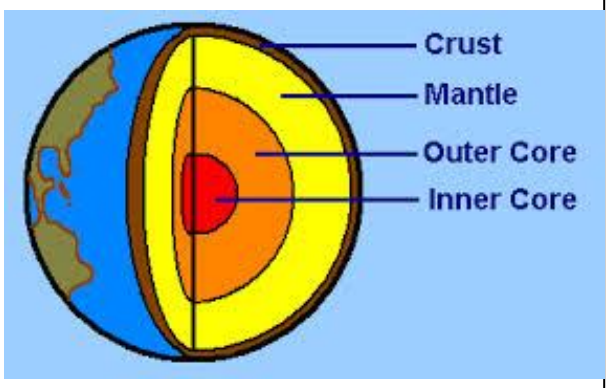
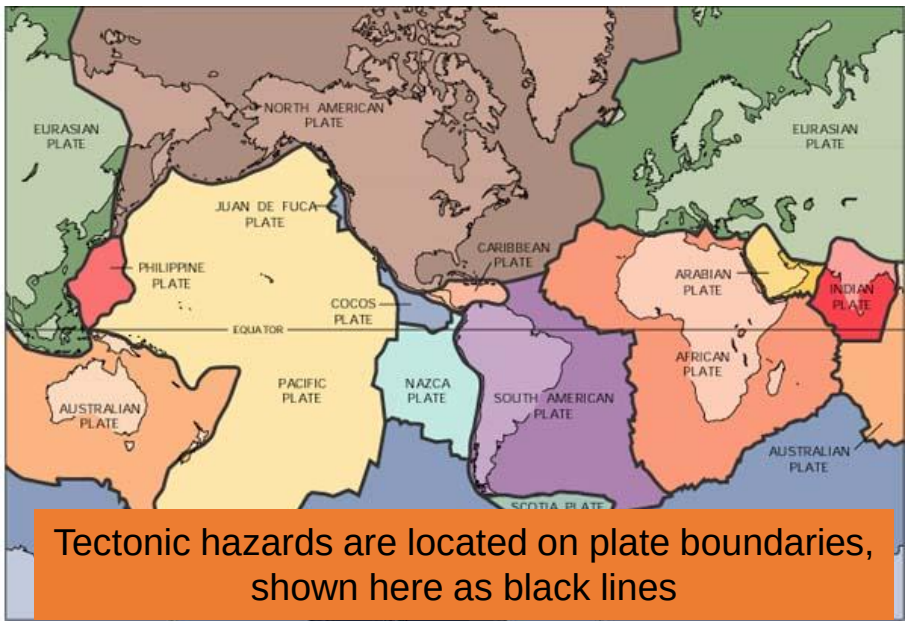
YR8 Shaky World Knowledge Map

Structure of the Earth:

CRUST- Rock between 5-90km thick broken up into tectonic plates
MANTLE- Semi molten rock that is moving slowly due to convection currents
OUTER CORE- Liquid layer of iron and nickel
INNER CORE- 6.Solid layer of iron and nickel



Key word	Definition
Tectonic hazards	Hazards caused by the movement of tectonic plates
Convection currents	Currents in the mantle which cause plates to move
Oceanic crust	Crust that has ocean on top of it
Continental crust	Crust that has land on top of it
Eurasian Plate	The tectonic plate that we live on
Pacific plate	The largest tectonic plate in the world
Plate boundary	Where two plates meet
Seismic waves	The waves that cause the ground to shake in an earthquake
Epicentre	The central point on the earthquake on ground level
Focus	The point underground where the energy of the earthquake is release
Subduction zone	The point where the oceanic plate dives under the continental plate on a destructive boundary
Primary impacts	The immediate and direct impacts of a tectonic hazard 4.
Secondary impacts	The indirect and long term impacts of a tectonic hazard
Richter scale	Scale between 1-10 to measure earthquake size 5.
Prediction	Estimated when and where is at risk
Preparation	Planning and getting ready for a tectonic hazard
Protection	Preventing damage from tectonic hazards



Tectonic hazards are located on plate boundaries, shown here as black lines

Convection currents

At the core, temperatures are very hot (up to 5,000 degrees C!). This heat causes the hot rock in the mantle to rise. As the rock moves away from the source of heat, it cools. This causes the rock to sink. This continued rising and sinking causes tectonic plates to move in all directions creating tectonic hazards. Think about a lava lamp.

