

HOW DO THE EFFECTS OF EARTHQUAKES DIFFER IN COUNTRIES AT DIFFERENT STAGES OF DEVELOPMENT?

For the exam you will need to know 2 case studies very well, one from an MEDC (more economically developed country) and one from an LEDC (less economically developed country). You will need to be able to explain how and why the effects differ referring to level of development (how rich or poor the country is).

LINK TO SYLLABUS: A case study of an **earthquake** in a **rich** part of the world and one from a **poorer** area – their specific **causes**; **primary** and **secondary effects**; **immediate** and **long-term responses** – the need to predict, protect and prepare. Contrasts in effects and responses will be clear.

CASE STUDY 1: KOBE, JAPAN 1995: GREAT HANSHIN EARTHQUAKE (MEDC).

CAUSES: At 5.46am on January 17th 1995 the Philippines plate was pushing beneath the Eurasian plate along the destructive fault line that runs beneath Kobe. The plates had become stuck and pressure began to build up beneath the crust and was finally released leading to an earthquake measuring 7.2 on the Richter scale, with tremors lasting 20 seconds.

PRIMARY EFFECTS: 6434 people dead and 40,000 injured. Gas mains ruptured, water pipes fractured, sections of elevated road collapsed and railway lines buckled.

SECONDARY EFFECTS: 300,000 homeless. 2 million people left without electricity and 1 million people had to cope without water for 10 days. Fires engulfed the city, devouring the wooden structures, damage to roads restricted access and the fires burned out of control. The economy suffered as there was \$220 billion in damage. Companies like Panasonic had to close temporarily.

RESPONSES: Friends and neighbours searched through the rubble for survivors, joined by the emergency services when access was possible. Hospitals struggled to cope with the large amount of injured people. Major retailers provided supplies for people and Motorola maintained mobile phone connections free of charge. The recovery longer term was quick. Railways were 80% operational within just a month, most roads were back to normal by July that year. A year later the port was 80% operational again. Buildings which survived the quake had been built to stricter regulations from 1981 onward. Buildings which were older than this were not and collapsed easily. New buildings were built further apart to prevent the domino effect should they fall. High rise buildings are now built with flexible steel frames and rubber blocks put under bridges to absorb shock.

The Japanese practice earthquake drills every year to prepare them for another similar event. Over 800,000 people took part in a drill in August 2006.

CASE STUDY 2: THE HAITI EARTHQUAKE 2010 (LEDC).

CAUSES: The earthquake happened along a conservative plate margin marking the boundary between the North American plate and the Caribbean plate. At 16:53 on January 12th 2010 the island of Haiti was struck by a powerful 7.0 magnitude earthquake. The earthquake was caused by stress building up along the conservative plate margin, when this stress was released there was a sudden slip along the fault. The earthquake was followed by several large aftershocks of up to 5.0 on the Richter scale.

EFFECTS: The earthquake devastated large parts of the capital Port-au-Prince and resulted in massive loss of life making it one of the most destructive earthquakes of all time.

PRIMARY EFFECTS: 230,000 people were killed. 180,000 homes destroyed by the ground shaking. Destroyed buildings in Port au Prince, Haiti.

SECONDARY EFFECTS: 2 million people were affected and 1.5 million were homeless. The homeless were accommodated in over 1100 squalid camps with limited services such as water and sanitation. People lived in these camps for over a year. Cholera claimed the lives of several hundred people mainly children. Storms and flooding caused further hardship in the camps. 19 million cubic metres of rubble and debris created- a huge job to clear up. 5000 schools damaged or destroyed. Service such as electricity, water, sanitation and communications were badly disrupted or destroyed. Total damage bill was \$11.5 billion. Damage to the presidential palace.

RESPONSES: Search and rescue was the immediate response. Assistance was required and so specially trained medics with sniffer dogs and high tech heat sensitive equipment were flown in from MEDCs. Local people made up the majority of the rescuers. Local people made up the majority of the rescue effort.

Aid arrived from abroad in the form of food, water, medical supplies and temporary shelters (from the USA and Dominican Republic at first.) The United Nations and the USA provided security to maintain law and order and ensure a fair distribution of aid. The UK's Disasters Emergency Committee (DEC) raised over £100 million. This money was used for emergency shelter, medical consultations, clean drinking water and sanitation. Temporary shelters became home for more than a year for the homeless, while medical care was very limited.

LONGER TERM RESPONSES: 3/4 of damaged buildings were inspected and repaired. 200,000 people have received cash or food for public work such as clearing rubble. Several thousand people have decided to move away from Port au Prince to stay with family, some have emigrated to other countries. The world bank pledged \$100 million to support reconstruction and recovery programmes in Haiti.

WHY DID HAITI SUFFER SO MUCH MORE THAN KOBE?

There is no denying that both countries suffered greatly as a result of the earthquakes. But why did so many more people die in Haiti? and why did it take them so much longer to recover?

As Haiti is an LEDC, the country had limited services and healthcare before the earthquake even happened. People were living in poverty as the country struggled to develop and improve quality of life for its people. There are no building regulations such as in Kobe, Japan and there are no action plans in place in case an earthquake was to occur. Buildings in Haiti were built with poor quality, cheap materials and these simply crumbled when the earthquake shook. Although building did fall in Kobe, a large proportion did not due to their construction.

Effects were similar, buildings collapsed and services were cut off. In Kobe they responded quickly as they already had well organised emergency services which could arrive from outside the city who were equipped with high tech machinery for rescue. In Haiti they were reliant upon aid from abroad, which arrived quickly to help local people with the rescue effort. Charities were quick to raise funds for Haiti and contribute medics with specialist equipment but these take time to arrive.

The final notable difference was the time it took to respond and recover. In Kobe it was a matter of weeks and months before the city was cleared and 80% functioning. Haiti was still devastated 12 months afterwards and is still recovering to this day. It is a challenge for any LEDC to develop and become richer, but when something as devastating as an earthquake happens, the country is pushed even further backwards in their attempt for a better life