AQA GCSE Geography

Paper 2 – Challenges in the Human Environment - Knowledge Organisers

Paper 2: Challenges in the Human Environment - Overview

A - Urban Issues and Challenges

- ❑ Global urbanisation trends (HICs, LICs, NEEs, megacities)
- ❑ Case study of a major city in an LIC/NEE (growth, opportunities, challenges, management) ***CS – Rio de Janeiro, Brazil / Favela Bairro Project***
- ❑ Case study of a UK city (urban change, opportunities, challenges, regeneration) ***CS – Liverpool, UK / LiverpoolONE / BedZED (London)***

B - The Changing Economic World

- ❑ Global development gap (causes, strategies to reduce it, DMT)
- ❑ Case study of an LIC/NEE (economic development, impacts of tourism, TNCs, aid, debt relief) ***CS – Nigeria / Jamaica Tourism / TNC - Shell Oil***
- ❑ UK economic change (post-industrial economy, science/business parks, transport, north-south divide, links to wider world) ***CS - Jaguar Land Rover at Wolverhampton / Area of Population Growth: South Cambridgeshire & Area of Population Decline: Outer Hebrides***

C - The Challenge of Resource Management

- ❑ Global resource distribution (food, water, energy)
- ❑ UK resource challenges (energy mix, food imports, water supply)
- ❑ Optional detailed study: Food / Energy **X**/ Water **X** (supply, demand, renewable/non-renewable, sustainable management) ***CS - Local Scheme in LIC/NEE – Tanzania: Goat Aid / Large-Scale Agricultural Development - Almería, Spain – Greenhouse Farming***

Total Marks - 88

Paper 2 – Section A – Question 1 - Knowledge Organiser – AQA GCSE Geography – Urban Issues & Challenges [Liverpool]

Overview of UK Urbanisation

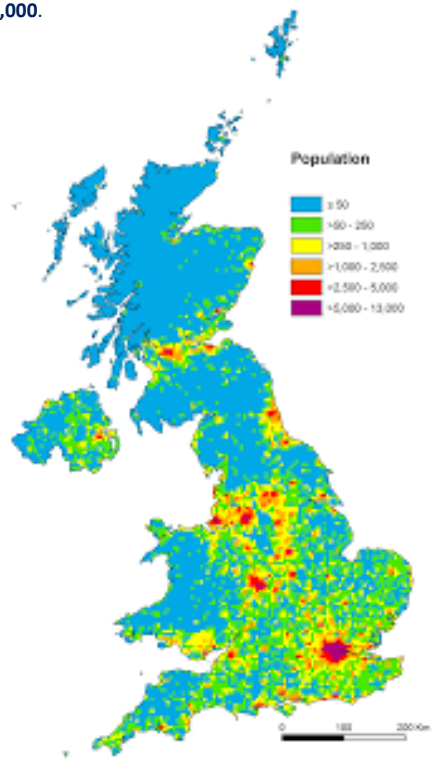
The UK has an **uneven population distribution**: denser in the **southeast (e.g. London)** and around major cities (e.g. Manchester, Birmingham, Glasgow).

Population distribution in the UK is uneven, with higher densities in urban areas (e.g. London, Birmingham, Liverpool).

Major UK cities include London, Manchester, Birmingham, Glasgow, and Liverpool.

Urban growth in the UK has been influenced by industrialisation, globalisation, and internal migration. Many cities developed around **natural resources, ports, or trade routes**.

Liverpool is a **major UK city**, located in **Northwest England** on the **River Mersey Estuary**, with a population of around **500,000**.



Case Study – Liverpool, UK

Location and Importance of Liverpool

Location:
Northwest England, on the eastern side of the **River Mersey Estuary**, about 50 km west of Manchester.

Population:
Approximately **500,500** (as of 2023).

Wider **Liverpool City Region** home to over **1.5 million** people.

National Importance:
- One of the UK's **core cities**.
- Key centre for **education**, **healthcare**, and **business services**.
- Major transport hub: **Liverpool John Lennon Airport**, Merseyrail network, & M62 motorway.

Global Importance:
- Historic **port city** – once a key part of the **British Empire's trade network**.
- Hosted **European Capital of Culture in 2008**.
- Birthplace of **The Beatles** – boosts global tourism – 60 million visitors per year.
- UNESCO World Heritage Site status (lost in 2021 due to modern waterfront developments).

Liverpool John Lennon Airport
Faster. Easier. Friendlier.

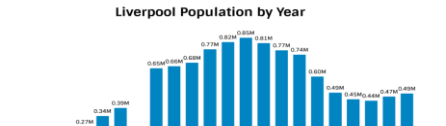
THE BEATLES

Impacts of National & International Migration

Population Trends:
- Growth due to both **national and international migration**, despite previous population decline from the 1970s to early 2000s.

National Migration:
- Movement from surrounding rural areas and other cities (e.g. students attending University of Liverpool, Liverpool John Moore's).
- Young professionals attracted by job opportunities in media, digital, and creative sectors.

International Migration:
- Long history of immigration – one of the UK's oldest **Afro-Caribbean** & **Chinese** communities.
- Somali, Yemeni, Caribbean, Irish, and Eastern European communities contribute to diversity.
- Estimated that **13% of Liverpool's population** is from ethnic minority backgrounds (compared to 86% White British in 2011 Census).
- Migration has contributed to **economic growth**, cultural vibrancy, and labour force supply.

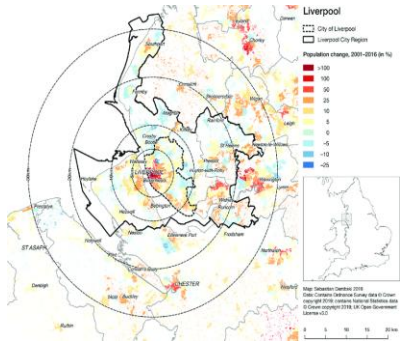


africa oye

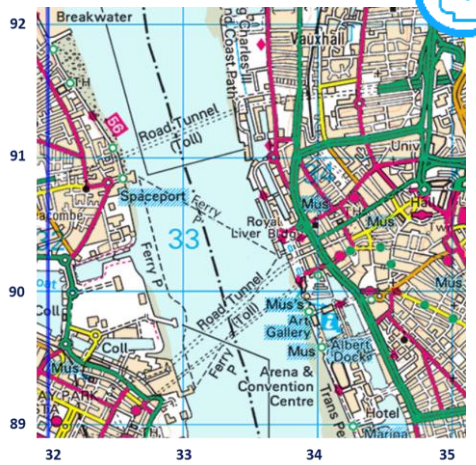
Urban Sprawl & Commuter Settlements

Growth in **suburban housing estates** and **commuter villages** like **Formby**, **Maghull**, & **Ormskirk**.
Pressures on rural land for:
- Housing developments (often on **greenbelt land**).
- **Retail parks** and **business parks** (e.g. Speke Business Park).
- New demand for housing affect the character of the area. Demand for housing can affect prices.
- Business lose money as people leave the areas all day.
- Increase of pollution from cars and commuting.

