education, and economic activities in Region VIII for decades. It suffered many casualties from storm surges with 2,646 dead and 701 missing. Based on the manual counting of structures, 7,677 structures were believed to be damaged by the storm surge.

From 1970-2013, a total of 720 tropical cyclones entered the Philippine Area of Responsibility (PAR). Based on NDRRMC records, Typhoon Yolanda is the worst typhoon to ever hit the Philippines ranking first in terms of damage to properties amounting to Php 93 Billion (infrastructure, productive, social, and cross-sectoral). A total of 6,300 individuals were reported dead, 28,688 injured and 1,062 are still missing, with more than 90 percent coming from Region 8.

Even though the hardest-hit areas received early warnings, the weather service and other officials later admitted that the victims were unfamiliar with the term "storm surge." Even though the hardest-hit areas received early warnings, the weather service and other officials later admitted that the victims were unfamiliar with the term "storm surge."



Case Study 2. Cotabato Earthquakes



Left: Earthquake-damaged building in North Cotabato after a magnitude 6.5 temblor struck the province on October 31, 2019.

Source: Earthquake stronger than 'The Big One' possible in N. Cotabato [Online image]. (2019, October 2019). Yahoo! News. <https://ph.news.yahoo.com/earthquake-stronger-big-one-possible-104124855.html>

Right: Rescuers are still looking for three more people in Magsaysay, Davao del Sur after a magnitude 6.6 earthquake jolted the nearby town of Tulunan, South Cotabato on Tuesday morning, local authorities said.

Source: Cotabato quake death toll climbs to eight, 394 injured [Online image]. (2019, October 30). CNN Philippines. <https://www.cnnphilippines.com/news/2019/10/30/magsaysay-davao-del-sur-missing-quake.html>

Description of Disaster

Three consecutive major earthquakes shook eastern and central Mindanao in the last quarter of 2019. These earthquakes are considered part of a sequence of events from interrelated faults in the region. The earthquake sequence triggered a large number of landslides and rockslides. Municipalities affected by landslides include Kidapawan City, Antipas, Arakan, Makilala, M'Lang, and Tulunan in Cotabato province; Magsaysay, Bansalan, Malalag, Matanao and Kiblawan in Davao Del Sur.

October 16 magnitude 6.4 – Tulunan, North Cotabato

On October 16, 2019, at 7:37 PM, a magnitude 6.3 earthquake struck the provinces of Cotabato, Davao del Sur, and vicinities. Tulunan felt the strongest ground-shaking. Aftershocks recorded afterward were small to moderate. Based on field investigations, geological impacts include liquefaction, tension cracks, and earthquake-induced landslides.

Reports included at least five people killed and thirty injured. The damaged buildings included forty houses, seventy schools, seven health facilities, ten commercial buildings, and two places of worship. Poor engineering has been a major contributing factor to these damages.

Description of Disaster

October 29 magnitude 6.6 – Tulanun, North Cotabato

On October 29, 2019, an earthquake occurred, with an epicenter located southeast of Tulanun, Cotabato. A major fire broke out in General Santos City. Many parts of Cotabato and locally in South Cotabato, Sultan Kudarat, and Sarangani experienced power outages. On a report, at least ten deaths and a minimum of another 400 injured. Arakan, Carmen, Tulanun, Makilala, Digos City, and Magsaysay reported deaths. Parts of North Cotabato, South Cotabato, and Sultan Kudarat suspended school classes. The October 29 shock triggered landslides that caused three fatalities, with six more people reported missing.

October 31 magnitude 6.5 – Central and eastern Mindanao

Two days thereafter, another earthquake rocked central and eastern Mindanao. Some buildings in Davao and Soccsksargen were seriously damaged, and some collapsed. More than 300 aftershocks comprised the figure after the earthquake.

