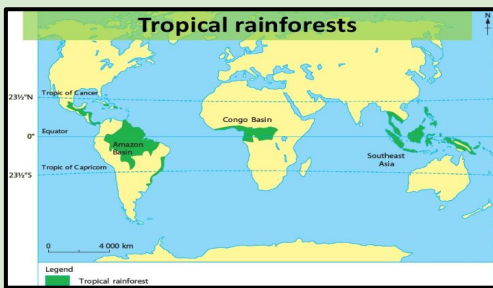


These 4 topics will feature on your end of year exam

- Tropical Rainforests
- Development
- Coasts
- Dangerous Earth [L1-3]

Use the attached resources as well as your exercise books to revise.



Tropical Rainforests

Climate

1. Very wet with over 2,000 mm of rainfall per year.
2. Very warm with an average daily temperature of 28°C. The temperature never drops below 20°C and rarely exceeds 35°C.
3. The atmosphere is hot and humid.
4. The climate is consistent all year round. There are no seasons.

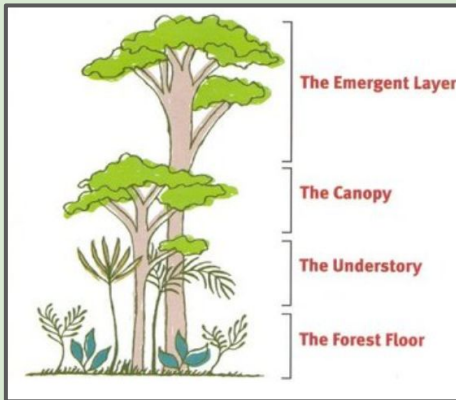
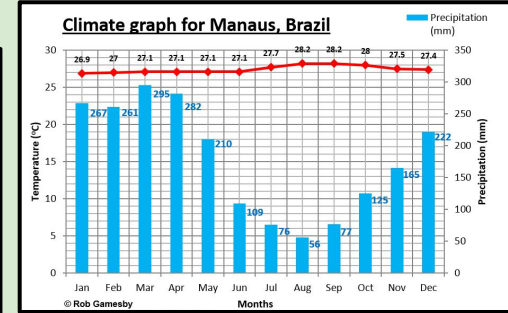
Location

1. Close to the Equator
2. Mostly between the Tropics
3. Largely in South America, Africa and Asia



Biodiversity - the variety of living things in an area.

1. Plants
2. Animals
3. Humans



Corpse Flower Adaptations

- ★ Suited to life on the dark, decaying **forest floor**. It grows within **liana vines** which are common in tropical rainforests.
- ★ The male flower emits a **foul smell** which **attracts flies** who like laying their eggs on dead animals. They carry its pollen to a female plant.
- ★ The terrible smell also **keeps animals away**.

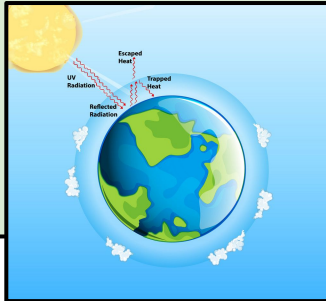


Value

Biodiversity - Although rainforests cover just 6% of the Earth's surface area, they account for over 50% of global plant and animal species.

Natural Resources - Rainforests provide a valuable source of food, materials and medicines. 70% of plants used to treat cancer are only found in rainforests and quinine, a cure for Malaria, comes from the Amazon rainforest.

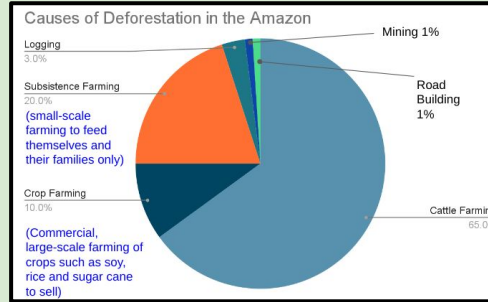
Global Climate - Rainforests help to regulate global temperatures through absorbing solar radiation. They also convert carbon dioxide into oxygen, creating around 40% of the planet's breathable air.



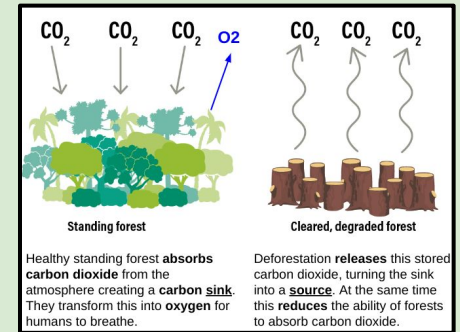
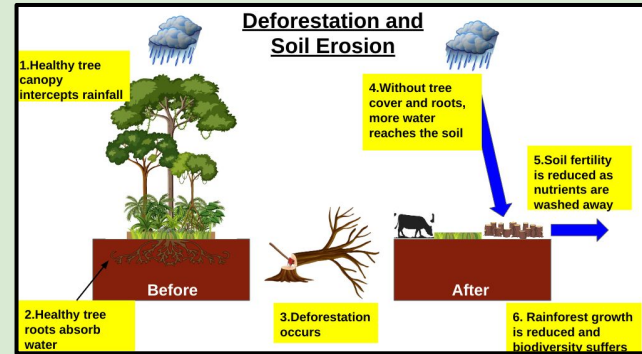
Greenhouse Effect

The Earth's atmosphere naturally traps solar radiation from the sun. However, if the concentration of greenhouse gases (such as Carbon Dioxide) in the atmosphere increases then more solar radiation is trapped. This has a warming effect known as the Enhanced Greenhouse Effect which leads to global warming. Global warming is widely believed to be a result of human activities such as burning fossil fuels and deforestation.

Deforestation - the removal of trees from forests.