Increased traffic congestion, habitat loss, and strain on rural infrastructure.



Retrieval:



LIVERPOOL

HILLSIDE HIGH SCHOOL

Paper 2 – Section A – Question 1 - Knowledge Organiser – AQA GCSE Geography – Urban Issues & Challenges [Liverpool]

Opportunities & Challenges Created by Urban Change in Liverpool

Social & Economic Opportunities:

- **Cultural Mix**:
  - Events such as **Africa Oye** and **Liverpool International Music Festival**.
  - Multicultural cuisine, places of worship, and community centres.
- **Recreation and Entertainment**:
  - **Liverpool ONE** – £1 billion shopping and leisure complex.
  - **Royal Albert Dock**, museums (e.g. Museum of Liverpool), theatres (e.g. Everyman Theatre), & football (LFC & EFC).
- **Employment**:
  - Growth in **tourism**, **creative industries**, **finance**, and **higher education**.
  - Liverpool's economy worth approximately **£13 billion GVA (2023)**.
- **Integrated Transport Systems**:
  - **Merseyrail** – rapid transit rail network connecting city to suburbs.
  - **Park and ride schemes**, electric bus trials, new **cycling infrastructure**.
  - **Liverpool Lime Street Station** connects the city nationally.

Environmental Opportunities:

- **Urban Greening**:
  - Over **40 parks and open spaces** (e.g. Sefton Park, Princes Park).
  - Reuse of **brownfield sites** for green space and mixed-use developments.
  - Green infrastructure included in major developments (e.g. tree planting, green roofs).

Social & Economic Challenges:

- **Urban Deprivation**:
  - Ranked as the **3rd most deprived local authority in England** (Index of Multiple Deprivation, 2019).
  - Areas like **Toxteth** and **Anfield** suffer from high unemployment, crime, and low education outcomes.
- **Inequality**:
  - Life expectancy in poorer wards (e.g. Everton, Toxteth) is **10 years lower** than in wealthier areas (e.g. Mossley Hill, Woolton).
  - Housing quality and overcrowding vary significantly.
  - **Education attainment gap**: lower GCSE results in deprived areas.

Environmental Challenges:

- **Dereliction**:
  - Former docklands and industrial buildings lie abandoned.
  - Some parts of **North Liverpool** suffer from long-term neglect.
- **Brownfield vs Greenfield**:
  - Debate over building on urban brownfield sites (harder to develop) vs. greenfield (loss of countryside).
- **Waste Disposal**:
  - Liverpool produces **around 180,000 tonnes of waste per year**.
  - Challenges in increasing recycling rates (currently around **30–35%**).

Urban Regeneration: Case Study - Liverpool ONE

- **Why Regeneration Was Needed:**
  - City centre decline after dock closures and industrial job losses in the late 20th century.
  - Derelict buildings, high unemployment & crime in areas like **Ropewalks** & **Baltic Triangle**.
  - Desire to boost economy and improve city image.
- **Main Features of the Project:**
  - £1 billion regeneration scheme, opened in **2008**.
  - 170+ shops, restaurants, cinema, hotels, and new public spaces.
  - Created **5,000+ jobs**, increased visitor numbers to **28 million+ per year**.
  - Kickstarted wider regeneration:
    - Revitalised the **Albert Dock**.
    - Attracted investment into the **Baltic Triangle** – now a creative and tech hub.
  - Integrated transport improvements and environmental upgrades.

Sustainable Urban Living: Case Study – BedZED (London)

BedZED is the UK's first large-scale sustainable community. Located in **Sutton, South London**, it was completed in **2002** and designed to promote **zero-carbon living**, **resource conservation**, and a high **quality of life**. **Features of BedZED:**

1. Water Conservation: Reduce mains water use and waste.

- **Rainwater harvesting**: Collected and used for **toilet flushing** and **garden irrigation**.
- **Low-flow taps, and dual-flush toilets** reduce usage.
- **Water consumption** at BedZED is **around 50% lower** than the UK average (approx. 76 litres/day vs. UK average 150 litres/day).

2. Energy Conservation: Minimise fossil fuel use and cut carbon emissions:

- **South-facing homes** maximise solar gain for natural heating.
- **Triple-glazed windows and thick insulation** reduce heat loss - 81% less heating energy than the UK average.
- **Renewable energy**: **Solar panels** on roofs generate electricity - Electricity use is **45% lower** than average UK households.

3. Waste Recycling: Reduce landfill and promote reuse:

- **On-site recycling bins** for all materials.
- **Composting** of food waste.
- Target of **zero waste to landfill** from construction.

4. Green Space and Biodiversity: Improve well-being & support ecosystems:

- **Green roofs** provide habitats for birds and insects.
- **Shared gardens** and car-free streets encourage outdoor socialising.
- **Planted public spaces** improve air quality and reduce heat island effect.

5. Transport and Mobility: Reduce car use and traffic congestion:

- Residents encouraged to walk, cycle, or use **public transport (**Close to **local railway station** for commuting)
- On-site **car-sharing scheme** reduces the need for personal vehicles.
- Transport emissions are around **65% lower** than typical urban residents

Category	BedZED Performance against UK Average
Water use	50% lower
Heating energy use	81% lower
Electricity use	45% lower
Car travel	65% lower CO_2 emissions
Recycling & waste	Extensive recycling & composting; low construction waste
Green space	Green roofs, shared gardens, urban biodiversity

How Urban Transport Strategies Reduce Traffic Congestion

Traffic congestion leads to **air pollution**, **lost productivity**, and **lower quality of life**. Cities are introducing **sustainable transport solutions** to reduce vehicle use and improve efficiency. **Key Urban Transport Strategies:**

1. **Integrated Public Transport Systems**
   - Combine buses, trains, trams, and cycling with a single **ticketing system**. Reduces car dependency by making public transport easier and more efficient.
   - Example: **London's Oyster card** works across buses, trains, underground.
2. **Park-and-Ride Schemes**
   - Drivers park on the city outskirts and take public transport into the centre.
   - Helps **reduce inner-city traffic and emissions**.
3. **Congestion Charging**
   - Drivers pay to enter busy areas at peak times. Reduces unnecessary car use and encourages public transport use.
   - Example: **London Congestion Charge** (introduced in 2003).
4. **Encouraging Walking and Cycling**
   - Building **cycle lanes**, **bike hire schemes**, and **pedestrianised zones**. Healthier, cleaner alternative to driving
   - Example: **Boris Bikes (London)**, **Liverpool City Bikes**..
5. **Traffic Management Systems**
   - Smart traffic lights and monitoring (e.g. **CCTV**, **GPS tracking**).
   - Prioritising buses at traffic lights (bus lanes). Reduces stop-start driving and keeps traffic flowing.
6. **Public Transport Investment**
   - New and expanded rail or bus services reduce private car use.
   - Examples: **Crossrail (Elizabeth Line)** in London, **Merseyrail** upgrades in Liverpool.