A hotel in Kidapawan City collapsed following the earthquake; fortunately, according to the National Disaster Risk Reduction and Management Council (NDRRMC), no one was inside the building when the earthquake struck. The Davao City government suspended classes on all levels. According to the NDRRMC, the earthquake impacted about 30,000 families or 150,000 individuals. The October 31 shock triggered landslides that caused two fatalities, with five more people reported missing.

For the last two earthquakes, A total of 71,247 families/349,266 persons were affected in 362 barangays in Region XI and XII. Of which, a total of 13,073 families/60,130 persons are taking temporary shelter in 107 evacuation centers, while 25, 812 families/125,609 persons are served outside ECs. Reports covered a total of 23 dead, 563 injured, and 11 missing persons. Displaced families took refuge in makeshift tents in the evacuation areas.

The DOST-PHIVOLCS Quick Response Team (QRT) was immediately deployed on 18 October 2019 and 30 October 2019 to 1) conduct earthquake information dissemination and education for local government units (LGUs) and locals in the affected areas; 2) conduct field surveys to determine the earthquakes' geologic impacts and effects to structures; 3) deploy temporary seismic stations for continuous aftershocks monitoring; and 4) assist the LGUs, together with the Mines and Geosciences Bureau, in assessing selected evacuation/relocation sites in terms of earthquake hazards. It also conducted information dissemination activities to explain the earthquake events.

Despite the reported total of seventy-three health facilities affected, they resumed operations and have set up temporary facilities for consultation areas, operating rooms, and delivery rooms to accommodate the surge of patients and casualties.

The Central Mindanao (SOCCSKSARGEN Region), which includes Cotabato, is one of the seismically active areas in the country because of the presence of the western extension of the Mindanao Fault (Cotabato-Sindangan Fault). This active fault traverses Sarangani province to northwest of the Zamboanga Peninsula. The Cotabato Trench is also a major source of earthquakes that can affect the region. In addition, there are other nearby local faults, some of which may be covered by recent deposits, and could be sources of small to strong magnitude earthquakes.

Description of Disaster

One of the most destructive earthquakes in the Philippines was the Moro Gulf earthquake on August 17, 1976, with a magnitude 8.1 that eventually caused tsunamis. The fact that the tremor happened just after midnight when most people were sleeping and a great tsunami was spawned—which struck the coasts from different directions and caught the people unaware—attributed as the major causes of the great number of casualties during the event.



Case Study 3. Mayon Volcano Eruption



Source: Warning in Philippines to 'evacuate or face death penalty' as Mayon volcano threatens deadly eruption [Online image]. (2018, January 23). Sky News. <https://news.sky.com/story/warning-in-philippines-to-evacuate-or-face-death-penalty-as-mayon-volcano-threatens-deadly-eruption-11219540>

Description of Disaster

Early in 2018, Mayon Volcano, in the province of Albay, in the Bicol region, showed active volcanic activities. Aside from ashfalls, rockfalls, and lava flows, the ground around the summit has also been shaking. It caused the Philippine Institute of Volcanology and Seismology (PHIVOLCS) to raise Mayon Volcano's alert level. Below is a series of activities of Mayon Volcano.

January 14: PHIVOLCS raised Mayon Volcano's level from II to III, signifying that Mayon has an increased tendency toward hazardous eruption.

January 15: Two lava collapse events occurred, producing rockfall and small-volume pyroclastic density currents. Barangays in the southwest of the volcano reported ash clouds produced with ash falls. As of 15 January, a total of 5,318 families (21,823 people) have been displaced, with 4,134 families (16,877) staying in 18 evacuation centers.

Description of Disaster

January 16: Lava flow, more rockfall events, and short pyroclastic flow continued. PHIVOLCS recommended a 6-km permanent danger zone, and a 7-km extended danger zone is enforced due to the dangers of rockfalls, landslides, and sudden explosions or dome collapse that may generate hazardous volcanic flows. The Province of Albay, Region V was declared under the State of Calamity through Resolution No. 00670-2018.