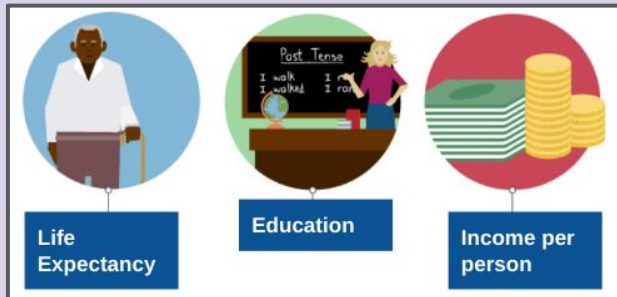
Deforestation and Soil Erosion



Deforestation and Indigenous People

- ★ Deforestation of the rainforest has a **significant impact** on indigenous people.
- ★ The indigenous tribes typically live in the forests, and deforestation means that their **living space** is being limited and they don't have as many **resources** (food, medicine, building materials) as before.
- ★ **Conflict** often arises as tribes come into contact with other stakeholders such as loggers, miners and farmers.
- ★ This forces many indigenous peoples to be **displaced**, move to cities and lose their **way of life** and **culture**.
- ★ Without **laws and controls** to protect them, indigenous people will continue to lose their land.

Development



Investment and the Multiplier Effect

A TNC builds a new **factory** in an LIC or NEE which **creates jobs** and generates taxes for the government.

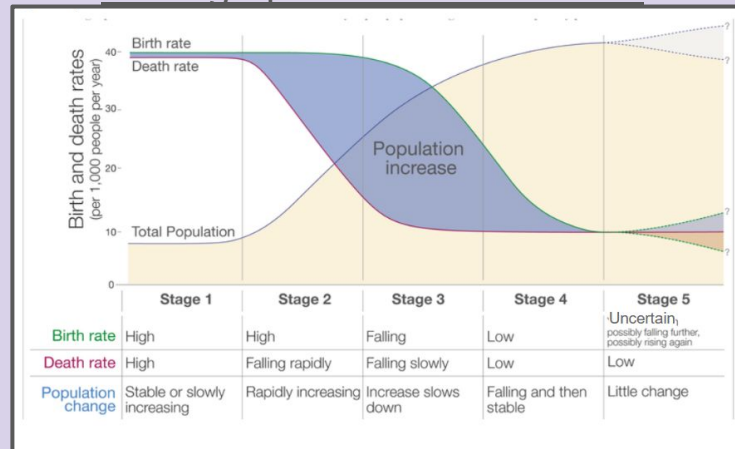
Other TNCs see this success and seek to invest in **new opportunities**, providing **more FDI**.

Local **business opportunities** multiply, such as shops, equipment suppliers and leisure facilities, to satisfy the new demand.

Money can be invested in **new infrastructure** such as schools, hospitals and roads.

The **local people** become better educated, healthier and safer.

Demographic Transition Model



Causes of uneven development

physical, economic or historical.

When very poor countries borrow money from other countries this can lead to **debt** which has to be paid back, sometimes with interest.

War and conflict can slow or reduce development for many years. Money is spent on arms and important services such as healthcare and education.

Corruption of government officials and leaders can cause a lack of investment in a country's essential services and a prolonged lack of talent in important positions.

Countries that suffer **natural disasters** regularly (eg: flooding and earthquakes) have to spend a lot of money on rebuilding.

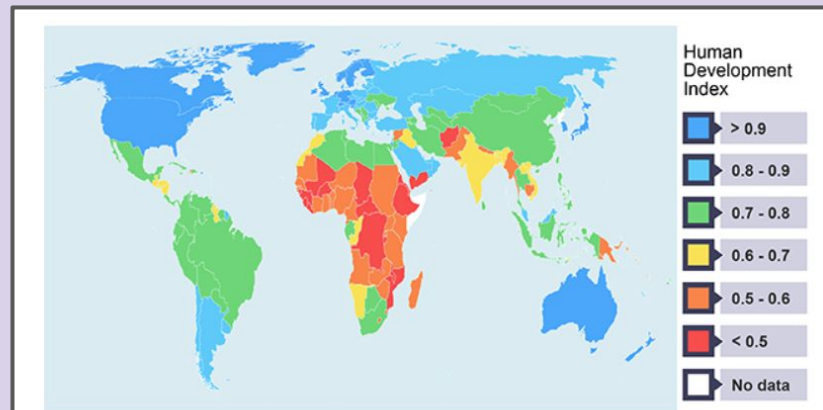
Some countries have **extreme climates** where not much will grow. This means people have less to eat or sell.

If a country has **limited trade links** with other countries then it won't make a lot of money, so there'll be less to spend on development.

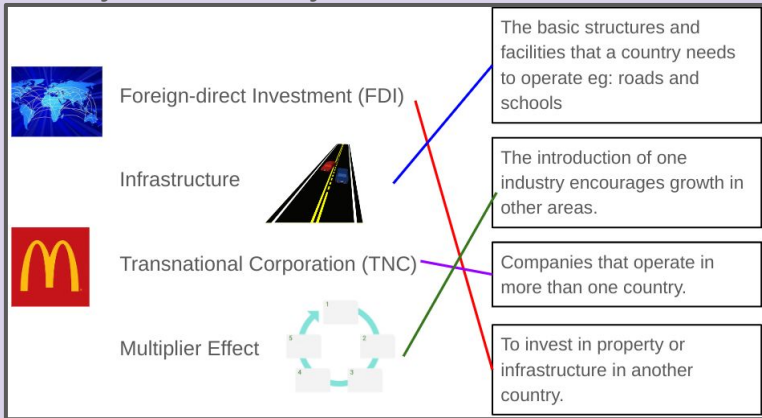
Countries that were **colonised** (ruled by another country) are often at a lower development level when they gain independence.

