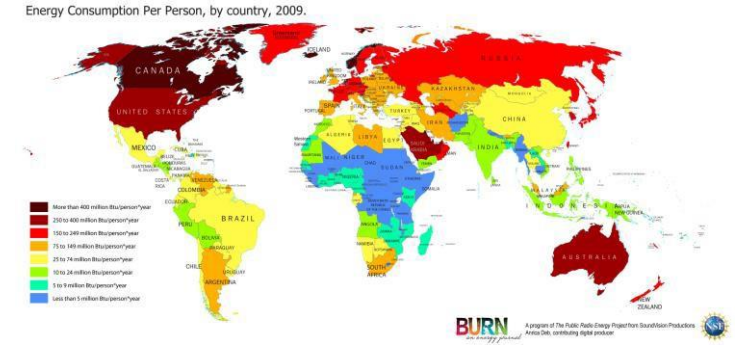
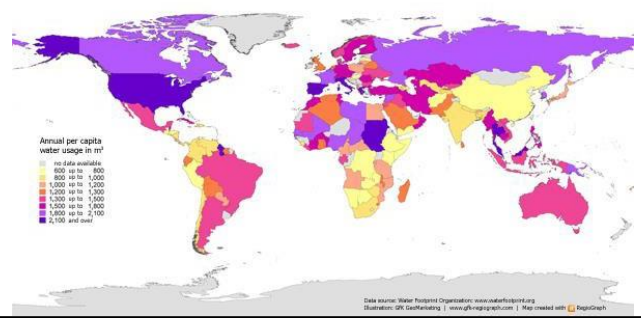


KI : Food, water and energy are fundamental to human development	
Key terms	Definitions
Resource management	The control and monitoring of resources so they don't become depleted or exhausted
The significance of food, water and energy to economic and social well being	
Key for human wellbeing. All lead to social and economic benefits which all increase the standard of living	
Food	<ul style="list-style-type: none"> <li>Calories provide energy</li> <li>Availability depends on climate, soil and level of technology</li> <li>Malnourishment means disease and death. Can also lead to underperforming at school which decreases economic wellbeing in life</li> <li>More than 1 billion people are malnourished</li> <li>2 billion are undernourished (poor diet)</li> <li>Obesity is an issue in some areas</li> </ul>
Water	<ul style="list-style-type: none"> <li>Used for survival, washing, food production, industry</li> <li>We need clean safe water otherwise we can get stuck in a cycle of poverty</li> </ul>
Energy	<ul style="list-style-type: none"> <li>Traditionally we get energy from oil, coal and wood</li> <li>Many different sources</li> <li>Used for production, heating, transport and for water supply (e.g. wells)</li> </ul>