January 22: The alert level-4 (hazardous eruption imminent) was raised over Mayon Volcano, located in Albay province. The danger zone was extended to an 8-kilometer radius, up from a previous 7-kilometer where local authorities were advised to prevent any human activity, due to the danger of rockfalls, landslides, and sudden explosions or dome collapse that may generate hazardous volcanic flows. As of 22nd of January, 7,900 families (30,000 people) have been evacuated from seven (7) Albay municipalities neighboring Mount Mayon.

January 24: The danger zone has been further extended to a 9-kilometer radius. Around 60,500 people have been displaced, and are sheltered in 52 evacuation centers or being hosted by relatives and friends.

February 26: Six (6) separate lava eruptions, lasting up to 19 minutes, occurred. A volume of 90,000 people remain affected, and 62,000 people have been evacuated from their homes due to the volcano and are staying in 57 evacuation centers.

From Alert Level 4, Mayon volcano declined in unrest activities that made it downgraded to Level 3 on March 6. On 3 April, the government lowered its Alert Level to Level 2 and reported the return of all Internally Displaced Persons (IDPs) to their respective places of origin.

As of March 06, 2019, 6:00 PM, the province of Albay incurred a total of ₱166,288,833.36 worth of damages to agriculture. There is still a total of 10,443 farmers affected in the province. A total of 64 schools, 74,010 learners, and 2,732 DepEd personnel located within the 6-9 kilometer Permanent Danger Zone were affected, and there are still 1,698 livestock evacuated in the Polling Stations.

As of September 2018, a total of 91,055 people has been affected by the eruption of Mayon Volcano.



Case Study 4. Payatas Landslide



Top: PHILIPPINES: LANDSLIDE AT PAYATAS GARBAGE DUMP LATEST.

Source: PHILIPPINES: LANDSLIDE AT PAYATAS GARBAGE DUMP LATEST [Online video]. (2015, July 21). YouTube. https://www.youtube.com/watch?v=n_NBmIChce0

Bottom: Housing situation at Payatas Dumpsite before landslide.

Source: Stability problems of landfills — The Payatas landslide. (n.d.). [PDF File]. http://www.dr-koelsch.de/Phillie_01_Payatas.pdf

Description of Disaster

In early July 2000, two tropical typhoons hit parts of the Philippines. After several days of heavy rain, the Payatas dumpsite tragedy happened on the early morning of July 10, 2000. A massive 50 feet wall of solid waste collapsed and burst in flames due to landfill gas, fallen power cables, or overturned stoves in the shacks. An avalanche of mud and rubbish buried more than 100 shacks and huts adjacent to the dump, which were home to around 800 families. It also buried an undetermined number of people. Bulldozers excavated the site while residents dug with their bare hands and whatever tools they could find to try to rescue victims.

More than 220 people were found dead in the plastered area. Four weeks after the landslide, rescue works were suspended. There was no longer hope to find survivors, and even the dead bodies were heavily degraded, which made the identification impossible. Therefore, an estimated 200 to 800 people are still missing.

The actual death toll will never be known, firstly because officials have no idea how many people were living alongside the dump, near Payatas. Local residents say that up to 500 are still buried under the rubbish, while local officials put the number at just 140.

The local city mayor, Mel Mathay, has tried to deflect criticisms of his administration by saying that he had ordered the residents out of the area the previous week for fear of landslides, but they had refused to go. Even after the disaster, many people are determined to stay simply because they have nowhere else to go.

During that time, about 1,540 metric tons (1,700 tons) per day of that MSW was placed at the Payatas landfill. Around the dumpsite, the city of Payatas houses 80,000 people, many of them working in a waste business, like in junk stores or as waste pickers (scavengers). The scavengers, who have the worst job in this micro-economy, often must live directly on the open waste surface of the dumpsite.

In 1998, the landfill was supposed to close, but the Quezon City government asked the Metro Manila Development Authority (MMDA) to postpone closure because of the higher cost of using the landfill in San Mateo, Rizal (~6.7 km away). According to the MMDA, the Quezon City government continued to postpone the closure of the Payatas landfill until one month before the July 2000 slope failure.