Countries that mostly export **primary products** (raw materials like timber and metal) tend to be less developed because they are sold for less than manufactured goods.

Steep land or poor soil means **poor farming land** which limits the ability to grow crops or graze animals.



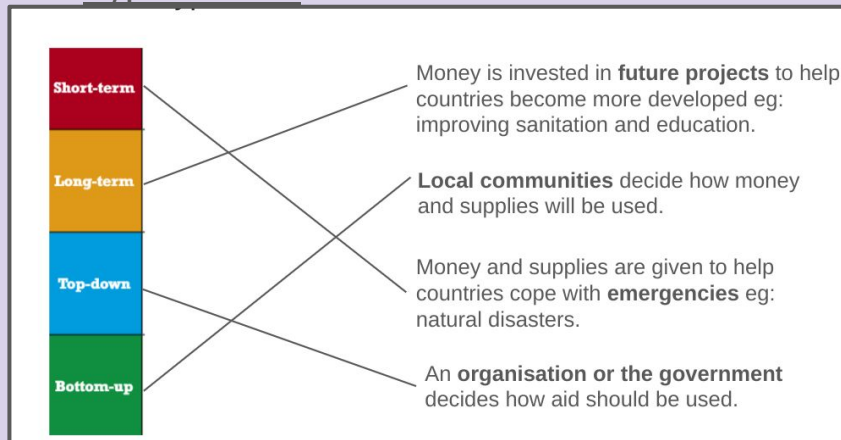
Key Vocabulary



There are many episodes in the history of the Congo that are bloodier than what is happening in the mining sector today, but none of these episodes ever involved so much suffering for so much profit linked so indispensably to the lives of billions of people around the world.

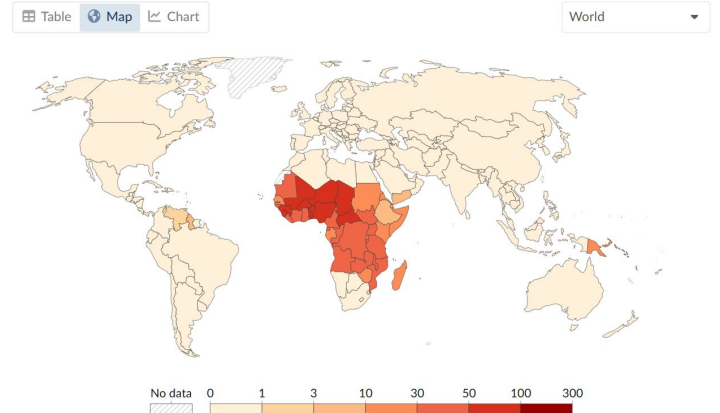
Siddharth Kara
"Cobalt Red: How the Blood of the Congo Powers Our Lives"

Types of Aid



Death rate from malaria, 2019

The number of deaths from malaria per 100,000 people.



An aerial photograph of a coastal landscape, featuring a steep, light-colored cliff face on the left and a sandy beach on the right. The cliff is topped with green vegetation and a winding path. The beach is bordered by the ocean on the right, with waves visible. Several small figures and objects are scattered on the beach near the base of the cliff. The word "COASTS" is overlaid in large, white, bold, sans-serif capital letters in the center of the image. A faint "Vecteezy" watermark is visible in the lower right quadrant.

COASTS

MASTER KNOWLEDGE ORGANISER



1. Waves

Constructive: Strong swash, weak backwash. Builds beaches.

Destructive: Weak swash, strong backwash. Erodes beaches.



2. Landforms

Erosional: Headlands, Bays, Caves, Arches, Stacks, Stumps.

Depositional: Beaches, Spits, Bars, Sand Dunes.



3. Processes

Erosion: Hydraulic Action, Abrasion, Attrition, Solution.

Transport: Longshore Drift, Traction, Saltation.



4. Management

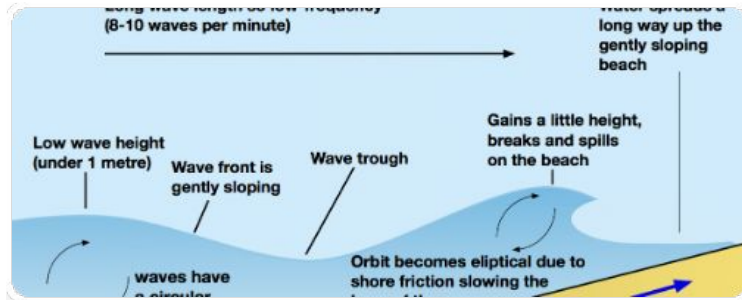
Hard: Sea Walls, Groynes, Gabions. Expensive, unnatural.

Soft: Beach Nourishment, Dune Regen. Sustainable, natural.

Focus Areas: Wave Types | Formation of Stacks | Longshore Drift | Engineering Strategies

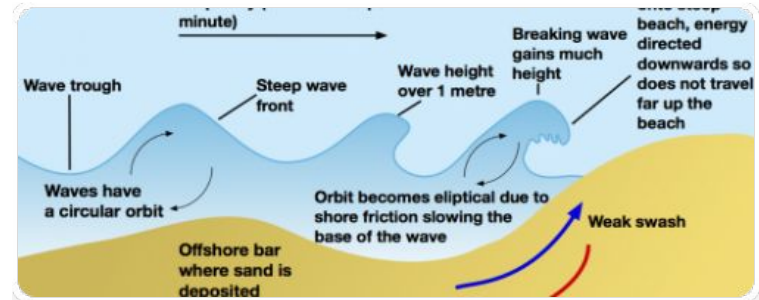
CONSTRUCTIVE VS DESTRUCTIVE

⚙️ Constructive Waves



- **Energy:** Low energy, calm weather.
- **Swash:** Strong (pushes sand up).
- **Backwash:** Weak (leaves sand behind).
- **Frequency:** 6-9 waves per minute.

