



CONTEXT & INTRODUCTION TO UNIT

In this unit, pupils will build an understanding of natural hazards and the risks they pose to people and the environment. Pupils will explore why some areas are more at risk than others and investigate how human choices and development levels influence the impact of and response to hazards. The unit combines physical processes (plate tectonics, earthquakes, and tsunamis) with human factors (preparedness, response, case study comparisons). Pupils will apply prior knowledge of continents and landforms and begin to evaluate human-environment interaction.

Prior knowledge –

KS3 Year 7 – Map skills, Weather and Climate

THE BIGGER PICTURE

Personal development opportunities.
Career links- Seismologist, Volcanologist, Disaster Relief Planner, Emergency Services Manager

Causes of Tectonic Hazards

1. The Earth's crust is divided into tectonic plates that float on the semi-molten mantle.
2. Movement is driven by convection currents in the mantle caused by heat from the Earth's core.
3. Plate boundaries (destructive, constructive, conservative) are zones where tectonic activity occurs, leading to earthquakes and volcanic activity.

Types of Plate Margins

4. **Destructive** – Oceanic plate subducts under continental plate, causing earthquakes and volcanoes.
5. **Constructive** – Plates move apart, magma rises, creating new crust (e.g., mid-ocean ridges).
6. **Conservative** – Plates slide past each other, causing earthquakes (e.g., San Andreas Fault).
7. **Collision** – two continental plates collide forcing upwards to create fold mountains (e.g., Himalayas: Formed by the collision of the Indian and Eurasian plates)

Causes of Earthquakes and Tsunamis

8. Earthquakes occur when pressure builds up and is suddenly released along faults or plate boundaries.
9. Tsunamis are large sea waves usually caused by undersea earthquakes or volcanic eruptions displacing water.

Consequences of Tectonic Hazards

10. Ground shaking causes destruction of buildings, roads, and infrastructure.
11. Secondary hazards include fires, landslides, liquefaction, and tsunamis.
12. Death, injury, displacement, and trauma for affected populations.
13. Economic damage: disruption to business, transport, healthcare, and communication.
14. Long-term impacts: homelessness, food shortages, disease, and migration.

Responses to Tectonic Hazards

15. **Prediction** – Seismometers and early warning systems detect tremors or sea-level changes.
16. **Preparation** – Earthquake drills, education, and emergency kits.
17. **Protection** – Building earthquake-resistant structures and sea walls for tsunamis.
18. **Aid and Recovery** – Emergency services, international aid, and rebuilding efforts.
19. **Monitoring** – Using technology to monitor tectonic activity (e.g., GPS, DART buoys).

Case Study Example – responses to tectonic hazards

KEY VOCABULARY

- Tectonic plates
- Convection currents
- Subduction zone
- Epicentre
- Focus (of an earthquake)
- Seismic waves
- Richter scale
- Moment magnitude scale
- Mitigation
- Prediction
- Hazard mapping
- Vulnerability
- Secondary impacts
- Economic resilience
- Disaster risk reduction (DRR)
- Liquefaction
- Continental drift
- Tsunami
- Crustal deformation
- Hazard perception
- Deep-ocean assessment and reporting of tsunamis (DART)
- Run-up height
- Inundation zone
- Early warning system
- Coastal defences



CONTEXT & INTRODUCTION TO UNIT

In this unit, you will learn about the **continent of Africa**, exploring its **location**, **diverse biomes**, and unique **flora and fauna**. You will discover how **human features** such as cities, culture, and trade shape life across the continent, as well as investigate challenges like **desertification**, **tropical diseases**, and **inequality**. We will also look at Africa's **physical geography**, including its landscapes, climate zones, and natural resources, while considering how people adapt to and manage environmental issues. By the end of the unit, you will have a deeper understanding of Africa's **global importance**, its incredible diversity, and the opportunities and challenges faced by its people and environments today.

THE BIGGER PICTURE

Personal development opportunities.
Career links- Environmental Consultant, International Aid Worker, Public Health Officer, Water and Sanitation Specialist

Prior knowledge: Ecosystems, Extreme Environments, Desertification

CORE KNOWLEDGE

Location and Physical Geography of Africa

Africa is the **second-largest continent** and is split almost equally by the **equator**.