## GCSE The Challenge of Resource Management Knowledge Organiser

### Worldwide water usage – “water footprints” of the nations

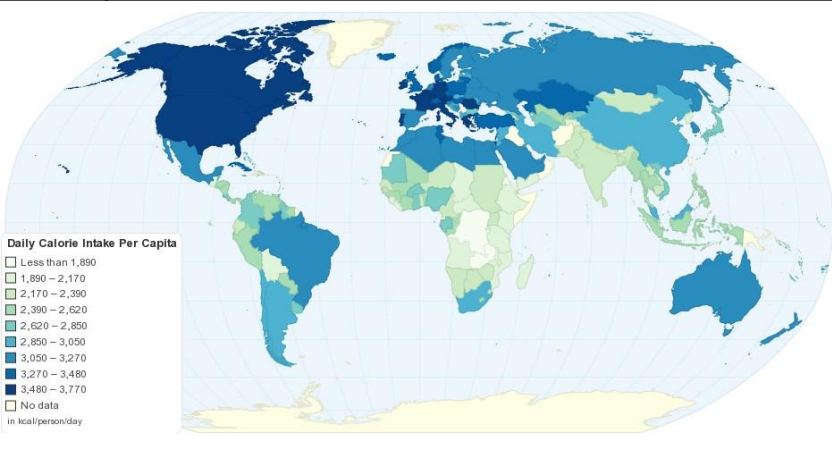


## KI : The changing demand and provision of resources in the UK create opportunities and challenges

An overview of global inequalities in the supply and consumption of resources	
Food	<ul style="list-style-type: none"> <li>UK consume 3200 calories per person per day</li> <li>Somalia 1580 calories per person per day</li> <li>Areas of greatest population growth have highest levels of undernourishment</li> <li>Demand depends on changing diets and increasing population</li> <li>Supply depends on climate, soil and level of technology</li> </ul>
Water	<ul style="list-style-type: none"> <li>Fresh water is unequally distributed</li> <li>Water footprint is the amount of water used per day</li> <li>Global average is 1240 l per day</li> <li>Bangladesh is 896 l per day</li> <li>USA is 2483 l per day</li> <li>Water scarcity can be physical or economic</li> <li>1 in 5 (more than 1.2 billion people) live in areas of water scarcity</li> <li>1 in 3 (2.4 billion people) have no access to clean drinking water</li> </ul>
Energy	<ul style="list-style-type: none"> <li>Richest billion people use 50% of the energy</li> <li>Poorest billion people use 4% of the energy</li> <li>Countries import and export energy</li> <li>Some countries do not have their own sources of energy</li> </ul>

Key terms	Definitions
Agribusiness	Application of business skills to agriculture
Carbon footprint	A measurement of all the greenhouse gases we individually produce
Energy mix	The range of energy sources of a region or country
Food miles	The distance covered supplying food to consumers
Fossil fuels	A natural fuel formed in the geological past from the remains of living organisms
Local food sourcing	A method of food production and distribution that is local
Organic produce	Food produced using environmentally and animal friendly farming methods on organic farms

Water	
Changing demand for water	<ul style="list-style-type: none"> <li>Increasing wealth</li> <li>Hygiene</li> <li>Demand for out of season food</li> <li>Increasing industrial use</li> <li>Increased domestic use</li> <li>Increasing population</li> <li>Increased use in domestic properties since 1975 by 70%</li> </ul>
Water quality and pollution management	<ul style="list-style-type: none"> <li>Water quality is managed by legislation, education campaigns, waste eater treatment, building better treatment plants, investing in infrastructure, pollution traps, green roofs and walls</li> <li>Key pollutants are fertilisers, pesticides, heavy metals and acid rain</li> </ul>
Matching supply and demand – areas of deficit and surplus	<ul style="list-style-type: none"> <li>Highest population is in the South East (area of deficit) and highest rainfall is in the north and west (water surplus)</li> <li>80% of Southern England relies on groundwater. 50% are affected by water quality</li> </ul>
Need for transfer to maintain supply	<ul style="list-style-type: none"> <li>Lake Vyrnwy scheme moves water from Wales to Liverpool. Wales – sparsely populated with excess supply, Liverpool – densely populated with water surplus.</li> <li>Built a dam and reservoir and transported the water via pipeline 68 miles.</li> <li>Had positive and negative impacts including loss of homes (37 homes and 10 farms), recreational area, 10 deaths during construction, reliable supply of water for Liverpool</li> </ul>



Food	
The growing demand for high value food exports from LICs and all year demands for seasonal food and organic produce	<ul style="list-style-type: none"> <li>Used to be seasonally and locally sourced. Now eat globally sourced foods all year</li> <li>In 2013 47% of UK food was imported</li> <li>More disposable income and increased demand for greater choice</li> <li>Can't grow all foods in the UK and foods can only be grown at certain times</li> <li>High value products are five times the price of similar products e.g. Madagascan vanilla, gourmet coffee</li> <li>Positive impacts : Jobs and wages for those in LICs, more tax income leads to a better quality of life</li> <li>Negative impacts – less land for locals, high water use and exposure to chemicals</li> <li>Organic – no pesticides or fertilizers used. Since the 1990s there has been an increase in demand. Worth £2 billion a year</li> </ul>
Larger carbon footprints due to the increased number of food miles travelled	<ul style="list-style-type: none"> <li>Grown more cheaply elsewhere</li> <li>Production and transport lead to carbon footprint</li> <li>17% of the UK's carbon footprint is due to food</li> <li>Tomatoes have less of a carbon footprint being grown in Spain and imported to the UK than if we grew them in the UK</li> <li>Food miles travelled by UK food imports is 18.8 billion.</li> <li>68% of food imported is from within the EU, 32% from the rest of the world</li> <li>Push now for buying local and having an allotment</li> </ul>
A trend towards agribusiness	<ul style="list-style-type: none"> <li>Agribusiness is a farm run as a business with the main aim being profit</li> <li>Big impacts on the environment as often heavy use of pesticides and fertilizers</li> <li>East Anglia has a lot of agribusinesses</li> </ul>