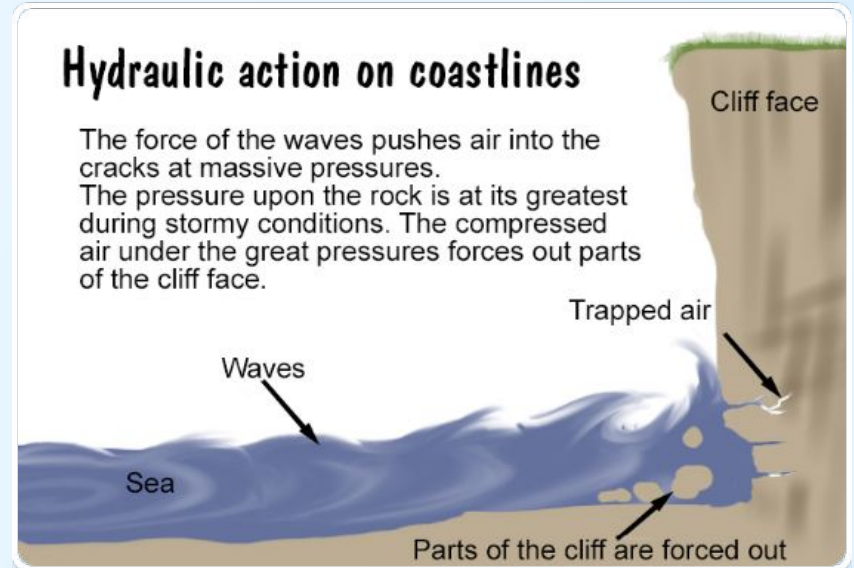
⚡ Destructive Waves



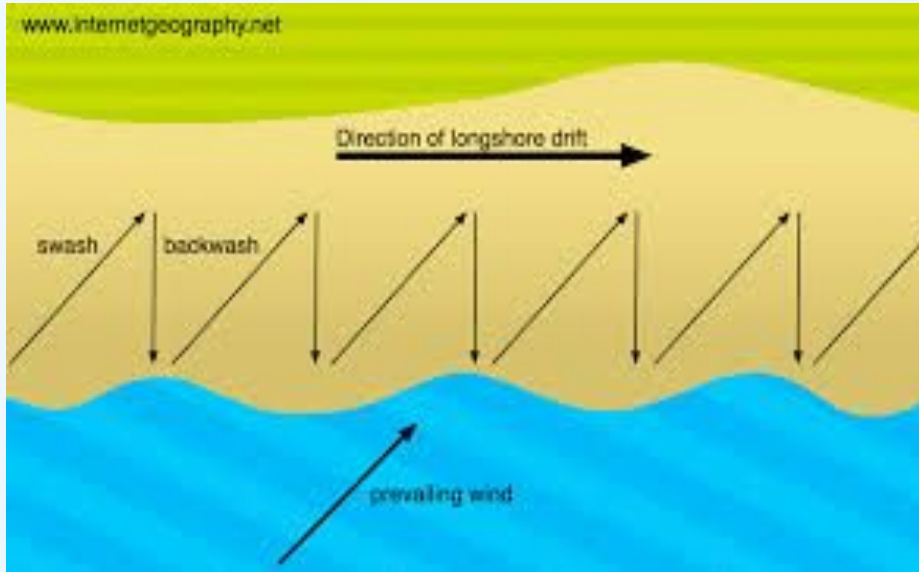
- **Energy:** High energy, stormy weather.
- **Swash:** Weak.
- **Backwash:** Strong (pulls sand away).
- **Frequency:** 10-15 waves per minute.

PROCESSES OF COASTAL EROSION

- ✱ **Hydraulic Action:** Air is trapped in cracks. The pressure causes rock to shatter.
- 🔨 **Abrasion:** Stones and pebbles are thrown against the cliff like sandpaper.
- ♻️ **Attrition:** Rocks in the sea knock into each other, becoming smaller and rounder.
- 🧪 **Solution:** Weak acids in seawater dissolve minerals in certain rocks (e.g., Chalk/Limestone).



