

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

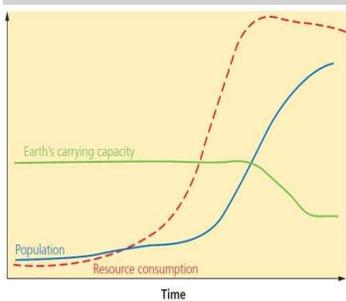
Resources such as food, energy and water are what is needed for basic human development.

FOOD 	WATER 	ENERGY 
Without enough nutritious food, people can become malnourished . This can make them ill. This can prevent people working or receiving education.	People need a supply of clean and safe water for drinking, cooking and washing. Water is also needed for food, clothes and other products.	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  | 2. Economic Development  |
|---|--|
| <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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. |



- ### 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	Impact of Demand 
<ul style="list-style-type: none"> 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. 	<p>Foods can travel long distances (food miles). Importing food adds to our carbon footprint.</p> <ul style="list-style-type: none"> + 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 	Sustainable Foods 
<p>Farming is being treated like a large industrial business. This is increasing food production.</p> <ul style="list-style-type: none"> + 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. 	<p>Organic foods that have little impact on the environment and are healthier have been rising. Local food sourcing is also rising in popularity.</p> <ul style="list-style-type: none"> • 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.

Unit 2c

The Challenge of Resource Management

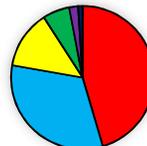
AQA 

Energy in the UK

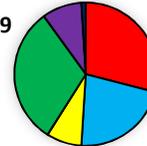
Growing Demand	Energy Mix 
<p>The UK consumes less energy than compared to the 1970s despite a smaller population. This is due to the decline of industry.</p>	<p>The majority of UK's energy mix comes from fossil fuels. By 2020, the UK aims for 15% of its energy to come from renewable sources. These renewable sources do not contribute to climate change.</p>

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.



2009



2020

 Oil	 Gas	 Renewable
 Nuclear	 Coal	 Other

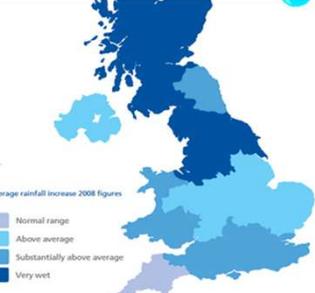
Water in the UK

Growing Demand	Deficit and Surplus
<p>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:</p> <ul style="list-style-type: none"> • A growing UK population. • Water-intensive appliances. • Showers and baths taken. • Industrial and leisure use. • Watering greenhouses. 	<p>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).</p>

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.



Average rainfall increase 2008 figures

- Normal range
- Above average
- Substantially above average
- Very wet

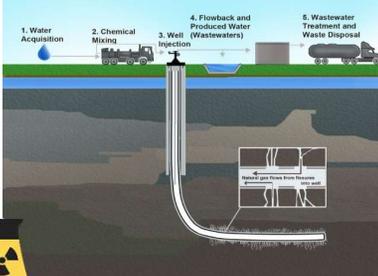
Management	Water Transfer
<p>UK has strict laws that limits the amount of discharge from factories and farms. Education campaigns to inform what can be disposed of safely. Waste water treatment plants remove dangerous elements to then be used for safe drinking. Pollution traps catch and filter pollutants.</p>	<p>Water transfer involves moving water through pipes from areas of surplus (Wales) to areas of deficit (London). Opposition includes:</p> <ul style="list-style-type: none"> • 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	Exploitation				
<ul style="list-style-type: none"> + 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 	<table border="1"> <tr> <th>Nuclear</th> <td> <p>New plants provide job opportunities. Problems with safety and possible harm to wildlife. Nuclear plants are expensive.</p> </td> </tr> <tr> <th>Wind Farm</th> <td> <p>Locals have low energy bills. Reduces carbon footprint. Construction cost is high. Visual impacts on landscape. Noise from wind turbines.</p> </td> </tr> </table>	Nuclear	<p>New plants provide job opportunities. Problems with safety and possible harm to wildlife. Nuclear plants are expensive.</p>	Wind Farm	<p>Locals have low energy bills. Reduces carbon footprint. Construction cost is high. Visual impacts on landscape. Noise from wind turbines.</p>
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What are Resources?	
Key term	Definition
Resources	Materials that have value for people. They may be needed for basic survival e.g. water, or appreciated as something that improves quality of life e.g. coffee.
Resource management	The control and monitoring of resources so they don't become depleted or exhausted.
Surplus	When there is more of a resource than is needed to meet demand.
Deficit	When there is not enough of a resource to meet demand.

