

The Challenge of Resource Management

<u>Food in the UK</u>	
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.</p> <p>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. <p>Watering greenhouses.</p>	<p>The north and west have a water surplus (more water than is required).</p> <p>The south and east have a water deficit (more water needed than is actually available).</p> <p>More than half of England is experiencing water stress (where demand exceeds supply). This leads to water stress</p>
Pollution and quality	Water stress in the UK
<ul style="list-style-type: none"> • 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. <p>Sewage containing bacteria spreads infectious diseases.</p>	<p>Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use.</p>
Management	Water Transfer
<p>UK has strict laws that limits the amount of discharge from factories and farms.</p> <p>Education campaigns to inform what can be disposed of safely.</p> <p>Waste water treatment plants remove dangerous elements to then be used for safe drinking.</p> <p>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).</p> <p>Opposition includes:</p> <ul style="list-style-type: none"> • Effects on land and wildlife. • High maintenance costs. <p>The amount of energy required to move water over long distances.</p>
<u>Energy Mix in the UK</u>	
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	Significance of Renewables
<ul style="list-style-type: none"> • 75% of the UK's oil and gas has been used up. • Coal consumption has declined. • UK has become too dependent on imported energy. 	<ul style="list-style-type: none"> + The UK government is investing more into low carbon alternatives. + UK government has targets for reducing emissions. + Renewables include wind, solar and tidal energy. - Renewables are still expensive to install. - Shale gas deposits may be exploited in the near future
Exploitation	
Nuclear	Windfarm
<p>New plants provide job opportunities.</p> <p>Concern over safety and possible harm to wildlife.</p> <p>Nuclear plants are expensive</p> <p>Locals have low energy bills.</p>	<p>Reduces carbon footprint.</p> <p>Construction cost is high.</p> <p>Visual impacts on landscape.</p> <p>Noise from wind turbines.</p>

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.</p> <p>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).</p> <p>The south and east have a water deficit (more water needed than is actually available).</p> <p>More than half of England is experiencing water stress (where demand exceeds supply).</p>
Pollution and Quality	Water stress in the UK
<p>Cause and effects include:</p> <ul style="list-style-type: none"> • 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. 	<p>Water supply is stressed in the south east of England where the population and therefore demand is high but the amount of precipitation is low</p>
Management	Water Transfer
<p>UK has strict laws that limits the amount of discharge from factories and farms.</p> <p>Education campaigns to inform what can be disposed of safely.</p> <p>Waste water treatment plants remove dangerous elements to then be used for safe drinking.</p> <p>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).</p> <p>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.

Focus: Food

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.

‘Human	Physical
<p>Poverty prevents people affording food and buying equipment.</p> <p>Conflict disrupts farming and prevents supplies.</p> <p>Food waste due to poor transport and storage.</p> <p>Climate Change is affecting rainfall patterns making food production difficult.</p>	<p>The quality of soil is important to ensure crops have key nutrients.</p> <p>Water supply needs to be reliable to allow food to grow.</p> <p>Pest, diseases and parasites can destroy vast amounts of crops that are necessary to populations.</p> <p>Extreme weather events can damage crops (i.e. floods).</p>

Daily calories: this can indicate the health and wealth of a population

Food Supply: can indicate if a country is self sufficient in food

Increasing food supply	Sustainable Food Supply
<p>Hydroponics - A method of growing plants without soil. Instead they use nutrient solution.</p> <p>New Green Revolution - Aims to improve yields in a more sustainable way. Involves using both GM varieties and traditional and organic farming.</p> <p>Biotechnology - Genetically modified (GM) crops changes the DNA of foods to enhance productivity and properties.</p> <p>Irrigation - Artificially watering the land so crops can grow. Useful in dry areas to make crops more productive.</p>	<p>This ensures that fertile soil, water and environmental resources are available for future generations.</p>
	<p>Organic Farming - The banned use of chemicals and ensuring animals are raised naturally.</p> <p>Permaculture - People growing their own food and changing eating habits. Fewer resources are required.</p> <p>Urban Farming - Planting crops in urban areas. i.e. roundabouts.</p> <p>Managed Fishing – Includes setting catch limits, banning trawling and promoting pole and line methods.</p>

