

# CAIE Geography Pre-U

## 3A: Tectonic Hazards Case Studies



## Haiti 2010 earthquake

### Background

In 2014 Haiti was **168 out of 187 for HDI** and it is the least developed country in the Western hemisphere. **96% of the population are at risk of mortality from two or more hazards**. Most of the houses in Haiti are built on steep slopes and are not well built.

### Impacts

The 2010 earthquake had a **magnitude of 7** on the Richter scale. Most of the infrastructure in the capital was destroyed. **3.5 million people were affected** with **220,000 people dying** and **300,000 being injured**. Over **188,000 houses were damaged** or destroyed and **1.5 million people were left homeless**.

### Short term

**Disaster management teams** from around the world came to aid the rescue efforts. NGOs handed out food and Oxfam delivered clean drinking water. This, however, was made difficult because the roads, especially to remote villages, were in poor condition. Massive camps were set up to house the homeless and provide medical aid.

### Long term

NGOs helped to replace tents with **earthquake resilient houses** that had clean water and toilets. **Microcredit schemes** were also set up which allowed small business to get up and running again allowing the stimulation of the economy and hope for better development and standards of living in the future. Rice mills were built and improved methods of farming were developed to ensure that a famine and/or dependence of food aid did not occur. NGOs also helped to develop earthquake simulation exercises to better prepare residents for future earthquakes.

## Tohoku 2011 earthquake

### Background

As Japan is subject to frequent earthquakes and it is also well developed, they are well prepared for hazards of this nature. They have frequent drills, buildings are made to withstand earthquakes and all school buildings, offices and many homes have earthquake emergency kits.

### Impacts

**Magnitude 9** earthquake that triggered a **tsunami** which swept inland flooding 500 square kilometres. **18,000 people were reported dead or missing** and 0.5 million people were left homeless. There was a shortage of food, petrol, medical supplies and 1 million were left without running water. The tsunami also caused a radiation leak from a nuclear power plant.

### Short term

A **20km evacuation zone** around the nuclear plant was established. Within 30 minutes, 11 military aircraft were up in the air and **identifying communities which were cutoff**. **Within 2 seconds of the earthquake being detected all of Tohoku's 27 bullet trains had been stopped**.



### Long term

**Within 8 months, 96% of electricity, 98% of the water supply and 99% of landline networks had been re-established.** The reconstruction design council was set up to plan a long term development strategy and were given **23 trillion yen** to help rebuild. They are working to rebuild infrastructure, rebound the economy and attract investment to the area.

## Nyiragongo 2002 volcanic eruption

### Background

The volcano in Nyiragongo, DRC contains a lava lake at its centre. During the eruption fissures opened up on the south side and caused 3 streams of lava from the lake to drain through. The lava flows reached **60km/hr**. There was political unrest in the DRC at the time and so monitoring of the volcano was difficult. This meant that people were given **little warning**.

### Impacts

Homes were destroyed by ash and lava. **45 people died in the first 24 hours. 50 people were killed when the lava reached a container of fuel oil causing it to explode. 30% of the city was destroyed** along with half of the hospitals. One month after the eruption **350,000 people were still dependent on aid**. Cholera also spread due to a lack of sanitation.

### Responses

Mainly received help from **aid** although many countries were reluctant to give long term aid due to the **political instability** within the DRC. Evacuation only began when plumes of ash and smoke were visible, at this time lava flows were already engulfing the area.

## Mount St Helens 1980 volcanic eruption

### Eruption

Earthquake struck causing a **landslide and a massive volcanic eruption. Pyroclastic flows** were also generated.

### Impacts

**57 people died. 250 homes, 47 bridges and 15 miles of railway were all destroyed.** Mudflows killed all aquatic life and every plant and animal within 25 km were all killed. It **cost \$1.1 billion**. The pyroclastic flows flattened forests and generated massive mud flows due to the melting of ice.

### Responses

Stranded people were rescued and shelter was provided for those who lost their homes. However, rescue efforts were slowed due to **inaccurate maps. \$300 million worth of trees were planted** and **farmers were compensated \$70 million. New tourist facilities were built** which has generated lots of income and stimulated the economy.



## Eyjafjallajokull 2010 volcanic eruption

This eruption only had an impact on **air travel** due to the vast quantities of ash which was ejected into the air. The disruption of air travel cost the airline industry **£130 million a day**. Although the reduction in air travel did save **1.3 to 2.8 million tonnes of CO<sub>2</sub>** from entering the atmosphere.

