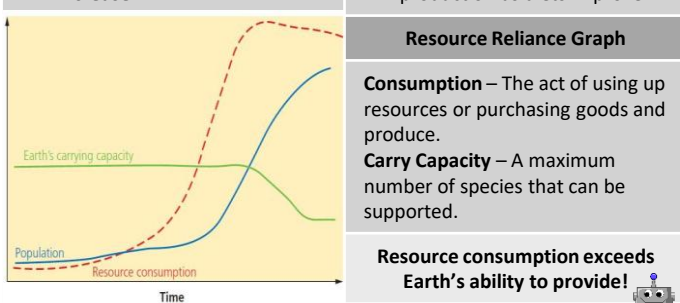


Resource Challenges		
Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.		
Significance of Water		
Resources such as food, energy and water are what is needed 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 

- 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.	- 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.
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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
- 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.	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 	Sustainable Foods 
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.	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.

Unit 2c

The Challenge of Resource Management

AQA 

Energy in the UK 											
Growing Demand	Energy Mix										
The UK consumes less energy than compared to the 1970s despite a smaller population. This is due to the decline of industry .	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 .										
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.	<table border="1"> <thead> <tr> <th>2009</th><th>2020</th></tr> </thead> <tbody> <tr> <td>Oil</td><td>Gas</td></tr> <tr> <td>Nuclear</td><td>Coal</td></tr> <tr> <td></td><td>Renewable</td></tr> <tr> <td></td><td>Other</td></tr> </tbody> </table>	2009	2020	Oil	Gas	Nuclear	Coal		Renewable		Other
2009	2020										
Oil	Gas										
Nuclear	Coal										
	Renewable										
	Other										

Water in the UK 	
Growing Demand	Deficit and Surplus
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.	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).
Pollution and Quality 	Water stress in the UK 
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
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 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	Exploitation
+ 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	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.

Section C: Global Water Supply and Demand Option -Knowledge Organiser

Water	<i>Exam Board Definition from the AQA Website.</i>
Groundwater Management	Regulation and control of water levels, pollution ownership and use of groundwater
Over-abstraction	When water is being used more quickly than it is being replaced.
Sustainable development	Development that meets the needs of the present without limiting the ability of future generations to meet their own needs.
Grey water	Wastewater that can be recycled and put to good use. Greywater from sink waste can be used on the garden.
Sustainable water supply	Meeting the present-day need for safe, reliable and affordable water, which minimises adverse effects on the environment, whilst enabling future generations to meet their requirements.
Waterborne diseases	Diseases caused by microorganisms transmitted in contaminated water, includes cholera and typhoid.
Water conflict	Disputes between regions or countries about the distribution and use of freshwater.
Water conservation	The preservation, control and development of water resources.

Key Idea: Demand for water resources is rising globally but supply can be insecure, which may lead to conflict.

1. Global patterns of water surplus and deficit

Regions with a water surplus include North America, Europe and parts of Asia. Other regions have a water deficit.

Regions with high rainfall usually have a water surplus. Areas with low rainfall, such as hot deserts, usually have a water deficit.

Areas which are highly industrialised and have a high population density have the highest demand for water. Water stress is where more than 80% of the available water is used very year.

2. What factors affect water availability?

Physical Factors	Climate: Regions with high rainfall usually have surplus water. Drier climates have less water available. Geology: Water falling on impermeable rock, such as clay, leads to it running over the surface as rivers. Permeable rock allows water to soak in and is available as groundwater.
Human Factors	Pollution of supply: Rivers can be polluted by industry, especially in rapidly industrialising countries. Over-abstraction: Where more water is removed than is replaced means that the water source is not sustainable. Poverty: Clean water can be expensive and the poor may not be able to afford it. Limited Infrastructure: A lack of water pipes, pumps and sewage pipes, especially in LICs.

3. Why is food consumption constantly rising?

Economic Development	Industry uses large amounts of water for cooling and processing. Wealthier countries use more domestic water due to dishwashers, power-showers and sprinkler systems.
Population Increase	This leads to increasing demands for energy and food, both of which require water to produce. Urbanisation leads to more water being needed for drinking and sanitation.

4. Impacts of food insecurity

Waterborne-diseases	Dirty water can carry diseases such as cholera
Water pollution	Rivers can be polluted by industry, especially in rapidly industrialising countries. Untreated human waste may also enter rivers.
Food production	Irrigation for agriculture uses a lot of water that may not be reliably available.
Industrial output	Manufacturing uses large amounts of water and in times of shortage may have to reduce production.
Potential for conflict	A river can cause conflict if the country upriver decides to dam the supply for its own use.

1. An overview of the different strategies to increase water supply.	
Strategy	How it works
Diverting supplies and increasing storage	Water can be diverted from some areas to areas where it is needed. China is diverting water from the Yangtze River to the Yellow River to supply Beijing with sufficient water.
Dams and reservoirs	Dams trap water creating a reservoir. In wetter periods the dam fills up allowing it to store water for drier periods.
Water transfers	In the UK water is transferred via pipes and rivers from the wetter north and west to the drier but more densely populated southeast.
Desalinisation	Removing salt from seawater means it can then be used for drinking. It is very expensive however as the water needs heating to allow evaporation to occur. The holiday island of Tenerife uses this method to support the thousands of holidaymakers it attracts all year round.

An example of a large-scale water transfer scheme – Lesotho to South Africa	
Advantages	Disadvantages
- It increased sanitation from 15% of the country to 20%. - Improvements to transport to help with construction. - Creates jobs and income.	- The cost is likely to reach \$4 billion. 40% of the water is lost through leakages. 30,000 people had to be relocated to build the dams.

Moving towards a sustainable resource future	
Water conservation	Water can be conserved by fixing leaking pipes, dripping taps, using water meters, showers instead of baths, waterless urinals, hosepipe bans and imposing fines.
Groundwater management	Monitoring this is important to ensure that not too much is extracted. It is also important to ensure this supply is not contaminated by industry or agriculture.
Recycling	Recycling water is becoming more important. Water can be recycled for use in irrigation, industry, power plants and toilet flushing. These uses do not need water to be treated to the same standard as drinking water.
Grey water	Grey water is where water is recycled immediately in the home or business. Waste water from washing machines and sinks can be used.

An example of a local scheme in a LIC / NEE	
Wakel River Basin	
Taankers (Traditional Water Storage Tanks): Taankers are underground storage tanks used to collect and store rainwater. Taankers store rainwater that would otherwise run off and be wasted. Pats (Irrigation Channels): Pats are small, man-made irrigation channels that direct water from rivers or streams to fields. Pats help farmers use water more efficiently, ensuring that the available water reaches their fields. Joheds (Small Earth Dams): Joheds are small, earth-built structures designed to catch and hold rainwater. Joheds increase the amount of groundwater, which people can then use through wells.	