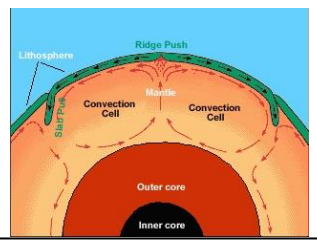


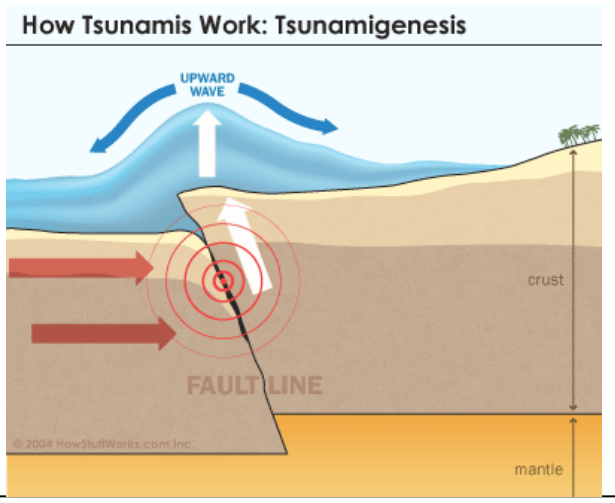
Plate boundaries

Conservative eg. Haiti 1. Two plates slide past each other (in the same of different directions) due to convection currents 2. Plates get stuck and pressure builds 3. Eventually this energy is released as seismic waves from the focus 4. The seismic waves push outwards and reach the epicentre causing the ground to shake	Constructive eg. Iceland 1. Plates move apart due to convection currents 2. Space created for magma to escape through, which created new land (normally under oceans) 3. As magma cools and solidifies, pressure builds as new magma tries to rise and escape 4. This pressure eventually gets too much and is released as a volcanic eruption
Collision eg. Nepal and the Himalayas 1. Two continental plates move towards each other due to convections currents 2. As they're of similar densities, the plates move upwards to form fold mountains 3. When the plates get stuck, pressure can increase 4. Eventually this energy is released as seismic waves from the focus 5. The seismic waves push outwards and reach the epicentre causing the ground to shake	Destructive eg. Japan 1. Oceanic and continental plate move towards each other 2. The oceanic plate is more dense and subducts under the continental plate 3. As this happens the plates can get stuck and pressure can build and release to form earthquakes 4. As the oceanic plate enters the mantle it melts to form magma 5. Magma rises to escape but can get stuck which causes pressure to build and result in a volcanic eruption

Example	Primary impacts	Secondary impacts	Management & response
Haiti earthquake 2010 (LIC) 8.	250,000 dead 70% of buildings in Port au Prince destroyed	1 million homeless Waterborne diseases 5,000 orphans	Lack of knowledge Last EQ 200 years ago Poor building design led to the pancake effect
Japan Tsunami 2011 (HIC)	16,000 deaths due to the tsunami 190,000 buildings damaged	24-25 million tonnes of debris Fukushima- nuclear power plant explosion 325,000 homeless Cost US$300bn	Early warning system in place Earthquake resistant buildings caused minimal destruction from the earthquake itself. Quick response emergency services
Boxing day tsunami 2004 (LIC)	Total deaths approx. 250,000 across 11 9. countries Indonesia death toll 165,945	500,000 homeless in Indonesia alone Cost US$9.9bn	No early warning systems Poor organisation and sanitation in hospitals Lack of search and rescue equipment

Tsunami formation

They occur at a destructive plate boundary. Where the oceanic plate subducts under the continental plate, the oceanic plate can get caught. Over time this pressure will build and eventually the oceanic plate will flip upwards, displacing all the water above it as a wave.



Yellowstone national park

Location: USA, Wyoming (NW)
Super volcano- an eruption that would be significantly larger than all other eruptions
Last erupted: 640,000 years ago
Many believe another eruption is long overdue

Local impacts:
90% of people killed within 1,000km radius
¾ of USA affected
Transport networks destroyed
Contaminated water supplies

