


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.

Global inequalities in the supply and consumption of resources


Food

- Average UK calorie consumption is 3200 calories per person per day.
- Average calorie consumption in Mali is 2590 calories per person per day.
- Areas of greatest population growth have highest levels of undernourishment.
- Demand depends on changing diets and increasing population.
- Supply depends on climate, soil and level of technology.




Water

- Fresh water is unequally distributed.
- Water footprint is the amount of water used per day.
- Global average is 1240 litres per day
- Bangladesh is 896 litres per day, USA is 2483 litres per day.
- Water scarcity (where demand is greater than supply) can be physical e.g. reduction in rainfall or economic e.g. lack of money to enable access to water.
- 1 in 5 (more than 1.2 billion people) live in areas of water scarcity.
- 1 in 3 (2.4 billion people) have no access to clean drinking water.






Energy

- The richest 13% of people globally use 50% of the world's energy.
- The poorest 13% of people globally use 4% of the world's energy.
- Countries import and export energy.
- Some countries do not have their own sources of energy.




The significance of food, water and energy to economic and social well being



Water food and energy are key for human wellbeing. All lead to social and economic benefits, which all increase the standard of living and quality of life.

Food	<ul style="list-style-type: none"> Calories provide energy. Availability of food depends on climate, soil and level of technology. Malnourishment leads to disease and death. In children it can lead to underperforming at school which decreases economic wellbeing in life. In adults they will be less productive (less able to work). Globally more than 1 billion people are malnourished. 2 billion are undernourished (poor diet). Obesity is an issue in some areas, mainly HICs. 
Water	<ul style="list-style-type: none"> Used for survival, washing, food production, industry. Clean, safe water enables development and allows people to break free from the cycle of poverty. Globally 2 billion people drink from contaminated water sources. Over 500,000 people a year die because of diarrhoeal diseases linked to contaminated water supplies. 
Energy	<ul style="list-style-type: none"> Traditionally we get energy from oil, coal and wood. Many different sources are generated by changing technology. Used for electricity production, heating, transport and for water supply (e.g. wells). Supports industrialisation and development. 

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. 

Changing demand for food in the UK creates opportunities and challenges

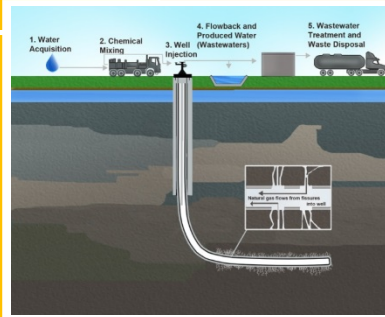
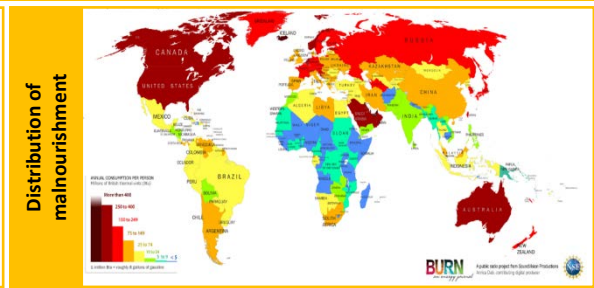
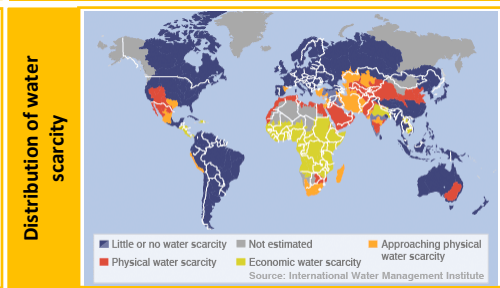
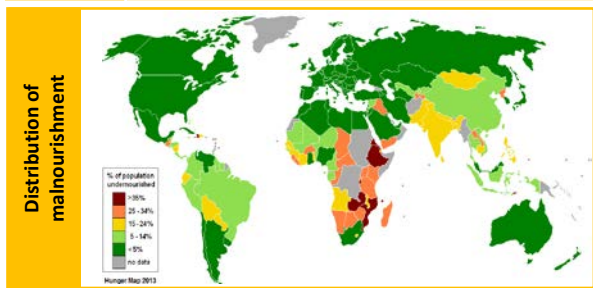
The growing demand for high value food exports from LICs and all year demands for seasonal food and organic produce.	<ul style="list-style-type: none"> Food used to be seasonally and locally sourced. Now we eat globally sourced foods all year. In 2013 47% of UK food was imported. More disposable income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

Fracking – Opportunities and Challenges

Opportunities	Challenges
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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.