It has a variety of **biomes**: tropical rainforests, savannas, deserts, Mediterranean regions, and mountain environments.

Key physical features include the **Sahara Desert**, **River Nile**, **Mount Kilimanjaro**, **Great Rift Valley**, and the **Congo Basin rainforest**.

Human Features of Africa

Africa has **54 countries** and over **1.4 billion people**; population is unevenly distributed due to climate and resources.

Major cities include **Lagos**, **Cairo**, **Nairobi**, **Kinshasa**, and **Johannesburg** — many are rapidly growing **megacities**.

Africa is the **most culturally diverse continent**, with over **2,000 languages** and many different traditions, religions, and ethnic groups.

Biomes, Flora, and Fauna

The **Congo Basin rainforest** is the second-largest tropical rainforest in the world, rich in biodiversity.

Savannas, like the **Serengeti**, are home to the “**Big Five**” animals: lions, leopards, elephants, buffalo, and rhinos.

Human activity, including **deforestation**, **poaching**, and **climate change**, is threatening Africa's ecosystems.

Development and Challenges

Africa's levels of **economic development** vary greatly, from **LICs** to rapidly growing economies.

Desertification in countries like **Mauritania** threatens farmland, food security, and livelihoods.

Tropical diseases, such as **malaria** and **Ebola**, impact health, economies, and development.

Africa faces challenges including **poverty**, **inequality**, **climate change**, and **conflict**, but also has significant opportunities for growth and innovation.

Responses and Management

Great Green Wall Project – aims to stop desertification by planting trees across the **Sahel** region.

Wildlife conservation through national parks and anti-poaching laws protects endangered species.

Disease control strategies include vaccinations, bed nets, and international aid during outbreaks.

Sustainable development projects focus on improving education, healthcare, and access to clean water.

Africa's role in **global trade** is growing due to natural resources, innovation, and investment.

KEY VOCABULARY

Continent
Equator
Sahel
Sahara Desert
Savanna
Biome
Climate zone
Rainfall variability
Desertification
Deforestation
Biodiversity
Natural resources
Water scarcity
Urbanisation
Rural-urban migration
Population distribution
Economic development
Inequality
Malaria
Ebola
Famine
Drought
Life expectancy
Infant mortality
Sustainable development



CONTEXT & INTRODUCTION TO UNIT

In this unit you will learn about the causes, impacts and responses to climate change. This is the long-term shifts in temperatures and weather patterns. The causes of these shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures. The main greenhouse gases that are causing climate change include water vapour, carbon dioxide and methane.

Prior knowledge: Population, Cities, Trade, Rich and Poor Countries

THE BIGGER PICTURE

*Personal development opportunities.
Career links- Social Researcher, Human Rights Advocate, Journalist, Trade Analyst, Business Consultant, Corporate Social Responsibility Manager*

CORE KNOWLEDGE

What is Development / How is it Measured

1. Development is about improving people's quality of life and standard of living.
2. It can be measured using economic indicators (GDP, GDP per capita), social indicators (life expectancy, literacy rate, infant mortality), and composite indicators (HDI, GII).
3. Different measures show different aspects of development, and averages can hide inequalities within countries.

Emerging Countries

4. Emerging countries are nations experiencing rapid growth and industrialisation (e.g. China, India, Brazil, South Africa).
5. Characteristics include urbanisation, a growing middle class, rising global influence, but also inequality between regions and groups.
6. Not all emerging countries develop at the same pace — some risk being stuck in the “middle-income trap.”

Population Structure & Gender Inequality

7. Population growth varies depending on stage of development (DTM).
8. Youthful populations increase demand for jobs and services, while ageing populations increase pressure on healthcare and pensions.
9. Gender inequality limits development — women may have less access to education, jobs, and healthcare.
10. Greater gender equality helps reduce poverty and supports economic growth.

Impacts of TNCs

11. TNCs (Transnational Corporations) bring jobs, investment, technology, and improved infrastructure.
12. Negative impacts include low wages, poor working conditions, environmental damage, and profits leaving the host country.
13. Impacts of TNCs differ between countries depending on laws, worker rights, and government power.