HILLSIDE HIGH SCHOOL

Paper 2 – Section A – Question 1 - Knowledge Organiser – AQA GCSE Geography – Urban Issues & Challenges [Rio]

Urbanisation and Global Trends

Urbanisation is the **increasing percentage** of a country's population living in towns & cities.
Today, over **55%** of the global population lives in urban areas (as of 2023), and this is expected to rise.

Global Pattern of Urban Change

- **High-Income Countries (HICs)**: Most urbanisation occurred **during the 19th and 20th centuries** (e.g. UK, USA). Today, urban growth is **slow or static**.
- **LICs and NEEs**: Experiencing **rapid urban growth**, especially in **Africa**, **South Asia**, and **Latin America**.
- **Urban Growth Trends:**
  - **HICs** - Slower, some counter-urbanisation
  - **NEEs** - Rapid urban growth
  - **LICs** - Fastest growth, often unplanned

Factors Affecting the Rate of Urbanisation

Migration (Push–Pull Theory):
Push factors (reasons people leave rural areas):

- Poverty
- Lack of services (healthcare, education)
- Natural disasters
- Unemployment

Pull factors (reasons people are attracted to cities):

- Job opportunities
- Better living standards
- Access to services and infrastructure

Natural Increase: High birth rates and **lower death rates** in cities.
- Young migrants = more babies = population grows quickly.

Megacities

A **megacity** is an urban area with a **population over 10 million**.

There are over **30 megacities** worldwide, mostly in **Asia** and **South America**.
Examples: Tokyo, Mumbai, Lagos, Rio de Janeiro.

Case Study: Rio de Janeiro, Brazil – Urban Growth in an NEE

Location and Importance of Rio de Janeiro

Location:
Southeastern coast of Brazil, facing the South Atlantic Ocean.

Population:
Approx. **13.5 million** in the metropolitan area (2024).

National Importance:
- Second largest city in Brazil after São Paulo.
- Home to Brazil's **main oil, gas and mining companies**.
- 5% of Brazil's GDP comes from Rio.

International Importance:
- Major port, international airport (Galeão).
- Hosts global events: **2016 Olympics**, **2014 World Cup**, **Carnival** (attracts **2 million visitors/year**).
- Headquarters for major international companies and **UNESCO World Heritage Site**.

Causes of Urban Growth

Natural Increase - High birth rate among young migrant population.
Migration - 65% of Rio's growth is due to migration.
- **Rural-to-urban migration** from poorer regions like the **northeast** (e.g. Bahia), where drought, poverty, & lack of jobs are common.
- **International migration**: From Bolivia, Argentina, & some African countries.
- Attraction to Rio's job market, better services, & perceived higher quality of life.

Challenges Created by Urban Growth

Managing Urban Growth - Favelas
- Over **1,000 favelas**, housing **around 1.4 million people** (23% of Rio's popul
- Rocinha is the largest favela:
  - **~75,000 residents** officially, up to **180,000 unofficially**.
  - **Issues:** overcrowding, informal construction, landslides (e.g. **2010: 224 deaths**).

Access to Services
- **Water**: 12% of the population lacks reliable access.
- **Sanitation**: 50% of homes in favelas are not connected to sewage systems.
- **Healthcare**: Infant mortality: **14 per 1,000 live births** in favelas (vs. 6 city average).
- **Education**: School attendance drops sharply after age 14 in poorer areas. Youths often drop out to earn money.

Crime and Unemployment
- **Youth unemployment:** approx. **25%**. Informal employment lacks job security, legal protection, or taxes.
- **Crime:**
  - High rates of drug trafficking, gang violence, & armed police operations.
  - Some favelas are controlled by drug gangs.
  - **Pacification (UPP)** programmes have been launched but are controversial.

Environmental Issues
- **Waste**: Many favelas lack formal rubbish collection; waste dumped in rivers and streets.
- **Water pollution**: **Guanabara Bay**: only **40%** of sewage is treated. 200 tonnes of raw sewage enter the bay daily.
- **Air pollution**: Vehicles cause over **5,000 deaths/year** due to respiratory illness.
- **Traffic congestion**: City centre roads often at **traffic capacity for 8+ hours/day**. Steep hills and poor public transport links contribute.

Opportunities Created by Urban Growth

Social Opportunities
- **Healthcare**: More access in urban areas.
  - Yet, some areas like **West Zone (Campo Grande)** have better healthcare than **North Zone favelas**.
  - Mobile health clinics now serve hard-to-reach favelas.
- **Education**:
  - Literacy rate: approx. **95%** (vs. 86% nationally).
  - Government encourages education with school grants and **'Schools of Tomorrow'** initiative.
- **Water and energy**:
  - **95%** of the city's population has access to mains water (2022).
  - Electricity connections extended to over **60 favelas** through government schemes.

Economic Opportunities
- Rio contributes **5% of Brazil's GDP**.
- Large employment sector:
  - **Tourism**, **construction**, **retail**, **finance**, **oil refining**.
  - **Port activities** and **steel manufacturing** are major employers.
- **Informal sector**: 1 in 3 jobs are informal (e.g. street vending, recycling).

Case Study of Urban Planning: Favela Bairro Project

- **Location**: Rio de Janeiro, Brazil — over **1,000 favelas** (informal squatter settlements), housing around **23%** of the city's population.
- **Goal**: Integrate favelas into the formal city by upgrading infrastructure & improving quality of life **without relocating locals**.