TRANSPORTATION: LONGSHORE DRIFT



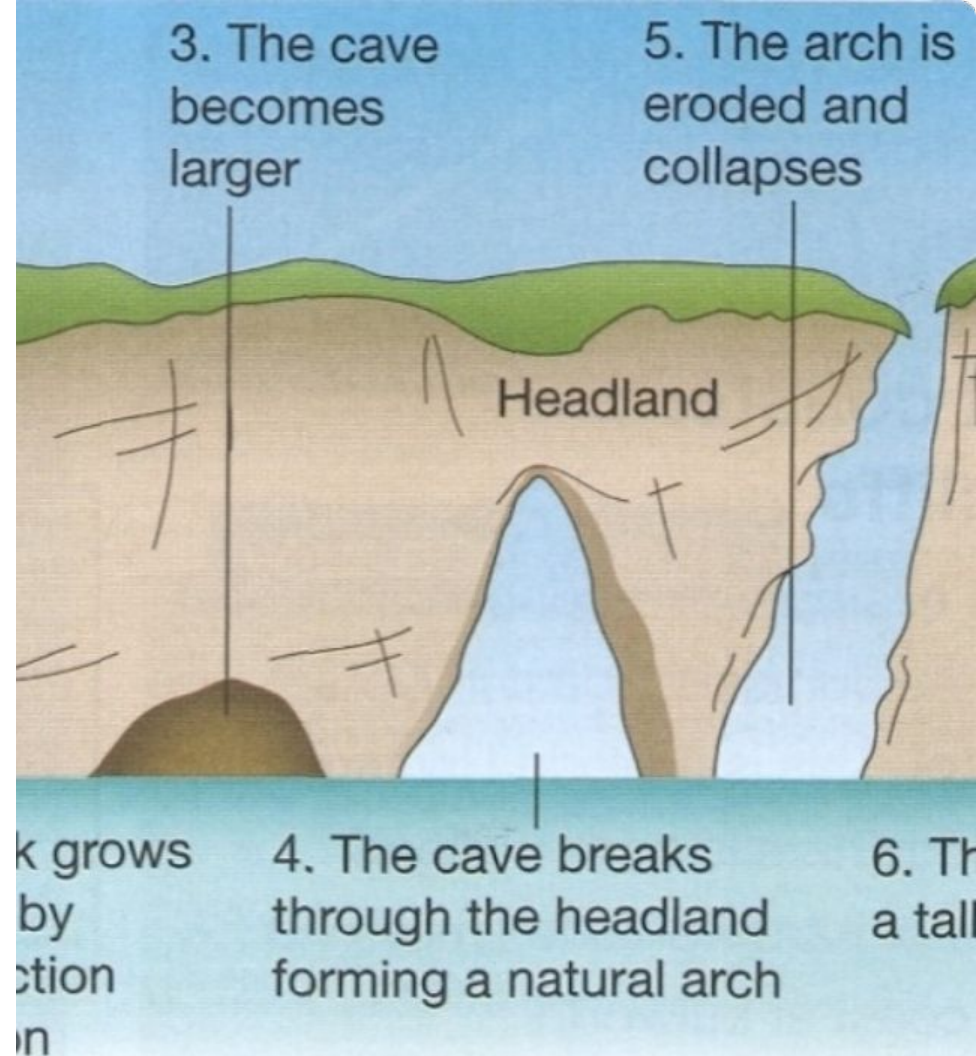
The Zig-Zag Process

Longshore drift is the movement of material along a coast by waves approach at an angle.

- **Swash:** Carries material up the beach at the angle of the wind.
- ↓ **Backwash:** Pulls material straight back down due to gravity.
- ✓ This creates a zig-zag movement of sediment along the shore.

STACK FORMATION

- 1 **Cracks:** Hydraulic action opens a fault.
- 2 **Cave:** Erosion widens the crack.
- 3 **Arch:** The cave erodes through the headland.
- 4 **Stack:** The arch roof collapses.
- 5 **Stump:** The stack erodes and falls.



DEPOSITIONAL FEATURES

Coastal Spits

Formed where the coastline changes direction. Longshore drift continues to move sediment out into the sea, forming a long finger of sand.



Beaches: Accumulation of sand and shingle in sheltered areas.



Sand Dunes: Wind-blown sand trapped by vegetation like Marram grass.



Bars: A spit that grows right across a bay, creating a lagoon behind it.

HARD ENGINEERING

Strategy	How it works	Pros / Cons
Sea Wall	Concrete wall reflects wave energy.	Very effective / Expensive (£5k/m).
Groynes	Wood/rock fences to trap sand.	Builds beach / Starves coasts downdrift.
Rock Armour	Large boulders absorb wave energy.	Natural look / Can be dislodged.



SOFT ENGINEERING



Beach Nourishment

Adding sand to build up the beach width.



Dune Regeneration

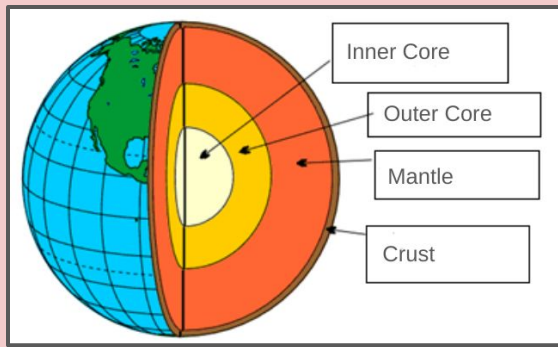
Planting marram grass to stabilize dunes.



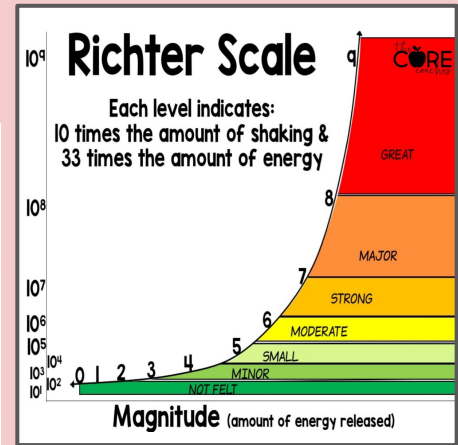
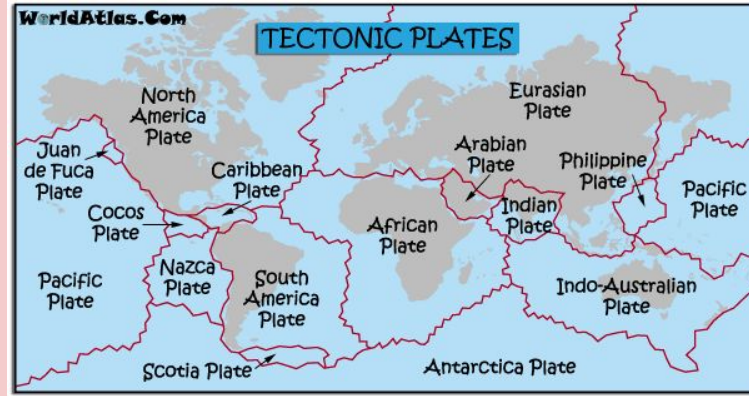
Managed Retreat

Allowing the sea to flood low-value land.