Fracking – Opportunities and Challenges



Opportunities

- Shale gas is readily available in UK.
- Will act as a bridging fuel until alternative technologies are developed.
- Increased cost of fuel makes fracking now affordable.

Challenges

- Contaminated water is pumped back into the ground and can affect water supplies.
- Fracking uses a lot of energy.
- 3% of gas extracted is lost to atmosphere; this is methane, a greenhouse gas.

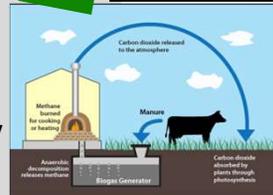
C.S. NEE - Karnataka, India

Karnataka, India. Village that are using Biogas produced by using Cow Dung. Cow dung is placed in the 'digestion tank' where it decomposes creating methane that can then be used for cooking.



Benefits to the community

- **Reduced health risks from open fires and burning wood in the home**
- **Low maintenance & running costs**
- **Has little environmental impact.**
- **Using local free materials – POO!**
- **The slurry left over in the tank is also good for fertilizer and it's free – they can sell it and make additional money.**
- **Funded buy aid from Charities or the government direct to the villagers**



Changing demand for Energy in the UK creates opportunities and challenges

The changing energy mix	<p>UK Energy mix in 2015 :</p> <ul style="list-style-type: none"> • Fossil fuels (65%) Coal 31%, Gas 25%, Nuclear 19%, Renewable sources 22%. In 1970 91% from fossil fuels. • The UK has invested in renewable energy e.g. solar energy and subsidies are given by the government.
Decreasing domestic supply of oil, coal and gas.	<ul style="list-style-type: none"> • Reserves of North Sea oil and gas are declining. • EU regulations on gas emissions has led to a decrease in fossil fuel use. • Energy efficient appliances and industry mean less energy is used in homes and industry.
Economic and environmental issues linked to energy use.	<ul style="list-style-type: none"> • It is cheaper to import coal into the UK than to mine it. • Nuclear Power Stations are being decommissioned and all current plants will close by 2023 – there are issues of contamination and disposal of nuclear waste. • Economic issues – costs, jobs, set up costs, research, reliability. • Environmental costs – ecosystems, waste, noise, emissions, pollution, radiation leaks.

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	Economic
<ul style="list-style-type: none"> • Geology determines the availability of fossil fuels. • Climate variations will affect the potential use of renewable energy. • Natural disasters can damage energy infrastructure. 	<ul style="list-style-type: none"> • 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	Political
<ul style="list-style-type: none"> • New technology is making once difficult energy sources now reachable/exploitable. 	<ul style="list-style-type: none"> • Conflict and turmoil in energy rich countries can affect exports. • Stricter regulations over Nuclear energy.

Impact of Energy Insecurity

Sensitive environments	Food production
Exploration of energy resources threatens to harm sensitive areas such as the oil drilling in Alaska, USA. Shale Oil in Canada	Food production depends on the energy needed to power machinery and transport goods to different markets.
Energy conflict	Industry
Shortages of energy resources can lead to tensions and violence. Conflict can be caused by fear of energy insecurity.	Countries can suffer from shortfalls in energy leading to a decline in manufacturing and services.

Increasing Energy Supply

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.



Sustainable Energy Supply

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

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.