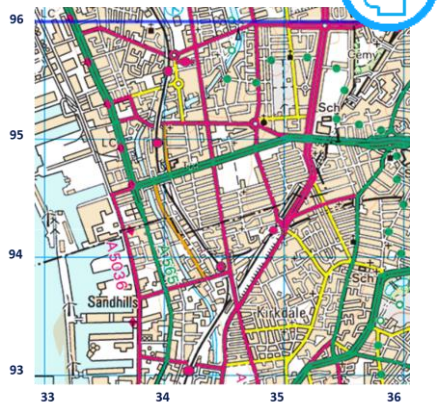
Main Features:
- Legal ownership of land.
- Paved roads and drainage systems.
- Access to clean water and electricity.
- Health centres and schools built.
- Hillsides reinforced to prevent landslides.
- Training schemes and community centres.

Successes:
- **Population served**: over **250,000 residents**.
- **Property values** in upgraded favelas rose by up to **80%**.
- **Increased access** to:
  - Clean water (coverage in upgraded favelas rose to **>90%**).
  - Sewerage systems (**~80%** coverage).
  - Electricity connections for nearly all homes in the selected areas.
- **Education**: school attendance rates improved; youth literacy improved by over **10%** in some areas.

Limitations:
Cost: Over **$1 billion** needed to scale up; funding limits slowed progress.
Incomplete Coverage: Only about **20%** of favelas were reached; thousands still lack basic services.
Crime and Violence: Drug gangs and militias continue to control some favelas, making improvements difficult in areas like **Complexo do Alemão**.
Environmental Impact: Illegal dumping and poor sewage management still affect some upgraded areas

Evaluation of Project
Positives: Improved **standard of living**. Empowered communities and encouraged legal ownership. Safer housing and improved access to public services.
Negatives: Not sustainable without long-term funding and government support. Some **communities excluded** from benefits. Crime remains a **major barrier** to long-term development.

Retrieval:



HILLSIDE HIGH SCHOOL

Paper 2 – Section B – Question 2 - Knowledge Organiser – AQA GCSE Geography – The Changing Economic World

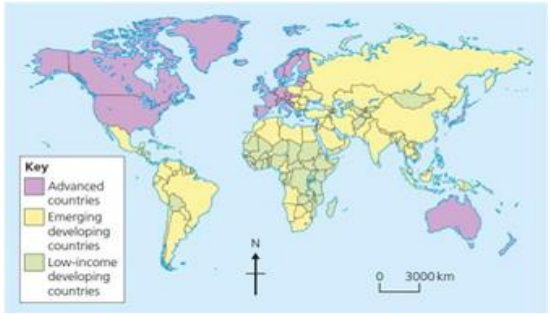
Global Variations in Economic Development & Quality of Life

Overview

- Economic development means an increase in the level of wealth and standard of living of a country.
- Quality of life refers to the general well-being of individuals and societies (includes health, education, housing, & security).
- There is a clear global pattern of development – most HICs are in the Northern

Classifying Parts of the World by Economic Development and Quality of Life

- The World Bank classifies countries based on Gross National Income (GNI) per capita.
- Countries can be classified using:
  - **LIC** (Low Income Country): e.g., Chad, Nepal
  - **NEE** (Newly Emerging Economy): e.g., India, Nigeria
  - **HIC** (High Income Country): e.g., UK, USA



Economic & Social Measures of Development

- **GNI per head**: total income of a country divided by its population.
- **Birth rate**: number of births per 1000 people per year.
- **Death rate**: number of deaths per 1000 people per year.
- **Infant mortality**: number of infant deaths under 1 year per 1000 live births.
- **Life expectancy**: average number of years a person is expected to live.
- **People per doctor**: how many people one doctor serves.
- **Literacy rate**: percentage of people who can read and write.
- **Access to safe water**: % of people with access to clean drinking water.
- **Human Development Index (HDI)**: composite measure using GNI, life expectancy, &education.

Limitations of Economic and Social Measures

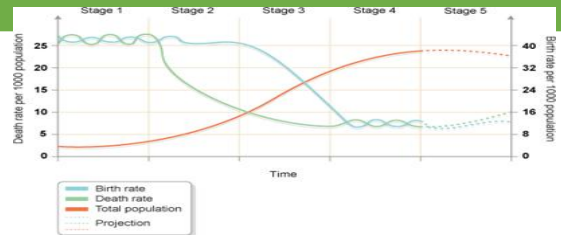
- **Averages can hide inequalities** within a country (urban vs rural, rich vs poor).
- **Data may be out-of-date** or unreliable, especially in LICs.
- **Some indicators are hard to measure** (e.g., literacy in rural areas).
- **One measure alone is not sufficient** – better to use a combination.

Demographic Transition Model (DTM) & Development

DTM shows changes in birth & death rates over time as a country develops.

- **Stage 1** – High birth/death rates (e.g., tribal communities).
- **Stage 2** – Death rate fall (e.g., LICs: Gambia).
- **Stage 3** – Birth rate drops (e.g., NEEs: India).
- **Stage 4** – Low birth/death rates (e.g., HICs: UK).
- **Stage 5** – Very low birth/death rates (e.g., HICs: Japan).

Countries move through the stages as their economies develop, & healthcare improves.



Causes of Uneven Development

Physical:
- Poor climate → poor farming → low income.
- Natural hazards damage infrastructure.
- Landlocked countries struggle with trade.

Economic:
- Poor trade links.
- Reliance on primary products.
- Debt repayment limits investment.

Historical:
- Colonisation disrupted development.
- Conflict & war reduce stability & investment.

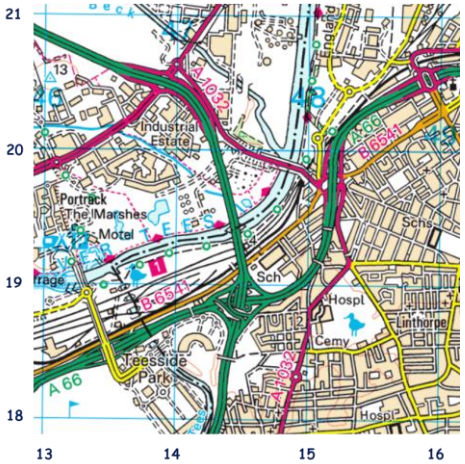
Consequences of Uneven Development

- **Wealth**: HICs have more economic opportunities; LICs remain poor.
- **Health**: Life expectancy is higher in HICs; more diseases in LICs.
- **Migration**: People move from LICs to HICs for better opportunities, e.g., economic migrants from North Africa to Europe.

Strategies for Reducing the Development Gap

- **Investment**: from TNCs (e.g., factories, infrastructure).
- **Industrial development**: moving from farming to manufacturing.
- **Tourism**: creates jobs and income (e.g., Jamaica).
- **Aid**: money/resources from HICs or NGOs.
- **Intermediate technology**: sustainable, appropriate for local use (e.g., water pumps).
- **Fairtrade**: ensures farmers get fair prices.
- **Debt relief**: cancelling or reducing debt repayments.
- **Microfinance loans**: small loans to individuals or small businesses.