DANGEROUS EARTH



Dangerous Earth



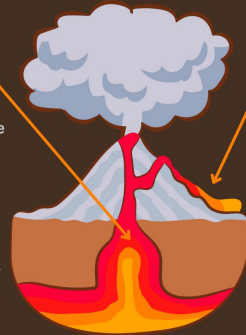
Magma vs Lava

Magma

- Molten rock **beneath** the surface
- Consists of molten rock, suspended crystals, and gas bubbles
- Temperature varies (600°C to 1,300°C)

Lava

- Molten rock **on** the surface
- Consists of molten rock and suspended solids
- Temperature varies (700°C to 1,200°C)



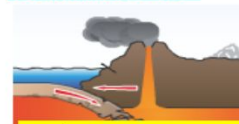
sciencenotes.org

Collision



Where two continental plates converge (meet)

Destructive



Where an oceanic and continental plate converge (meet)

Constructive



Where two plates diverge (move apart)

Conservative

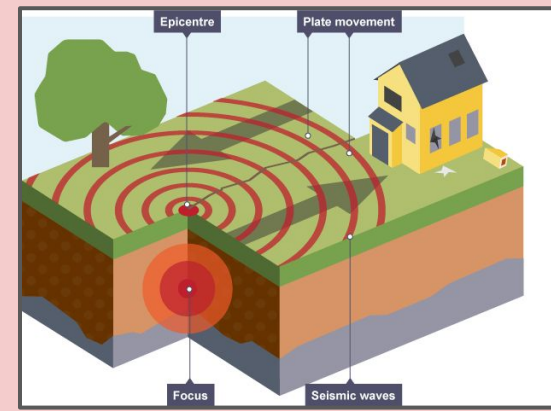


When two plates move past each other in different directions or at different speeds

Why do people live by volcanoes?

People choose to live in volcanic areas despite the risks of an eruption. Volcanoes can provide people with many benefits such as:

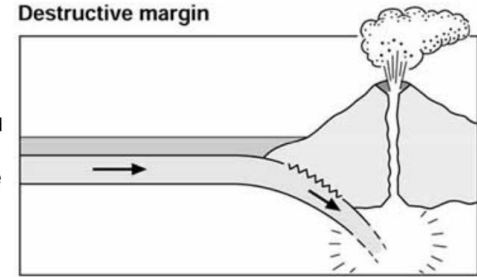
- volcanic rock and ash provide **fertile land** which results in a higher crop yield for farmers
- **tourists** are attracted to the volcano, which increases money to the local economy
- **geothermal energy** can be harnessed, which provides free electricity for locals
- **minerals** are contained in lava, eg sulphur and diamonds - these can be mined to make money
- volcanoes hold deep spiritual significance for some cultures, and they see them as **sacred places**.



Volcanoes at Plate Margins

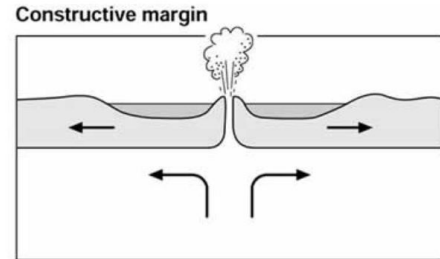
Destructive margin

An oceanic plate moves under a continental plate and melts into the mantle. This causes a magma build up which causes an eruption when the pressure gets too high.



Constructive margin

Plates move away from each other at constructive boundaries. Magma rises to fill the gap which forms new thin crust. As magma builds up, it breaks through the thin crust when the pressure gets too high. This causes an eruption.



Explain why Chile suffered fewer earthquake deaths than Nepal. [6 marks]



Regularity - Chile experiences earthquakes far **more regularly** than Nepal. This means that they are **better prepared**. As a result, response units are able to **save people** more efficiently. Nepal hasn't experienced a major earthquake since 1988.



Response - wealthier countries put more **investment** into emergency **services and rescue equipment** so that they can reach injured and trapped victims **more quickly** and **save lives**.



Education - In HICs businesses and schools have earthquake **risk assessments** and **practice drills**. People are more aware of where to go to be safest and so less lives are lost.

Roads/Access - HIC's can afford to maintain **infrastructure** such as roads and transport networks. In an emergency, vehicles cannot **access** some areas in LIC's due to a lack of paved roads. Some areas are only accessible on foot therefore help is slow to arrive and more lives are lost.



Knowledge Organiser: Overview



Internal Structure

The Earth is split into 4 distinct layers with varying density, temperature, and physical states.



Plate Dynamics

Driven by convection currents in the mantle, tectonic plates collide, separate, or slide past each other.



Volcanic Hazards

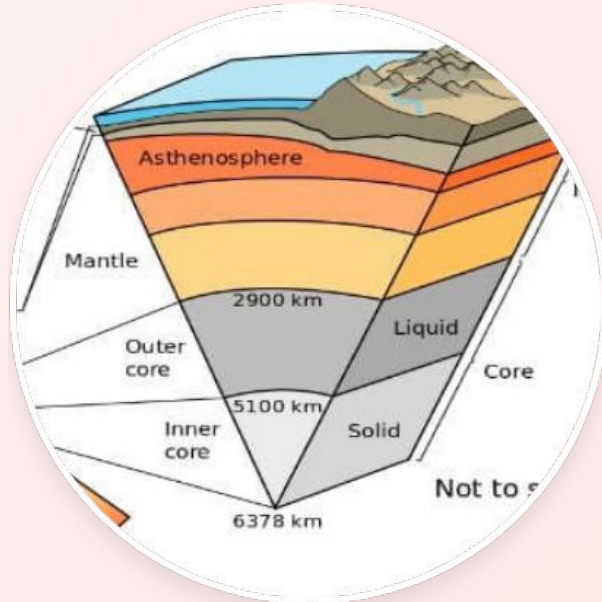
Magma reaches the surface at specific margins, creating shield or composite volcanoes with unique risks.



