

## 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.

### 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.

### 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.

### 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

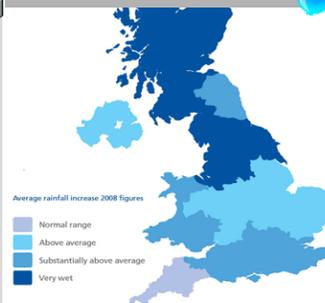


**Cause and effects include:**  
 • Chemical run-off from farmland can destroy habitats and kills animals.  
 • Oil from boats and ships poisons wildlife.  
 • Untreated waste from industries creates unsafe drinking water.  
 • Sewage containing bacteria spreads infectious diseases.

### 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



## Unit 2c



# The Challenge of Resource Management

## Energy in the UK



### Growing Demand

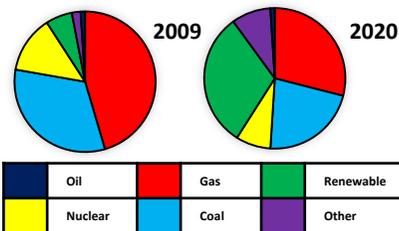
The UK **consumes less energy** than compared to the 1970s despite a smaller population. This is due to the **decline of industry**.

### 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**.



### 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.

## 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.

## Option 3: ENERGY



Energy security means having a reliable, uninterrupted and affordable supply of energy available. Energy insecurity can be experienced by countries with both a high and low energy consumption. Technology is increasing energy consumption.

### Physical



- **Geology** determines the availability of fossil fuels.
- **Climate variations** will affect the potential use of renewable energy.
- **Natural disasters** can damage energy infrastructure.

### Economic



- **Cost** of extracting fossil fuels is becoming costly and difficult.
- **Price of fossil fuels** are volatile to potential political changes.
- **Infrastructure** for energy is costly, especially for LICs.

### Technology



- **New technology** is making once difficult energy sources now reachable/exploitable.

### Political



- **Conflict** and turmoil in energy rich countries can affect exports.
- **Stricter regulations** over Nuclear.

### Impact of Energy Insecurity



#### Sensitive environments

Exploration of energy resources threatens to harm sensitive areas such as the oil drilling in Alaska, USA.

#### Food production

Food production depends on the energy needed to power machinery and transport goods to different markets.

#### Energy conflict

Shortages of energy resources can lead to tensions and violence. Conflict can be caused by fear of energy insecurity.

#### Industry

Countries can suffer from shortfalls in energy leading to a decline in manufacturing and services.

### Increasing Energy Supply

### C.S. Natural Gas - Amazon

#### Non-renewables

**Fossil Fuels** - Conventional power stations can be made more efficient with carbon capture overcoming the environmental impacts.

**Nuclear** - Once a nuclear plant is built it can provide a cheap and long-term dependable source of energy.

#### Renewables

**Wind, Solar, Biomass** - These are examples of environmentally friendly renewable sources that can't run out but cost a lot to install.



The Camisea Project was set up in 2004 in a gas field in Peru.

#### Advantages

- **The project could save Peru \$4billion in energy costs**
- **The government could make \$34 billion profit in 30 years**
- **Creates jobs**
- **New roads will be built**

#### Disadvantages

- **Trees cut down to make space (deforestation)**
- **Clearing the land has caused dangerous landslides**

### Sustainable Energy Supply

### C.S. NEE - Chambamontera



**This involves balancing supply & demand. It also includes reducing waste & supporting the environment.**

Chambamontera is an isolated community in the Andes of Peru. It introduced a micro-hydro to exploit water power as an energy source.

#### Benefits to the community

**Home design** - Building homes to conserve energy. i.e. roof insulation.  
**Reduce demand** - Changing attitudes towards energy used to save energy.  
**Efficient technology** - Making cars more efficient by improving engine design and weight. i.e. Hybrid engines.  
**Transport** - Using public buses & bikes.

- **Provides renewable energy.**
- **Low maintenance & running costs**
- **Has little environmental impacts.**
- **Using local labour and materials.**
- **Businesses are developing.**
- **Less wood is needed to be burnt.**