Almeria Spain – a large scale approach to food production

Background: Almeria is a **desert** as it averages **228mm precipitation a year**. It is in the **rain-shadow** of several mountain ranges that cause the westerly winds to rise, cool, condense and rain before they reach Almeria

Methods

Hydroponics

is a method of growing plants using mineral nutrient solutions, in water, without soil.

Drip Irrigation

Is a system of irrigating (watering) plants through hoses with holes in them to direct the water to the plant. This avoids lots of waste

Greenhouses

Massive plastic or glass sheds used for growing crops under controlled environmental conditions – where the temperature, moisture and nutrients are made to be optimum for the plants

Advantages

- Jobs in agriculture and also in packing
- Good quality food all year round
- The food produced is quite cheap
- The greenhouses cool the local area by reflecting the sunlight back into the atmosphere
- Export food brings in a lot of trade and profit
- Less water wasted due to drip irrigation
- The year round natural warm conditions mean less energy is used

Disadvantages

- The plastic used has badly damaged local ecosystems and the environment. Waste plastic is often burnt and this is toxic and hazardous to human health.
- The immigrant labour force is paid very low wages and they live in poor conditions
- Large amounts of litter have been left in the area including containers used for chemicals and plastic sheeting.
- The greenhouses often use pesticides to protect the crops from pests, these increase health risks for people working there and have caused some cancers.

Abuja, Nigeria – a sustainable approach to food production

Background: Abuja is the capital of Nigeria. It is experiencing rapid urbanisation, so the population is on the rise and available land for farming is decreasing. It is a NEE, so demand for food is changing as people can afford more varied and nutritious diets

Methods

<p style="text-align: center;">Hydroponics</p> <p>is a method of growing plants using mineral nutrient solutions, in water, without soil.</p>	<p style="text-align: center;">Drip Irrigation</p> <p>Is a system of irrigating (watering) plants through hoses with holes in them to direct the water to the plant. This avoids lots of waste</p>	<p style="text-align: center;">Storage containers</p> <p>These are the containers used on the big ships. They can be stacked and crops can be grown in layers as space in Abuja is limited for farming</p>
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Impacts – positive and negative

<p style="text-align: center;">Social</p> <ul style="list-style-type: none"> • Fresh Direct tries to get young people into farming as the average age of farmers in Nigeria are 60. • Local people can be trained and employed. Crops can also be grown year-round which means better job security for the urban farmers. • The containers need to be carefully monitored and the conditions inside needs to be maintained. This means that farmers have to work very hard to make sure the crops grow • Farmers use fewer pesticides which means that there will be less health risks 	<p style="text-align: center;">Economic</p> <ul style="list-style-type: none"> • The vegetables are still considered as luxury goods, so many people who are in need of food desperately will not be able to afford the product. • Grower can go from seeds to selling produce within weeks. • One container farm can produce up to 30,000 heads of marketable vegetables per year equivalent to 2 acres of farmland. • Locally sourced material used. The crops are grown in free shipping containers which are everywhere in Nigeria as they import various goods from all over the world. They can get these for free most of the time. 	<p style="text-align: center;">Environmental</p> <ul style="list-style-type: none"> • Pump in the containers circulates the water which means the water used at the start of the month is the same as the end of the month. This conserves water needed to grow the crops. • Crops are produced by Hydroponics which uses nutrient infused water and LED lights, so they do not need soil to grow the vegetables. This means that the local soil condition does not affect the growth of the crops. • There are often fuel scarcity in the region which can prohibit them from producing their product. • If they experience no electricity or no water, their crops will be completely wiped out. This means that they will not be able to produce their product without constant source of energy/ resource.
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