Retrieval:



Case Study – Jamaica (Tourism to Reduce the Development Gap)

Jamaica is an **NEE in the Caribbean**.

+ Tourism is Jamaica's main source of income – contributes **over 20% to GDP**.
+ In 2023, tourism brought in over US$4 billion. HDI has increased in Jamaica from 0.45-0.55
+ Employment in tourism: **200,000 jobs** (hotels, transport, shops).
+ Infrastructure has improved in tourist areas.

- Tourism has increased the standard of living in some areas but has **regional inequalities**.
- Environmental impacts include footpath erosion, waste, and visual pollution.
- Only a small portion of profit goes to locals – most goes to big companies.

HILLSIDE HIGH SCHOOL

Paper 2 – Section B – Question 2 - Knowledge Organiser – AQA GCSE Geography – The Changing Economic World

Case Study: Nigeria: A Newly Emerging Economy (NEE)

Some LICs & NEEs are Experiencing Rapid Economic Development

- Nigeria is one of the **fastest-growing economies in Africa**.
- Economic development has led to **urbanisation**, **infrastructure growth**, and **rising incomes**.
- Rapid development brings **benefits** (jobs, investment, better services) and **challenges** (pollution, inequality, environmental damage).

Wider Political, Social, Cultural & Environmental Context

Political:
- Past instability due to **civil war**, **corruption**, and **military rule**.
- Recent shift towards **democracy**.
- Ongoing conflict with **Boko Haram** in the northeast.

Social:
- Multi-ethnic and multi-faith country: major groups include **Hausa-Fulani (north), Yoruba (southwest), Igbo (southeast)**.
- Significant **inequality** between north & south.
- Access to services like education and healthcare is **uneven**.

Cultural:
- Recognised globally for **music (Afrobeats)**, **literature**, **film industry (Nollywood)**.
- Success in **sports** – football is especially popular.

Environmental:
- Wide range of environments: **savanna, rainforest, mangroves**.
- Environmental challenges: **desertification**, **oil spills**, **deforestation**, and **urban pollution**.

Location and Importance of Nigeria (Regional & Global)

Location: **West Africa**, bordered by Benin, Niger, Chad, and Cameroon.
Population: Over **220 million**, most populous country in Africa.

Regional importance:
- Large population & economy.
- Member of the **African Union (AU)** and **ECOWAS**.

Global importance:
- World's **21st largest economy** (2025 est.).
- **Oil exporter** (12th largest globally).
- Member of **OPEC**.
- Major contributor to **UN peacekeeping missions**.

Changing Industrial Structure

- Shift from **agriculture (70% of jobs in 1999)** to **manufacturing and services**.
- Growth in **telecommunications**, **finance**, and **film (Nollywood)**.
- **Oil and gas** sector remains dominant but is less labour-intensive.
- **Manufacturing industry** (e.g., food processing, textiles, cement) is growing and:
  - Increases **GDP**.
  - Attracts **foreign investment**.
  - Leads to the **multiplier effect**.

Changing Political and Trading Relationships

- Nigeria used to trade mostly with **former colonial powers** (UK).
- Now trades globally – **China**, **USA**, **India**, and **Brazil** are key partners.
- **Imports**: machinery, chemicals, transport equipment.
- **Exports**: crude oil, gas, rubber, cocoa.
- Increasing **Chinese investment** in infrastructure (e.g., railway projects).
- Nigeria is a member of **ECOWAS** (regional trading bloc).
  - Leads to the **multiplier effect**.

Role of Transnational Corporations (TNCs) –Example: Shell (oil company) in Nigeria

TNCs are large companies that operate in several countries.

Advantages:
- Provide **jobs** (65,000 Nigerians employed by Shell).
- Contribute to **infrastructure development**.
- **Export earnings** improve national income.
- Transfer of **skills and technology**.

Disadvantages:
- **Environmental damage** (e.g., oil spills in the Niger Delta).
- **Profits often leave** the country ("economic leakage").
- Workers may face **poor conditions** and low pay.
- TNCs can influence government decisions.

Shell

International Aid

- Nigeria receives aid from **the UK**, **World Bank**, **UN**, and **NGOs**.

Types of Aid:
- **Multilateral** (e.g., from World Bank)
- **Bilateral** (e.g., UK–Nigeria Health Programme)
- **Voluntary/NGO** aid (e.g., nets from **Nets for Life**)

Impacts:
- Positive: Health projects reduced spread of **HIV** and **malaria**. **Education projects** increased school attendance.
- Challenges: **Corruption** means aid isn't always used effectively.

Effects on Quality of Life

- **Life expectancy** and **literacy rates** are rising.
- Access to:
  - **Clean water**: improved in urban areas.
  - **Healthcare**: better but still varies by region.
- More **employment opportunities** in industry and services.
- BUT:
  - **Inequality remains** between north and south.
  - Rapid development has not benefited **everyone equally**.
  - Urban areas face overcrowding and pressure on services.

Environmental Impacts of Economic Development

- **Urban growth**: traffic congestion, air & water pollution (e.g., Lagos).
- **Industrialisation**: toxic waste, air pollution, loss of green space.
- **Oil extraction**: Oil spills (e.g., in the **Niger Delta**) destroy habitats & harm livelihoods. Gas flaring contributes to greenhouse gas emissions.
- **Deforestation** from agriculture & urban expansion.

HILLSIDE HIGH SCHOOL

Paper 2 – Section B – Question 2 - Knowledge Organiser – AQA GCSE Geography – The Changing Economic World

UK Economic Change

Major changes in the economy of the UK have affected, and will continue to affect, employment patterns & regional growth

- The UK has undergone a major shift from **primary & secondary industries** (e.g. coal mining, steel) to **tertiary & quaternary sectors** (e.g. IT, finance, research).
- This has caused changes in **employment patterns**:
  - Decline in **manual and manufacturing jobs**.
  - Increase in **service, professional and technology-based roles**.
- Growth is now concentrated in **the Southeast and major cities**, contributing to the **north–south divide**.