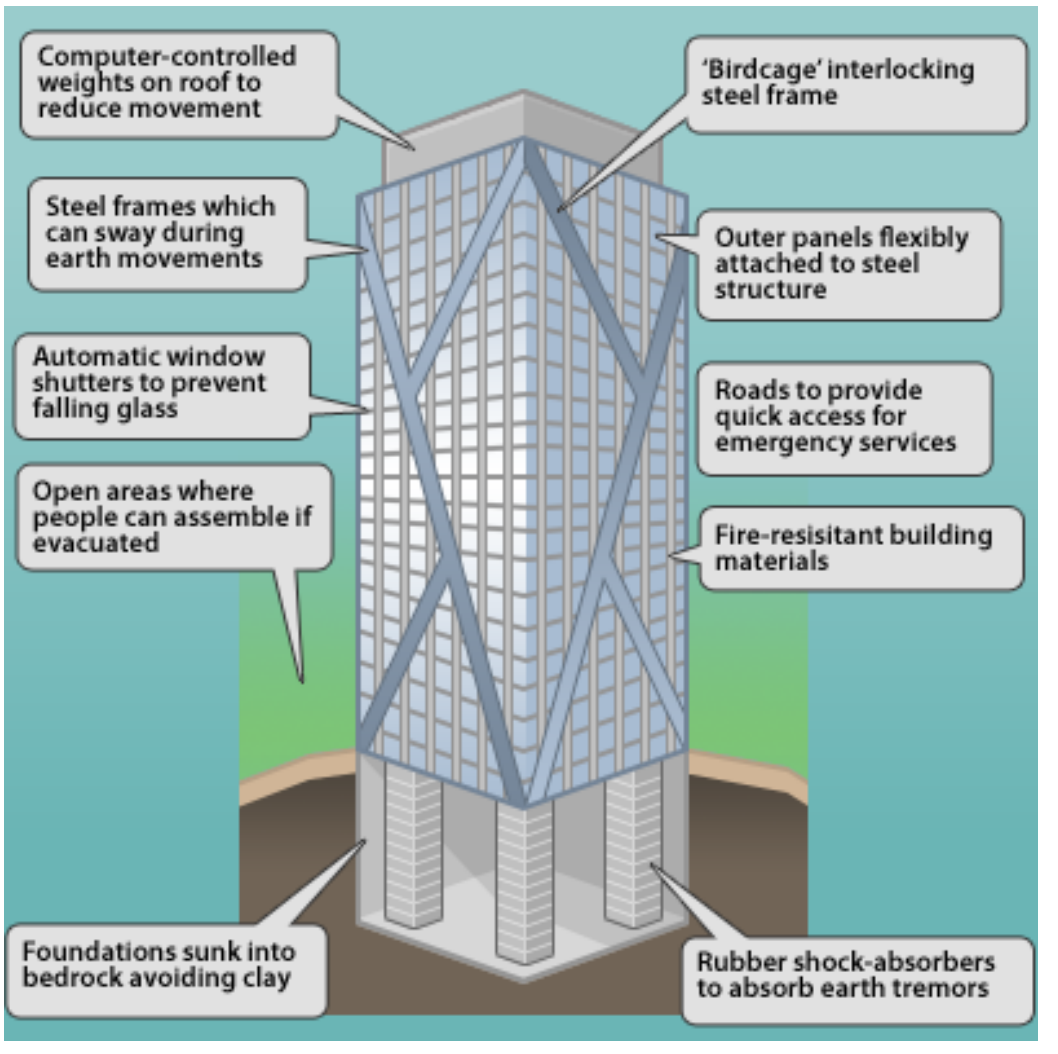
Global impacts:
Annual temperature decrease of 10 degrees
Global temperatures could drop for 6-10 years
Global weather patterns change eg. Monsoon rain could fail

Reducing the impacts of tectonic hazards:

Preparation & planning
- Earthquake drills
- Train emergency services

Protection & prevention
- Earthquake proof buildings
- Retrofit old buildings to make them stronger
- Strict building regulations

Prediction
- Seismic gap theory
- Monitoring animal behaviour
- Hazard mapping
- Tsunami warnings



	LIC	HIC
Factors affecting impacts:	**Mount Sinabung, Indonesia 2014**	**Eyjafjallajökull, Iceland 2010**
Level of development	55% work as farmers GNI per capita $3,840	5% work as farmers GNI per capita $67,960
Population	High population density 17,500 evacuated	Low population density 800 people evacuated
Monitoring	Not closely monitored making prediction less reliable	Close monitoring of all volcanoes in Iceland
Impacts of eruption	15 deaths 28,000 homeless Loss of farm land	0 deaths 0 homeless Flights across the world grounded (airlines lost $30 million per day)

Advantages of living close to a volcano	
Farming: • Ash provides nutrients to the soil • Rich soil for good quality crops • Farmers earn a good living • Eg. Olive farming in Italy	Geothermal energy: • Renewable energy • Cheap energy • No fossil fuels burnt= less CO2 • Eg. Iceland
Tourism: • Tourists visit and spend money • Tourists support other local businesses eg. Souvenir shops, restaurants and hotels • Jobs provide tax to the government • Eg. Vesuvius, Italy	Natural resources: • Diamonds • Bassalt (road construction) • Sulphur dioxide used in food processing • Resources worth money • Taxes produced

Haiti Earthquakes comparison: Factors effecting the impacts of earthquakes in an LIC

	2010	2021
Magnitude	7.0	7.2
Location	15 miles west of Haiti's capital Port-au-Prince.	93 miles west of Haiti's capital
Death toll	250,000	2,248
Injuries	4,000	12,000
Cost of damage	$8 billion	???

Standard of living is the wealth and material comfort available to a person or country and is **objective**, which means it is based on **factual evidence**.

Quality of life is standard of health, comfort and happiness and is **subjective**, which means it is influenced by **people's opinions**.