Development in China / Asia

14. China is the world's largest emerging economy, with rapid industrialisation and urbanisation.
15. Special Economic Zones (SEZs) attracted foreign investment and boosted exports.
16. Challenges include air pollution, inequality between rural and urban areas, and pressure on resources.
17. Asia's development has increased its global importance in trade, politics, and environmental agreements.

Measuring Development

- A. **Economic measures** – e.g. Gross Domestic Product (GDP) and GDP per capita show the wealth of a country.
- B. **Social measures** – e.g. literacy rate, infant mortality rate, and life expectancy show people's quality of life.
- C. **Composite measures** – e.g. Human Development Index (HDI) combines income, education, and health.
- D. **Gender measures** – e.g. Gender Inequality Index (GII) shows differences between men and women.
- E. **Limitations** – Averages can hide **inequalities** within countries; no single measure gives the full picture.

KEY VOCABULARY

Development
Emerging Economy
GDP
GDP per Capita
Urbanisation
Rural-Urban Migration
Megacity
Infrastructure
Industrialisation
Special Economic Zone (SEZ)
Globalisation
Outsourcing
Inequality
Standard of Living
Quality of Life
Middle Class
Population Distribution
Population Density
Sustainability
Air Pollution
Resource Scarcity
Trade Surplus
TNCs (Transnational Corporations)
Human Development Index (HDI)



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Prior knowledge: Ecosystems, Extreme Environments, Desertification

THE BIGGER PICTURE

*Personal development opportunities.
Career links- environmental scientist, Environmental Lawyer, Renewable Energy Engineer, Ecologist, Wildlife Conservationist.*

CORE KNOWLEDGE

Changes in Global Climate / Greenhouse Effect / Evidence of Climate Change

1. The Earth's climate has naturally fluctuated over this period between glacial (cold) and interglacial (warm) phases.
2. These changes were mostly caused by natural factors, such as changes in the Earth's orbital, volcanic activity, and solar flares.
3. Evidence for climate change - Global Temperature Records, Tree Rings, Historical Records, Glacial Retreat and Melting Ice & Rising Sea Levels.

Causes of Climate Change

4. **Human Causes** - Increase burning of fossil fuels, / Increase in Agriculture / Deforestation.
5. **Natural Causes** – Solar flares/ Volcanic eruptions / Earth's orbit of the sun.

Consequences of Climate Change

6. Increase in malaria: morbidity, mortality, decrease in economic activity, poverty.
7. UN has suggested there could be war over water in LICs: East Africa, South Asia & the Middle East.
8. Damage to settlement, industry, transport, communication links & infrastructure: loss to economy
9. More droughts, severe hurricanes and massive forest fires – destruction & extinction of habitats.
10. Increase in heatwaves - greater risk of heat-related illness and death of vulnerable people (OAPs).
11. Increasing frequency & magnitude of flooding - Boscastle, UK 2004 a 1 in 400-year event!
12. UK to experience extreme seasons: hot, dry summers = drought / warm wet winters = flooding.
13. Greenland ice sheet melts by 7-8m: 75% of the world's population on the coast = flooding & migration

Responses to Climate Change

14. Alternative energy production (Renewables – Solar, Wind, Thermal) – as there is no burning of fossil fuels therefore no CO₂ in the atmosphere..
15. Carbon capture - carbon dioxide is captured, compressed, transported and stored in underground reservoirs between layers of rock.
16. Afforestation (Planting trees) - trees exchange oxygen for carbon dioxide reducing temperatures.
17. International agreements between all countries – agree to reduce global greenhouse gas emissions.
18. Changes in agricultural systems: Storing Grain or growing drought resistant crops.
19. Managing Water Supply - water metres are installed in people's homes to discourage them from using too much water.
20. Flood Defences: Reducing the risk from rising sea levels

The Greenhouse Effect

- A. **Solar radiation (shortwave)** from the sun passes through the atmosphere and reaches Earth.
- B. The **Earth's surface absorbs** the energy and becomes warm.
- C. The Earth **re-emits energy as infrared (longwave) radiation**.
- D. Some of this heat escapes into space, but some is **trapped by greenhouse gases** in the atmosphere.
- E. This **trapping of heat keeps the Earth warm** enough to support life — this is the **natural greenhouse effect**.