Causes of Economic Change in the UK

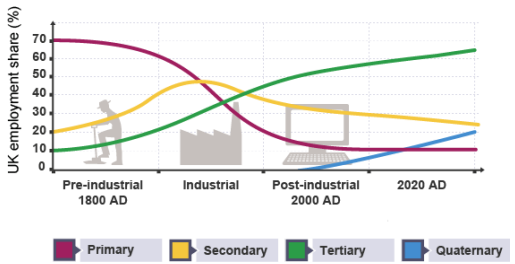
A. Deindustrialisation:
- Heavy industry (e.g. shipbuilding, coal mining) declined from the 1970s due to: Outdated technology / Cheaper overseas competition / Environmental concerns
- Loss of jobs in traditional industrial areas (e.g. South Wales, Northeast England)

B. Globalisation:
- Growth of world trade, cheaper overseas labour
- Manufacturing moved abroad (outsourcing)
- UK is now part of a **global economy** with foreign companies investing in services, finance, and tech

C. Government Policies:
- **1980s**: privatisation and deregulation, reduced support for traditional industries
- **Post-2000s**: investment in infrastructure, training, science & tech
- **Enterprise zones** and investment in northern regions to reduce inequalities

Post-Industrial UK Economy

- The UK economy has shifted towards:
  - **Information technology** (e.g. London is a tech hub; 1.7 million people employed in the digital sector)
  - **Service industries** (finance, education, health – now over 79% of UK employment)
  - **Finance** (e.g. London – one of the world's top financial centres)
  - **Research** (universities, medical, environmental science)
  - **Quaternary sector** – growing due to high skill level and investment in innovation
  - **Science & business parks**:
    - ❖ Often located near **universities** (e.g. Cambridge Science Park)
    - ❖ Modern, attractive working environments with good transport links



Impacts of Industry on the UK Physical Environment

- Past industrial activity caused:
  - **Air and water pollution**
  - **Waste disposal problems**
  - **Landscape scarring** (e.g. abandoned quarries, mines)
- Modern industrial development is **more sustainable**, focusing on:
  - Energy efficiency
  - Waste recycling
  - Reducing emissions

Example: Jaguar Land Rover at Wolverhampton

- **Built on a Brownfield Site:** Constructed on previously developed land, avoids damaging greenfield sites & natural habitats
- **Energy Efficiency:** Factory uses **solar panels** that generate over **30% of the site's energy**
- **Sustainable Transport:** Encourages **low-carbon logistics** (e.g., using rail for transport)
- **Waste Management:** Targets **zero waste to landfill.** Recycles or reuses industrial by-products
- **Carbon Reduction:** Aims to reduce vehicle and production-related CO_2 emissions

JAGUAR | LAND ROVER

UK Rural Changes – Social & Economic

Area of Population Growth: South Cambridgeshire

- Desirable for commuters (close to Cambridge/London)
- **Social impacts**: Ageing population / Rising house prices / Pressure on services and water supply
- **Economic impacts**: More jobs in construction and services / Local economy benefits from new residents

Area of Population Decline: Outer Hebrides

- Remote Scottish islands – population declining due to out-migration of young people
- **Social impacts**: Ageing population / Declining school numbers / Isolation and fewer community services
- **Economic impacts**: Reduced workforce / Struggle to maintain agriculture & fishing / Risk of economic stagnation

UK Infrastructure Improvements

A. Road:
- £15 billion "Road Investment Strategy":
- Upgrading **A303** to dual carriageway near Stonehenge
- New smart motorways (e.g. M62)

B. Rail:
- **HS2 (High Speed 2)**: London to Birmingham & further north (construction paused)
- **Crossrail (Elizabeth Line)**: East–West route across London, opened 2022
- Upgrades to **Northern Powerhouse Rail**

C. Airports:
- **Heathrow 3rd runway approved** to increase global capacity
- Regional airports expanded (e.g. Manchester, Bristol)

D. Ports:
- **Liverpool2**: £300 million deep-water container terminal
- Supports increased container trade and reduces traffic on roads

UK North–South Divide

Context:
Southeast (especially London) is wealthier, has lower unemployment & higher wages than **northern regions**
Industrial decline hit the **North** hard. Differences in **health, education, life expectancy**

Strategies to reduce the divide:
HS2 and Northern Powerhouse Rail
Enterprise Zones offering tax breaks & government support
Devolution: more local control (e.g. mayors in Manchester, Tees Valley)
Local Enterprise Partnerships (LEPs) encouraging business growth

UK's Global Links

Trade: UK trades globally, especially with **EU, USA, China**.
- **Over 40%** of UK trade was with the **EU** before Brexit.

Culture: Global influence in **music, TV, literature, sports**.
- The English language aids cultural exports.

Transport: Extensive **air and sea links**.
- Major airports: **Heathrow, Gatwick, Manchester**.
- **Channel Tunnel** connects UK to mainland Europe.

Electronic Communication: Important hub for **submarine internet cables**.
- Home to major IT and media companies.

Political Links: Commonwealth: 56 countries with shared history and cooperation.
- **European Union (EU)**: UK left in 2020 but still maintains trade and diplomatic ties.
- **G7 and NATO**: UK plays a leading global role.

HILLSIDE HIGH SCHOOL

Paper 2 – Section C – Question 3 & 4 - Knowledge Organiser – AQA GCSE Geography – The Challenge of Resource Management

Food, Water, and Energy Are Fundamental to Human Development

Resource Management - The control and monitoring of resources so they don't become depleted or exhausted.
Natural Resources: Food, water, & energy are essential resources required for human development & quality of life.
Interdependence: These resources are interconnected; for example, growing food requires water & energy.
Resources are essential for people's survival and development:

- **Food**: needed for a healthy, productive population.
- **Water**: essential for drinking, hygiene, agriculture, and industry.
- **Energy**: powers homes, industry, transport, and technology.

The significance of food, water and energy to economic and social well being

Key for human wellbeing. All lead to social and economic benefits which all increase the standard of living

Food:
- Undernourishment affects productivity, child development, and life expectancy (e.g. More than 1 billion people are malnourished & 2 billion are undernourished (poor diet))
- Over-nutrition in some HICs causes health problems (e.g. obesity).

Water:
- Used for survival, washing, food production, industry
- We need clean safe water otherwise we can get stuck in a cycle of poverty
- Access to clean water reduces disease and improves life expectancy.
- Essential for agriculture & industry → supports economic growth.

Energy:
- Reliable energy enables industrialisation, economic development, and domestic comfort.
- Energy poverty limits education, health, and employment in many LICs.