Earthquake Events

Sudden releases of built-up pressure at plate boundaries result in seismic waves felt at the surface.

Structure of the Earth



- **Inner Core:** Solid iron/nickel, 6000°C.
- **Outer Core:** Liquid metal, creates magnetic field.
- 💧 **Mantle:** Semi-molten rock where convection happens.
- ▲ **Crust:** Thin outer shell (Oceanic or Continental).

Convection Currents

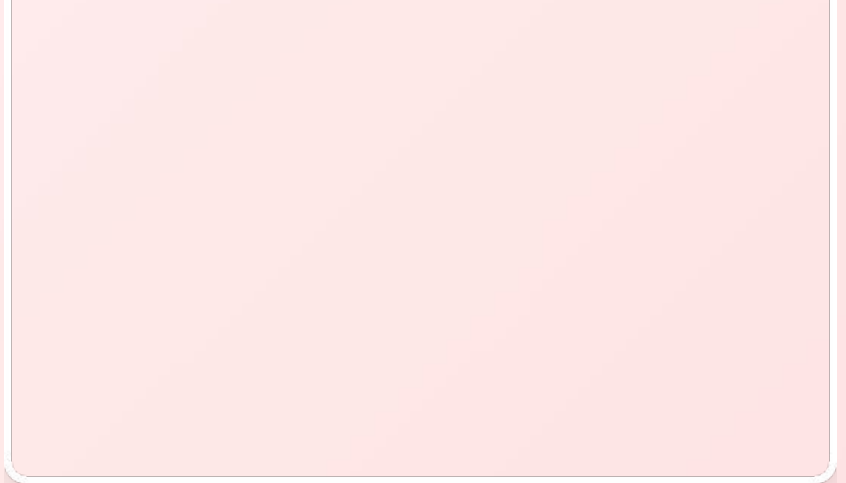
The Engine of the Earth

Heat from the core causes magma in the mantle to rise because it becomes less dense. As it moves horizontally under the crust, it drags the plates above it.

Cooling: The magma cools near the crust, becomes denser, and sinks back down, creating a circular "convection cell."

Result: This constant cycle is the primary driver of tectonic plate movement.

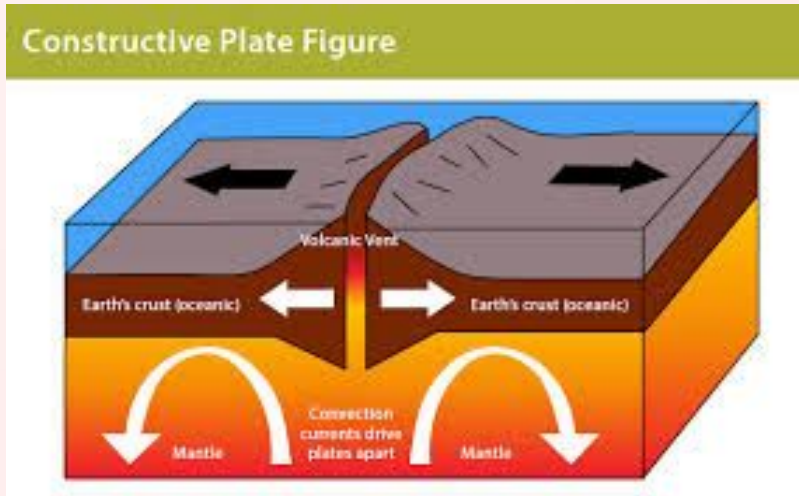
 Mantle convection currents diagram



Tectonic Plate Boundaries

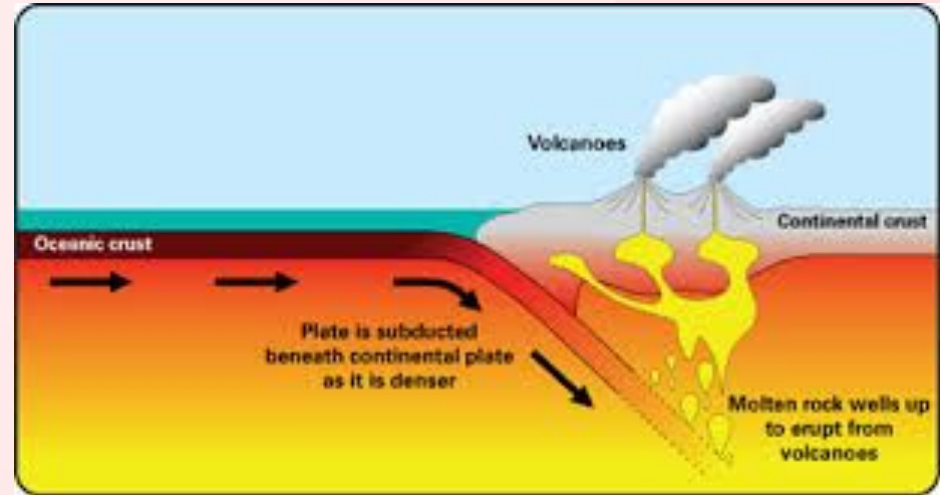
Margin Type	Movement	Hazards	Example
Constructive	Plates move apart (Diverge)	Volcanoes, Small Earthquakes	Mid-Atlantic Ridge
Destructive	Plates move together (Subduction)	Explosive Volcanoes, Strong EQ	Nazca/South American Plate
Conservative	Plates slide past each other	Strong Earthquakes (No Volcanoes)	San Andreas Fault
Collision	Two continental plates collide	Fold Mountains, Strong EQ	Himalayas (India/Eurasia)

Volcano Formation at Margins



Constructive Margin

As plates pull apart, magma rises to fill the gap. This creates **Shield Volcanoes** with runny lava and gentle slopes (e.g., Iceland).