KEY VOCABULARY

- Adaptation
- Greenhouse Effect
- Methane
- Water Vapour
- Carbon Dioxide (CO₂)
- Greenhouse Gas
- Emissions
- Weather
- Climate
- Global Warming
- Fossil Fuels
- Sea-Level Rise
- Global Average Temperature
- Renewable Energy
- United Nations Framework Convention on Climate Change (UNFCCC)
- Conference of the Parties (COP)
- IPCC
- Parts Per Million (PPM)
- Pre-Industrial Levels of Carbon Dioxide
- Methane
- Mitigation



CONTEXT & INTRODUCTION TO UNIT

In this unit you will learn about glaciers, how they form, the processes that shape the land, and how people use glaciated landscapes today. Glaciers are large masses of ice that move downhill under their own weight, carving out valleys and mountains. These landscapes were created during past Ice Ages, when much of the UK and other parts of the world were covered in ice.

You will also study how glaciers erode, transport, and deposit material, leaving behind features such as U-shaped valleys, corries, moraines, and drumlins. In the UK, glaciated areas like the Lake District are used for tourism, farming, water, and energy, but also need careful management.

Prior knowledge: The Water Cycle, Rivers, Map Skills

THE BIGGER PICTURE

Personal development opportunities.

Career links- Environmental Consultant,

Geomorphologist, Tourism Manager,

National Park Ranger, Outdoor

Education Leader

CORE KNOWLEDGE

What is a Glacier?

1. A glacier is a large mass of ice that moves slowly downhill under gravity.
2. Glaciers form where accumulation of snow is greater than ablation (melting).
3. The balance between accumulation and ablation is called the glacial budget.

Glacial Processes: Erosion, Transportation, Deposition

4. **Erosion** – glaciers erode by plucking (ice pulls rocks away) and abrasion (rocks grind bedrock).
5. **Transportation** – glaciers carry material on the surface, within the ice, or at the base.
6. **Deposition** – glaciers deposit unsorted till directly, and sorted outwash through meltwater streams.

Glacial Landforms

7. **U-shaped valleys** – glaciers erode V-shaped river valleys into deep, wide troughs.
8. **Corries** – bowl-shaped hollows where glaciers form; often contain a tarn after melting.
9. **Arêtes** – sharp ridges formed between two corries.
10. **Pyramidal peaks** – pointed mountain tops created by back-to-back corries.
11. **Moraines** – ridges of till (terminal, lateral, medial, ground).
12. **Drumlins** – smooth, egg-shaped hills of till aligned with ice movement.
13. **Erratics** – large rocks left behind, often different from the local geology.

Human Use of Glaciated Areas

14. **Tourism** – walking, climbing, boating (e.g. Lake District attracts millions of visitors).
15. **Farming** – mainly sheep farming due to steep slopes and thin soils.
16. **Water supply** – reservoirs in glacial valleys (e.g. Thirlmere) supply cities like Manchester.
17. **Energy** – hydroelectric power from dammed glacial valleys.
18. **Conservation** – National Parks protect landscapes while balancing human use.

Tourism in the Lake District

19. Attractions include mountains (Scafell Pike), lakes (Windermere), and cultural sites (Beatrix Potter, Wordsworth).
20. Benefits: jobs, income, local business growth.
21. Challenges: congestion, footpath erosion, litter, rising house prices.
22. Management: *Fix the Fells*, park-and-ride, visitor centres, planning controls.

KEY VOCABULARY

- Glacier
- Ice sheet
- Valley glacier
- Accumulation
- Ablation
- Glacial budget
- Snout
- Ice age
- Freeze-thaw weathering
- Erosion
- Plucking
- Abrasion
- Transport
- Deposition
- Moraine
- Terminal moraine
- Lateral moraine
- Medial moraine
- Glacial trough (U-shaped valley)
- Hanging valley
- Corrie (cirque)
- Arête
- Pyramidal peak
- Drumlin
- Erratic