

## 1.8 Earthquakes in the developing world

### + Section in brief

This section looks at the impacts of earthquakes in developing countries, and how people respond to them. The earthquake that hit Sichuan, China, on 12th May 2008 provides the case study. The primary and secondary effects of the earthquake are explained, and then the local and international responses are detailed.

In the activities, students:

- explain why the earthquake happened;
- identify and classify the effects of the earthquake;
- compare the impacts and explain the differences between the case studies looked at in this chapter.

### Key ideas

- The earthquake happened at the collision zone where the Indian Plate is moving against the Eurasian Plate.
- Primary effects happen immediately and may include injury and death.
- Secondary effects happen later and may include disease and shortages of food and water.
- Aftershocks happen after the main earthquake, and can cause further problems.
- Local responses included a huge rescue effort.
- International responses included money, materials, and rescue teams.

### Key vocabulary

+ earthquake, tsunami, primary effects, secondary effects, aftershocks, earthquake-proof

### Skills practised

Geographical skills: classifying

Literacy skills: comparing and explaining

### Section outcomes

By the end of this section, most students should be able to:

- define or explain the terms given in 'Key vocabulary' above;
- explain why the earthquake happened;
- understand the difference between primary and secondary effects;
- understand the difference between and give examples of local and international responses.

### Ideas for a starter

- 1 Ask students: What types of plate margin have we learned about so far?
- 2 Ask students to quickly recap what type of tectonic activity can occur at all types of plate margin.

### Ideas for plenaries

- 1 Ask students to identify two key things they have learned today – ideally, you are looking for them to identify and show an understanding of primary and secondary effects and/or local and international responses.
- 2 Search the internet for eyewitness accounts from the Sichuan earthquake, and read them out. Ask students for any comments, and how the accounts make them feel.

### Further class and homework activity

Research the response of the UK government and UK charities to the Sichuan earthquake.

### answers

- 1 The Sichuan earthquake was caused by the northward movement of the Indian Plate against the Eurasian Plate – this results in the uplift of the Himalayas and the Tibetan plateau, and earthquake activity; this is a collision boundary or zone, where two continental plates are pushing into each other – because of the massive pressures caused by two plates crashing into each other, there are strong earthquakes at these margins.
- 2 **a** Effects of the Sichuan earthquake: 70 000 deaths, 400 000 injured, 5 million homeless, \$75 billion in damage, 420 000 buildings damaged by aftershocks, over 700 schools destroyed, quake lakes.  
**b** Social effects: 70 000 deaths, 400 000 injured, 5 million homeless, over 700 schools destroyed, 420 000 buildings damaged by aftershocks. Economic effects: \$75 billion in damage.
- 3 **a** Volcano – developed world: Sakurajima, Japan; 35 deaths.  
Volcano – developing world: Nyiragongo Congo; 100 deaths; 14 villages and 40% of Goma destroyed – 12,500 homes and 45 schools destroyed, airport out of action, 120 000 homeless.  
Earthquake – developed world: Niigata, Japan; 11 deaths; 350 buildings destroyed, nuclear power plant damaged, car factory shut down.  
Earthquake – developing world: Sichuan, China; 70 000 deaths; \$75 billion, 5 million homeless
- b** Generally, earthquakes are likely to cause more deaths and more damage – because they affect a wider area, and because there's usually less warning than for volcanic eruptions, so people have less chance to escape. However, both volcanoes and earthquakes are likely to cause more deaths in the developing world – in the case of volcanoes, warning and evacuation measures are less likely to be in place, and people are less likely to heed them; in the case of earthquakes, building design and construction tends to be poorer, so they are less able to withstand the shaking and collapse, killing people trapped inside. The costliest damage tends to occur in the developed world, because the more developed infrastructure costs more to repair and replace.
- 4 Earthquakes happen on destructive plate margins because:
  - destructive margins occur where plates of heavier (more dense) oceanic crust collide with plates of lighter (less dense) continental crust – the collision zone is known as the subduction zone;
  - the lighter continental crust overrides the heavier oceanic crust – the oceanic crust is forced down beneath the continental crust;
  - this results in friction and increased pressure;
  - the rock jolts and grinds its way down, causing earthquakes.