Destructive Margin

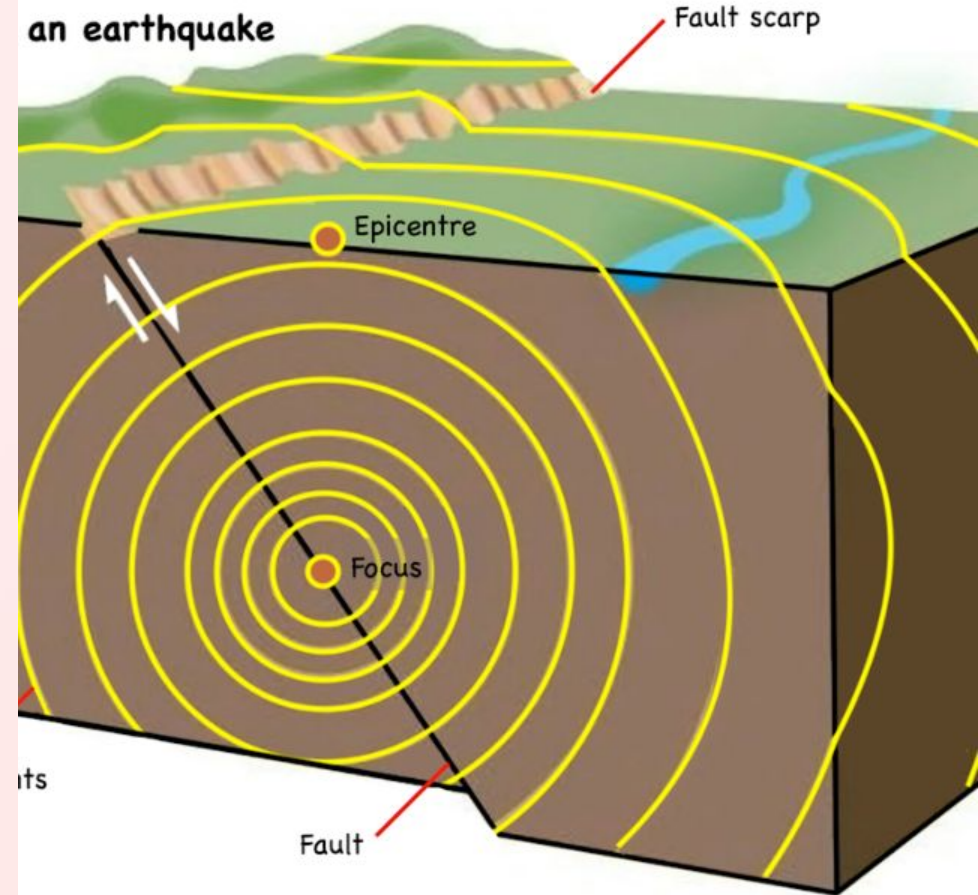
Oceanic plate sinks and melts. Magma rises through cracks, forming **Composite Volcanoes** with thick lava and violent eruptions.

Earthquake Mechanics

Pressure & Release

1. Plates become "locked" due to friction as they move against each other.
2. Enormous pressure builds up over time within the rock layers.
3. The pressure reaches a breaking point; the plates suddenly slip.
4. Energy is released as **Seismic Waves** from the **Focus**.

Seismic waves radiate from
an earthquake



Why Live Near Volcanoes?



Fertile Soil

Volcanic ash is rich in minerals like potassium and phosphorus, perfect for high-yield farming.



Geothermal

Steam from underground hot rocks can be used to generate clean, renewable electricity and heating.



Tourism

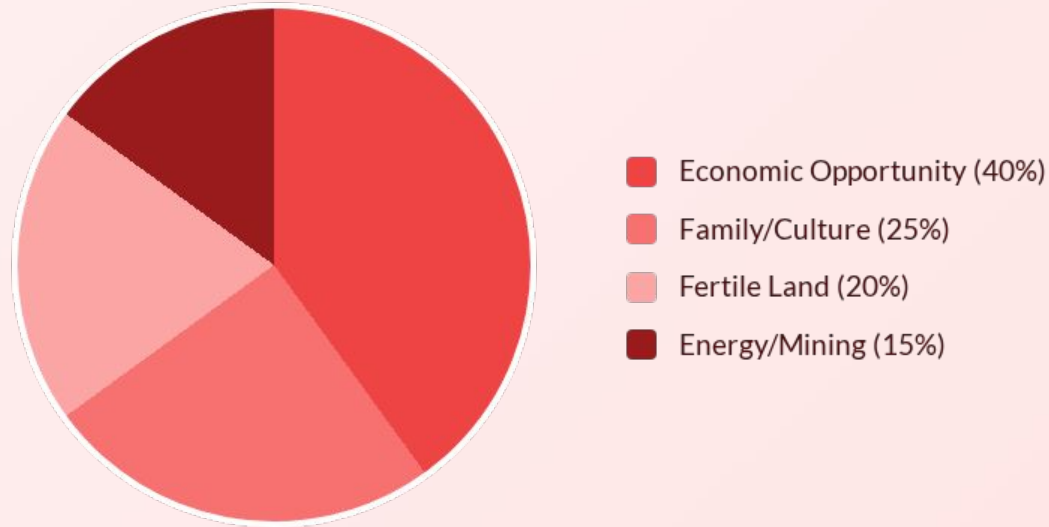
Volcanoes create dramatic landscapes that attract millions of tourists, providing local jobs and income.



Minerals

Precious metals like gold, silver, and diamonds are often brought to the surface during eruptions.

Primary Reasons for Residence



Data based on surveys in high-risk zones like Naples and Java.

Visualizing the Benefits



Agricultural Wealth



Clean Energy Hubs