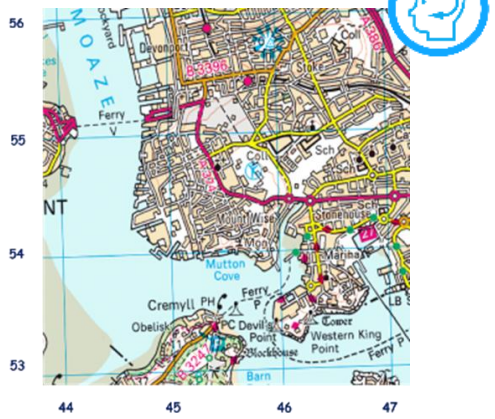
An overview of global inequalities in the supply and consumption of resources

Food
- Recommended average daily calorie intake: 2500 for men. 2000 for women.
- UK 3200 calories per person per day
- Somalia 1580 calories per person per day
- Areas of greatest population growth have highest levels of undernourishment
- Demand depends on changing diets and increasing population
- Supply depends on climate, soil and level of technology

Water
- Fresh water is unequally distributed
- Water footprint is the amount of water used per day: Global average is 1240 l per day / Bangladesh is 896 l per day / USA is 2483 l per day
- Water scarcity can be physical or economic
- 1 in 5 (more than 1.2 billion people) live in areas of water scarcity
- 1 in 3 (2.4 billion people) have no access to clean drinking water

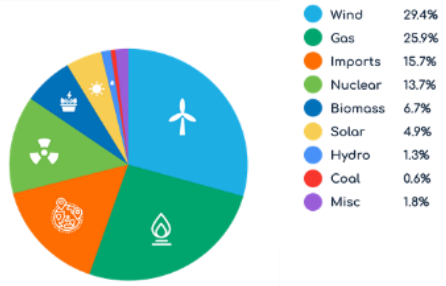
Energy
- Richest billion people use 50% of the energy
- Poorest billion people use 4% of the energy
- Countries import and export energy
- Some countries do not have their own sources of energy

Retrieval:



UK Energy Mix

Energy mix refers to the combination of different energy sources a region or country uses to meet its energy needs.



The changing demand and provision of resources in the UK create opportunities and challenges
An overview of resources in relation to the UK

FOOD

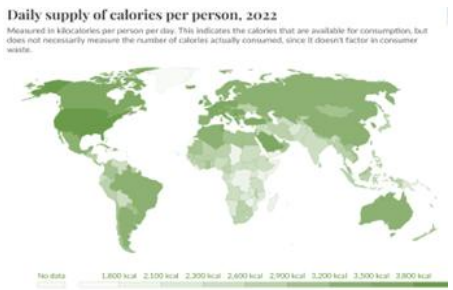
Growing Demand for Food
UK consumers demand **exotic and out-of-season food** (e.g., mangos, green beans).
Many products are imported from **LICs** (e.g., Kenya, Peru).
Benefits LICs (employment, income), but can: Reduce food availability for locals / Strain water and land resources / Increase food insecurity in exporting countries.

All-Year Demand for Seasonal & Organic Produce
Foods once seasonal are now **available year-round** due to global trade.
Organic food (grown without chemicals) is increasingly popular in the UK. Organic food often costs more but is seen as healthier and more sustainable.

Carbon Footprints & Food Miles
Food miles = distance food travels from producer to consumer.
Importing food increases **carbon footprint** due to:
- Air freight, refrigeration, & transport emissions.

Push for **local sourcing**: Reduces emissions / Supports local farmers and rural economies.

Agribusiness in the UK
Agribusiness = large-scale, industrialised farming.
Features: High-tech machinery / Chemical fertilisers & pesticides / Fewer, larger farms.
Increases **efficiency and productivity**, but: Can reduce **biodiversity** / Leads to loss of traditional farming methods / May increase environmental degradation.



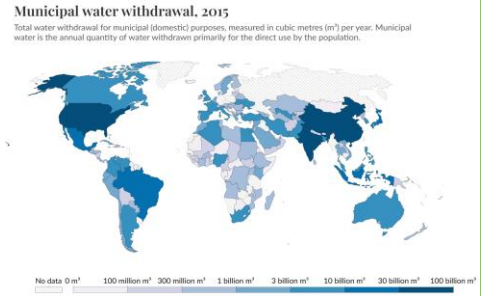
WATER

Changing Demand for Water
UK demand is rising due to:
- Population growth.
- Lifestyle changes (e.g., more showers, appliances).
- Increased use in industry and leisure.

Water Quality & Pollution Management
UK water sources are affected by: Agricultural runoff (nitrates, pesticides) & Discharge from industry & untreated sewage.
Water treatment and **regulation** (e.g., by the Environment Agency) help manage pollution.

Areas of Water Deficit & Surplus
Water surplus: North and west UK (e.g., Wales, Lake District).
Water deficit: South and east UK (e.g., London, East Anglia).
Mismatch between supply and demand causes pressure on water systems.

Water Transfer Schemes
Moving water from surplus to deficit areas (e.g., Kielder Transfer Scheme).
Benefits: balances supply.
Challenges: Costly / Environmental impacts (disruption of ecosystems) / Local opposition.

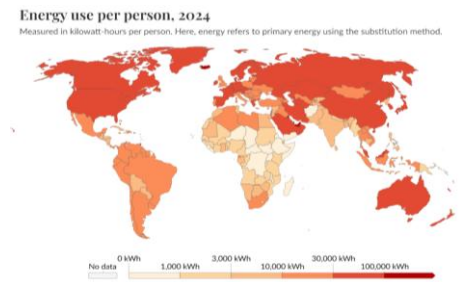


ENERGY

Changing UK Energy Mix
UK used to rely heavily on **coal**.
Now moving towards: **Gas** (domestic and imported), **Nuclear & Renewables** (wind, solar, HEP, biomass).
Coal use has declined due to climate goals and mine closures.

Decline in Domestic Fossil Fuel Supplies
Many **coal mines have closed** (uneconomic, polluting).
North Sea oil and gas reserves are declining and expensive to extract.
UK now **imports over 50%** of its energy.

Economic & Environmental Issues of Energy Sources
Fossil Fuels: Pros: reliable, established infrastructure. **Cons:** CO_2 emissions, pollution, finite supply, costly to clean up.
Renewables: Pros: sustainable, lower emissions, long-term cost-effective. **Cons:** expensive to set up, visual/noise pollution, weather dependent.
Nuclear: Pros: low emissions, high output. **Cons:** expensive, radioactive waste, long build time.



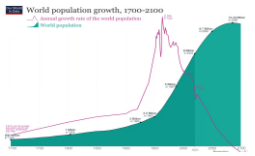
HILLSIDE HIGH SCHOOL

Paper 2 – Section C – Question 3 & 4 - Knowledge Organiser – AQA GCSE Geography – The Challenge of Resource Management

Food

Demand for food resources is rising globally but supply can be insecure, which may lead to conflict

- **Global food demand is increasing** due to:
  - **Population growth** (expected to reach 9+ billion by 2050).
  - **Economic development**:
  - As countries develop, people eat more **calories**, **processed foods**, & **meat**.
- This puts pressure on **global food supply systems**.