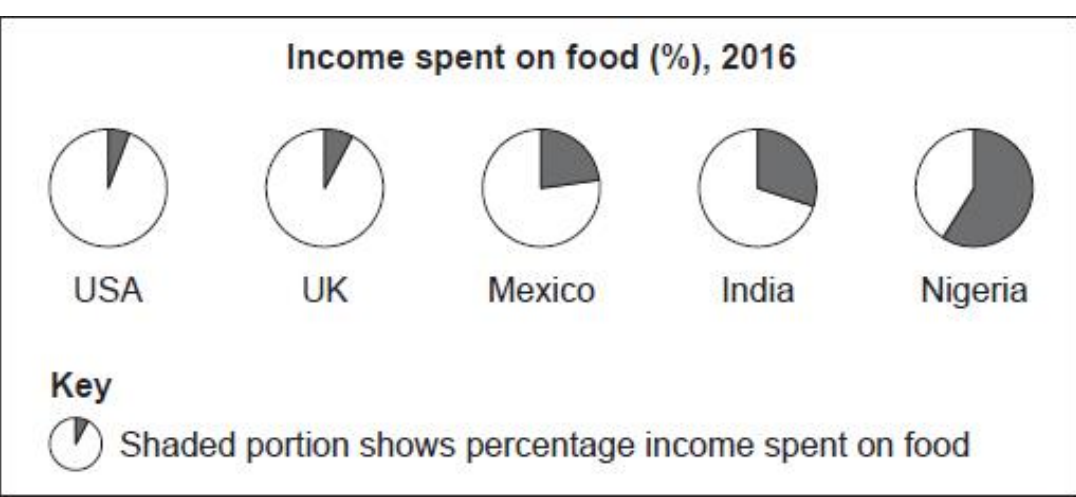
Energy	
The changing energy mix – reliance on fossil fuels and the growing significance of renewable energy	<ul style="list-style-type: none"> <li>UK Energy mix in 2015 :               <ul style="list-style-type: none"> <li>Coal 31%</li> <li>Gas 25%</li> <li>Nuclear 19%</li> <li>Renewable sources 22%</li> </ul> </li> <li>In 1970 91% was from coal and oil</li> <li>UK investing in renewable energy e.g. solar energy and subsidies given by the government</li> <li>Shale gas most recent focus</li> </ul>
Decreasing domestic supply of oil, coal and gas	<ul style="list-style-type: none"> <li>In 1980 North Sea oil and gas was discovered</li> <li>Now have decreasing reserves of fossil fuels</li> <li>EU regulations on emissions has meant decrease in fossil fuel use</li> <li>12% less energy being used in homes since 1970 and 60% less in industry due to energy efficiency, public awareness and increasing costs</li> </ul>
Economic and environmental issues associated with the exploitation of resources	<ul style="list-style-type: none"> <li>Cheaper to import coal into the UK than to mine it</li> <li>Nuclear sites being decommissioned and all current plants will close by 2023 – issues of contamination and disposal of nuclear waste</li> <li>Economic issues – costs, jobs, set up costs, research, reliability</li> <li>Environmental costs – ecosystems, waste, noise, aesthetics, emissions, pollution, radiation leaks</li> </ul>

