Your notes

GCSE Geography: revision notes

Tectonic hazards

Contents

1. Plate tectonics
2. Plate margins
3. Effects
4. Responses
5. Case studies: Chile 2010 and Nepal 2015
6. Reducing the risk
7. Volcanic landscapes and vulnerability (Eduqas)
8. Key terms
9. Quick questions
10. What to do next

Plate tectonics

- The Earth's crust is split into **tectonic plates** that move slowly, driven by **convection currents** in the mantle and slab pull.
- Most earthquakes and volcanoes happen along plate margins.

Plate margins

- Destructive: an oceanic plate sinks (subducts) under a continental plate, causing explosive volcanoes and strong earthquakes.
- Constructive: plates move apart and magma rises to make new crust, with gentler volcanoes (e.g. Iceland).
- Conservative: plates slide past each other, causing earthquakes but no volcanoes (e.g. the San Andreas Fault).

Effects

- **Primary effects** happen straight away: buildings collapse, roads crack, people are injured or killed.
- **Secondary effects** happen later: fires, tsunamis, landslides, disease, loss of jobs and income.

Responses

- Immediate responses: search and rescue, medical care, emergency shelter, food and water.
- Long-term responses: rebuilding homes and infrastructure, stricter building codes, restoring the economy.

Case studies: Chile 2010 and Nepal 2015

- Chile (a higher-income country), 27 February 2010: a magnitude 8.8 earthquake off the coast, near Concepción. About 500 people died, and a tsunami hit coastal towns. The damage cost about US$30 billion. Strict building codes and quick emergency responses kept the death toll low, and the country recovered quickly.
- Nepal (a low-income country), 25 April 2015: a magnitude 7.8 earthquake in the Gorkha district, about 80 km north-west of Kathmandu. Nearly 9,000 people died, many old buildings collapsed, and landslides and avalanches followed, including on Mount Everest. Nepal needed international aid, and rebuilding took many years.

Reducing the risk

- Monitoring: seismometers, tiltmeters and gas measurements can warn that a volcano may erupt.
- Protection: earthquake-resistant buildings with deep foundations, cross-bracing and shock absorbers.
- Planning: hazard maps, evacuation routes and drills.
- People live near hazards because of fertile soil, geothermal energy, tourism, jobs and family ties.

Volcanic landscapes and vulnerability (Eduqas)

- Theme 3 (if your school chose it). **Hotspots** are plumes of very hot magma under the middle of a plate, such as Hawaii, where volcanoes form far from plate boundaries.
- Large features: shield volcanoes (gentle slopes of runny lava, like Mauna Loa), stratovolcanoes (steep layers of ash and lava, with explosive eruptions) and **calderas** (huge craters left when a volcano collapses).
- Smaller features: cinder cones (small, steep cones of loose fragments), lava tubes (tunnels left when lava keeps flowing under a hardened crust) and geysers (hot springs that shoot out water and steam).
- Volcanic hazards: **pyroclastic flows** (fast clouds of hot gas, ash and rock), lava flows, **lahars** (volcanic mudflows) and ash clouds, which can ground aircraft.
- Vulnerability depends on physical factors, such as magnitude, and on social and economic ones, such as poverty, building quality and preparation. You need one located volcanic hazard and one located earthquake.

Key terms

Tectonic plate	A large slab of the Earth's crust that moves slowly.
Convection current	Circulation of heat in the mantle that helps move the plates.
Destructive margin	Where an oceanic plate subducts under a continental plate.

Your notes

Constructive margin	Where two plates move apart and new crust forms.
Conservative margin	Where two plates slide past each other.
Subduction	One plate sinking beneath another into the mantle.
Epicentre	The point on the surface directly above where an earthquake starts.
Primary effect	An effect caused directly by the hazard, straight away.
Secondary effect	An effect that happens later as a result of the primary effects.
Hotspot	A place where a plume of hot magma rises under the middle of a plate, forming volcanoes. (Eduqas)
Caldera	A huge crater formed when a volcano collapses after an eruption. (Eduqas)
Lahar	A volcanic mudflow of ash, rock and water. (Eduqas)
Pyroclastic flow	A fast-moving cloud of hot gas, ash and rock from a volcano. (Eduqas)

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. At which type of margin do plates move apart?
2. What happens at a destructive margin?
3. Which margin has earthquakes but no volcanoes?
4. Which of these is a primary effect of an earthquake?
5. Which of these is a secondary effect of an earthquake?
6. What moves tectonic plates?
7. What is the point on the surface directly above where an earthquake starts?
8. Which instrument detects earthquakes?

Answers

1. Constructive
2. An oceanic plate sinks under a continental plate
3. Conservative
4. Buildings collapsing
5. Fires from broken gas pipes
6. Convection currents in the mantle
7. Epicentre
8. Seismometer

What to do next

Practise 15 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

Your notes