

Resource Challenges

Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Significance of Water

Resources such as food, energy and water are what is needed for basic human development.

FOOD



Without enough nutritious food, people can become **malnourished**. This can make them ill. This can prevent people working or receiving education.

WATER



People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed for food, clothes and other products.

ENERGY



A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry.

Demand outstripping supply

The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth



- Currently the global population is **7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

2. Economic Development



- As **LICs** and **NEEs** develop further, they require **more energy** for industry.
- LICs** and **NEEs** want similar lifestyles to **HICs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.

Resource Reliance Graph

Consumption – The act of using up resources or purchasing goods and produce.
Carry Capacity – A maximum number of species that can be supported.

Resource consumption exceeds Earth's ability to provide!



3. Changing Technology and Employment

- The demand for resources has driven **the need for new technology** to reach or gain more resources.
- More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

Food in the UK



Growing Demand

- The UK imports about 40% of its food. This increases people's **carbon footprint**.
- There is growing demand for greater choice of **exotic foods** needed all year round.
- Foods from abroad are more affordable.
- Many food types are unsuitable to be grown in the UK.

Agribusiness



Farming is being treated like a large industrial business. This is increasing food production.
 + Intensive farming maximises the amount of food produced.
 + Using machinery which increases the farms efficiency.
 - Only employs a small number of workers.
 - Chemicals used on farms damages the habitats and wildlife.

Impact of Demand

Foods can travel long distances (food miles). Importing food adds to our carbon footprint.
 + Supports workers with an income
 + Supports families in LICs.
 + Taxes from farmers' incomes contribute to local services.
 - Less land for locals to grow their own food.
 - Farmers exposed to chemicals.

Sustainable Foods



Organic foods that have little impact on the environment and are healthier have been rising. Local food sourcing is also rising in popularity.
 • Reduces emissions by only eating food from the UK.
 • Buying locally sourced food supports local shops and farms.
 • A third of people **grow their own food**.



Water in the UK



Growing Demand

The average water used per household has risen by 70%. This growing demand is predicted to increase by 5% by 2020.
This is due to:
 • A growing UK population.
 • Water-intensive appliances.
 • Showers and baths taken.
 • Industrial and leisure use.
 • Watering greenhouses.

Pollution and Quality

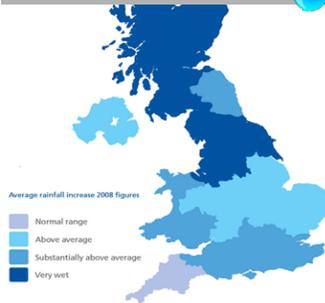


Cause and effects include:
 • Chemical run-off from farmland can destroy habitats and kills animals.
 • Oil from boats and ships poisons wildlife.
 • Untreated waste from industries creates unsafe drinking water.
 • Sewage containing bacteria spreads infectious diseases.

Deficit and Surplus

The north and west have a **water surplus** (more water than is required).
 The south and east have a **water deficit** (more water needed than is actually available).
 More than half of England is experiencing **water stress** (where demand exceeds supply).

Water stress in the UK



The Challenge of Resource Management



Energy in the UK



Growing Demand

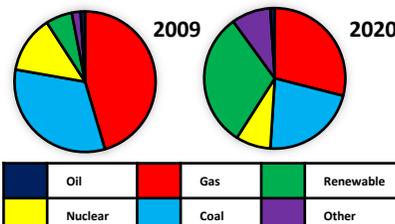
The UK **consumes less energy** than compared to the 1970s despite a smaller population. This is due to the **decline of industry**.

Changes in Energy Mix

- 75% of the UK's oil and gas has been used up.
- Coal consumption has declined.
- UK has become too dependent on imported energy.

Energy Mix

The majority of UK's energy mix comes from **fossil fuels**. By 2020, the UK aims for 15% of its energy to come from **renewable sources**. These renewable sources do not contribute to **climate change**.



Energy in the UK (continued)

Significance of Renewables

+ The UK government is investing more into low carbon alternatives.
 + UK government aims to meet targets for reducing emissions.
 + Renewable sources include wind, solar and tidal energy.
 - Although infinite, renewables are still expensive to install.
 - Shale gas deposits may be exploited in the near future

Exploitation

Nuclear

New plants provide job opportunities.
 Problems with safety and possible harm to wildlife.
 Nuclear plants are expensive.

Wind Farm

Locals have low energy bills. Reduces carbon footprint.
 Construction cost is high. Visual impacts on landscape. Noise from wind turbines.

Management

UK has **strict laws** that limits the amount of discharge from factories and farms.
Education campaigns to inform what can be disposed of safely.
Waste water treatment plants remove dangerous elements to then be used for safe drinking. Pollution traps catch and filter pollutants.

Water Transfer

Water transfer involves moving water through pipes from areas of surplus (Wales) to areas of deficit (London).
Opposition includes:
 • Effects on **land and wildlife**.
 • High maintenance **costs**.
 • The **amount of energy** required to move water over long distances.