### Food in the UK

Growing Demand	Impact of Demand
<ul style="list-style-type: none"> <li>The UK imports about 40% of its food. This increases people's <b>carbon footprint</b>.</li> <li>There is growing demand for greater choice of <b>exotic foods</b> needed all year round.</li> <li>Foods from abroad are more affordable.</li> <li>Many food types are unsuitable to be grown in the UK.</li> </ul>	<p><b>Foods can travel long distances (food miles). Importing food adds to our carbon footprint.</b></p> <ul style="list-style-type: none"> <li>+ Supports workers with an income</li> <li>+ Supports families in LICs.</li> <li>+ Taxes from farmers' incomes contribute to local services.</li> <li>- Less land for locals to grow their own food.</li> <li>- Farmers exposed to chemicals.</li> </ul>
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"> <li>+ Intensive farming maximises the amount of food produced.</li> <li>+ Using machinery which increases the farms efficiency.</li> <li>- Only employs a small number of workers.</li> <li>- Chemicals used on farms damages the habitats and wildlife.</li> </ul>	<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"> <li>Reduces emissions by only eating food from the UK.</li> <li>Buying locally sourced food supports local shops and farms.</li> <li>A third of people grow their own food.</li> </ul>

### 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"> <li>A growing UK population.</li> <li>Water-intensive appliances.</li> <li>Showers and baths taken.</li> <li>Industrial and leisure use.</li> <li>Watering greenhouses.</li> </ul>	<p>The north and west have a <b>water surplus</b> (more water than is required).</p> <p>The south and east have a <b>water deficit</b> (more water needed than is actually available).</p> <p>More than half of England is experiencing <b>water stress</b> (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"> <li>Chemical run-off from farmland can destroy habitats and kills animals.</li> <li>Oil from boats and ships poisons wildlife.</li> <li>Untreated waste from industries creates unsafe drinking water.</li> <li>Sewage containing bacteria spreads infectious diseases.</li> </ul>	



- Using the graph, suggest how the percentage of income spent on food may influence well-being.
- What is organic farming?
- Explain why there is a growing demand in the UK for food from LICs.
- Outline **one** advantage of the trend towards agribusiness in the UK.
- How does increasing food miles lead to a larger carbon footprint?
- Explain how changing demand for food has affected the UK's carbon footprint.

### Energy in the UK

Growing Demand	Energy Mix
<p>The UK consumes <b>less energy</b> than compared to the 1970s despite a smaller population. This is due to the <b>decline of industry</b>.</p>	<p>The majority of UK's energy mix comes from <b>fossil fuels</b>. By 2020, the UK aims for 15% of its energy to come from <b>renewable sources</b>. These renewable sources do not contribute to <b>climate change</b>.</p>
Changes in Energy Mix	
<ul style="list-style-type: none"> <li>75% of the UK's oil and gas has been used up.</li> <li>Coal consumption has declined.</li> <li>UK has become too dependent on imported energy.</li> </ul>	

Management	Water Transfer
<p>UK has <b>strict laws</b> that limits the amount of discharge from factories and farms.</p> <p><b>Education campaigns</b> to inform what can be disposed of safely.</p> <p><b>Waste water treatment plants</b> 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).</p> <p><b>Opposition includes:</b></p> <ul style="list-style-type: none"> <li>Effects on <b>land and wildlife</b>.</li> <li>High maintenance <b>costs</b>.</li> <li>The <b>amount of energy</b> required to move water over long distances.</li> </ul>



### Energy in the UK (continued)

Significance of Renewables	Exploitation				
<ul style="list-style-type: none"> <li>+ The UK government is investing more into low carbon alternatives.</li> <li>+ UK government aims to meet targets for reducing emissions.</li> <li>+ Renewable sources include wind, solar and tidal energy.</li> <li>- Although infinite, renewables are still expensive to install.</li> <li>- Shale gas deposits may be exploited in the near future</li> </ul>	<table border="1"> <tr> <th>Nuclear</th> <td> <p>New plants provide job opportunities.</p> <p>Problems with safety and possible harm to wildlife.</p> <p>Nuclear plants are expensive.</p> </td> </tr> <tr> <th>Wind Farm</th> <td> <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> </td> </tr> </table>	Nuclear	<p>New plants provide job opportunities.</p> <p>Problems with safety and possible harm to wildlife.</p> <p>Nuclear plants are expensive.</p>	Wind Farm	<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>
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- To what extent is it preferable to source food locally in the UK rather than import from abroad?
- BUG the question by boxing the command word and underlining the content you need to write about.
  - List the key vocabulary you will use.
  - Create a plan of what you would write in each paragraph.
  - Practice writing your answer from memory.