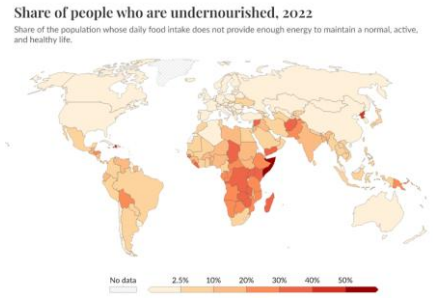


Areas of Food Surplus & Deficit

- **Food surplus (security)** = supply > demand.
  - Found mostly in **HICs**: e.g., North America, Europe, Australia.
- **Food deficit (insecurity)** = demand > supply.
  - Found mostly in **LICs and conflict-affected regions**:
  - e.g., sub-Saharan Africa, parts of South Asia.

Global Patterns:

- **Calorie intake**:
  - HICs: often >3,000 kcal/day (e.g., USA: ~3,600 kcal).
  - LICs: often <2,500 kcal/day (e.g., Chad: ~2,000 kcal).
- **Food supply** differs due to access to:
  - Fertile land, technology, infrastructure, and investment.



Factors Increasing Food Consumption

1. **Population Growth** – more people = more mouths to feed.
2. **Economic Development** – rising incomes = demand for varied, high-calorie diets (e.g., fast food, dairy, meat).
3. **Urbanisation** – changes how food is produced, distributed, and consumed.

Factors Affecting Food Supply

1. **Climate** – droughts, floods, temperature extremes can ruin crops.
2. **Technology** – lack of machinery, fertilisers, and infrastructure limits productivity.
3. **Pests and Disease** – affect crops and livestock, especially where pest control is poor.
4. **Water Stress** – water shortages hinder irrigation and crop yields.
5. **Conflict** – war disrupts farming and food transport.
6. **Poverty** – people can't afford seeds, tools, or even to buy food.

Impacts of Food Insecurity

1. **Famine**: Long-term, extreme food shortage. Example: South Sudan (2021) – millions at risk.
2. **Undernutrition**: Not enough nutrients = poor health, reduced productivity. Affects children & vulnerable populations.
3. **Soil Erosion**: Over-farming and overgrazing degrade land. Leads to desertification and less food production.
4. **Rising Prices**: Low supply = higher prices, making food unaffordable.
5. **Social Unrest**: Food shortages can lead to protests, riots, & instability. Example: Arab Spring (2010–11) partly triggered by food price spikes.

Different strategies can be used to increase food supply

Overview of Strategies

1. **Irrigation** – Artificial watering of land for agriculture (e.g., canal systems, sprinklers).
2. **Aeroponics & Hydroponics**: **Aeroponics**: growing plants in air/mist without soil. **Hydroponics**: growing plants in nutrient-rich water. Pros: saves space/water; year-round production.
3. **New Green Revolution**: High-yield crops, chemical fertilisers, and irrigation. Now includes **GM crops** and **sustainable techniques**.
4. **Biotechnology**: Genetically modified (GM) crops resist pests, drought, etc. Improves yields but raises **ethical and environmental concerns**.
5. **Appropriate Technology**: Small-scale, low-cost, sustainable, and suited to local needs. Examples: treadle pumps, solar-powered irrigation.

Example: Large-Scale Agricultural Development - Case Study: Almería, Spain – Greenhouse Farming

Location and Context - Almería is in **southeastern Spain**, a **semi-arid region** that gets **less than 250 mm of rainfall per year**. The region has over **30,000 hectares** of greenhouses, producing **fruit and vegetables** for export across **Europe**.

Advantages

1. **Year-Round Production and Export -** enabling crops to be grown **365 days a year**. Supplies **50% of Europe's out-of-season fruit and vegetables**.
2. **Economic Growth and Employment -** contributes around **€1.5 billion annually** to the local economy. Provides approximately **100,000 jobs.**
3. **Use of Recycled Water and Solar Energy - Drip irrigation systems** reduce water waste. The region benefits from **high solar radiation**, reducing the need for artificial lighting.

Disadvantages

1. **Plastic Waste and Visual Pollution -** Plastic waste is often **dumped in local riverbeds** or the sea, causing **long-term pollution**.
2. **Intensive Water Use in a Dry Region -** Water is extracted from **aquifers**, causing **over-abstraction** and a **falling water table**. Reliance on **desalination plants**, which are expensive and energy-intensive.
3. **Reliance on Migrant Labour** Many workers are from **North and West Africa**, often employed **illegally** or informally. **Low wages**, **long hours**, and **poor working conditions** are widespread.

Sustainable Food Supply

Strategies for Sustainable Food

1. **Organic Farming** – No chemicals; supports biodiversity and soil health.
2. **Permaculture** – Farming with natural systems (e.g., crop rotation, natural pest control).
3. **Urban Farming Initiatives** – Growing food in cities (e.g., rooftop gardens, vertical farming).
4. **Sustainable Fish and Meat** – Reduces overfishing and land degradation.
5. **Seasonal Food Consumption** – Eating what's in season locally = fewer food miles.
6. **Reducing Food Waste**: 1/3 of all food globally is wasted. Solutions: better storage, public awareness, redistributing surplus.

Example: Local Scheme in LIC/NEE – Tanzania: Goat Aid

Location and Background - Tanzania is an **LIC in East Africa** where many people rely on **subsistence farming**. Goat Aid was a scheme introduced by **Farm Africa**, a UK-based charity. Each goat cost approximately **£25–£30**.

Advantages

1. **Improved Nutrition -** One goat could produce up to **3 litres of milk per day**. Provides a **regular source of protein and calcium**, helping reduce **malnutrition** among children.
2. **Extra Income -** Surplus milk is sold at local markets. Profits can be used to buy **school supplies, clothing, or farming tools**.
3. **Improved Agriculture -** Goats produce **manure**, which improves **soil fertility** and crop yields.

Disadvantages

1. **Overgrazing -** Goats may eat young shoots and strip bark, leading to **land degradation** and **soil erosion** in areas where vegetation is scarce.
2. **Hidden Costs -** Families need to pay for: **Vet bills** & vaccinations / **Animal feed** during dry seasons
3. **Climate Risk -** Droughts or disease outbreaks could **kill livestock**, wiping out a family's investment.

HILLSIDE HIGH SCHOOL