Food Security is when people at all times need to have physical & economic access to food to meet their dietary needs for an active & healthy life. This is the opposite to Food Insecurity which is when someone is unsure when they might next eat. HICs – meat, fish, eggs, cereals. LICs – cereals and vegetables.

Human Causes



- **Poverty** prevents people affording food and buying equipment.
- **Conflict** disrupts farming and prevents supplies.
- **Food waste** due to poor transport and storage.
- **Climate Change** is affecting rainfall patterns making food production difficult.

Impacts of food security –

Famine and undernutrition – weakens immune system resulting in diseases and death. Can stop growth of children. 2012-14, 805 million were undernourished (85% LICs)

Rising prices – a shortage of food = higher prices. Hard for LICs

Conflict – The need for food and farming can cause conflict and wars

Physical Causes



- The **quality of soil** is important to ensure crops have key nutrients.
- **Water supply** needs to be reliable to allow food to grow.
- **Pest, diseases and parasites** can destroy vast amounts of crops that are necessary to populations.
- **Extreme weather** events can damage crops (i.e. floods).

Food security on the environment

Poor land = lack of nutrients/water = bad harvest = infertile land = no vegetation = soil erosion via wind/water
Pesticides for healthy crops = water pollution = increase in the demand of water = water shortages = impact of wildlife/habitats

Daily Calorie Intake

Daily Calorie Intake



This map shows how many **calories per person** that are consumed on average for each country. This can indicate the global distribution of **available food** and **food inequality**.

Increasing Food Supply



Aeroponics – Process of using air rather than soil to grow plants. Water and nutrients are sprayed on every few minutes.

Advantages – easily maintained and easy to relocate, less water and nutrients needed and requires little space

Disadvantages – Relies upon the nutrient misting, technology needed (HIC), can become contaminated if not cleaned regularly

Hydroponics - A method of growing plants without soil. Instead they use nutrient solution.

New Green Revolution - Aims to improve yields in a more sustainable way. Involves using both GM varieties and traditional and organic farming.

Biotechnology - Genetically modified (GM) crops changes the DNA of foods to enhance productivity and properties.

Irrigation - Artificially watering the land so crops can grow. Useful in dry areas to make crops more productive.

Sustainable Food Supply



This ensures that **fertile soil, water and environmental resources** are available for future generations.

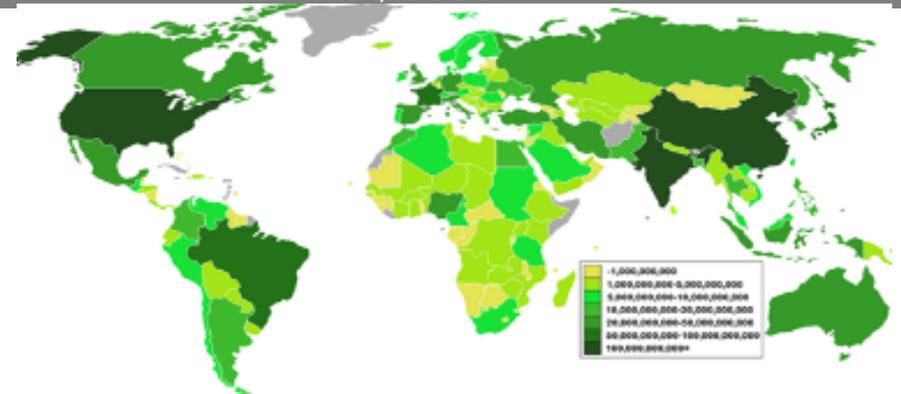
Organic Farming - The banned use of chemicals and ensuring animals are raised naturally.

Permaculture - People growing their own food and changing eating habits. Fewer resources are required.

Urban Farming - Planting crops in urban areas. i.e. roundabouts.

Managed Fishing – Includes setting catch limits, banning trawling and promoting pole and line methods.

Food production



This map shows the amount of **food produced** in different countries. Whilst Asia and **North America** have **high** production outputs, **Africa** and **Central America** have **low** production outputs.

C.S. Almeria, Spain – A large-scale agriculture development

Almeria, southeast of Spain. Largest concentration of greenhouses in the world and most of the UK's out of season crops are from here. Large scale – changes in diet, low labour costs and new and fast transport costs.

Advantages

- Large amounts of cheap and temporary labour
- Cheap fresh fruit and vegetables all year round
- Low energy costs due to all-year round warmer temperature

Disadvantages

- Immigrants working illegally
- The environment has been covered with plastic – destroying ecosystems
- Increased amount of pesticides have increased health risks for locals – no health and safety

C.S. NEE – Jamalpur, Bangladesh – local sustainable food production scheme

Jamalpur gains 57% of their income from agriculture. Many subsistence farmers grow for their family (rice/wh  charity **practical aid** helped introduce small local fish into the paddy field. The fish provide a natural fertiliser to the rice with their dropping, eat pests and circulate oxygen. 'Rice-fish' culture have increase yields by 10%. More protein in rice = better health. Sell extra food for more ££.

The point of these schemes is that they are sustainable and are run by local people to increase food production and are able to pass their knowledge on once they are trained.