Unit 2c CGP pages 90-93 & 106-111

The Challenge of Resource Management




Resource Security


Key term	Definition
Energy security	When the demand for energy is lower than the supply of energy there will be a surplus. This means that a location is energy secure.
Energy insecurity	When the demand for energy is greater than the supply of energy there will be a deficit. This means that the location is energy insecure.
	Security and insecurity can be used to describe access to water and food as well.

Energy Production is unevenly distributed





Some countries produce a **lot** of energy because they have large energy reserves and the money to exploit them.
Iran and Saudi Arabia – Oil
China and Australia – Coal
Russia and UK – Oil and Gas

Some countries produce **little** energy because they can't afford to exploit their resources or they don't have many.
Sudan – War and little money
Ireland – few resources

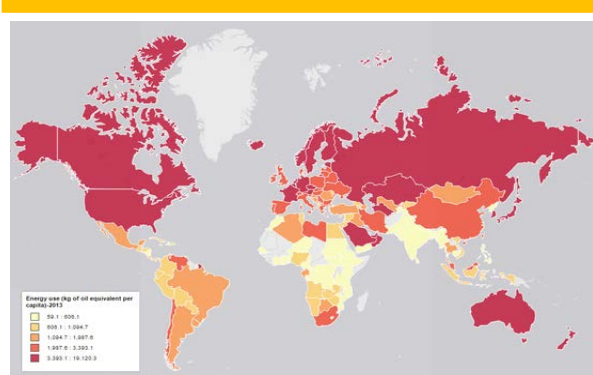
Global Oil Fields 



Impacts of Energy insecurity

Environmental damage	Growth of Biofuels	Power cuts	Conflict
As fossil fuels get used up, reserves in more difficult to reach and environmentally sensitive areas will be accessed, damaging the environment. For example more areas of the rainforest will be used as oil fields.	Biofuels are made from plant material, but growing plants for this uses up agricultural land which could be used for crops and also makes the soil poorer. Over time this will damage the environment.	Energy shortages may make factories less productive when they experience power cuts. This could damage the economy of the country. Factories might then move to places with better energy security.	When energy is limited it can lead to tension or even war. Wars can also disrupt the distribution of energy supplies from countries experiencing war such as the conflict between Russia and Ukraine.
			

Global Energy Use (2015)




Factors affecting energy supply

Physical factor – Geography	-Wind power and hydroelectric power rely on geography for their location. Little wind or small rivers limits their use. -Wave power and tidal power can't be built where the sea is too rough.
Physical factor - Access to fossil fuels	Fossil fuels are not distributed evenly, some countries like the USA have large supplies, other countries like Djibouti have no fossil fuels. Fossil fuels are a non – renewable resource and will eventually run out.
<h3>Fossil Fuel</h3> 	

Strategies to increase energy supply

<p>Access more non renewable sources or Use more renewable energy</p> <p>Renewable:</p> <ul style="list-style-type: none"> -Won't run out -Little or no waste products -Less maintenance than non-renewable sources 	<p>Wind Power – Works on land and at sea. No CO2. Wind is variable so it doesn't work all the time.</p> <p>Hydro – Water trapped behind a dam and allowed to fall through a turbine. Large areas behind destroyed.</p>
<p>Biomass – burn plants and animal waste. Little technology needed, good for LICs.</p> <p>Geothermal – Water pumped into the ground and the earth heats it up, steam turns a turbine. Cheap but needs to be in tectonically active area.</p>	<p>Fossil Fuels – Search for new reserves of oil and gas. Use technology such as fracking to access resources that were previously too difficult to get to.</p> <p>Nuclear – Large amounts of energy, however dangerous.</p>

Sustainable energy management


<p>Sustainable Energy: providing for people today without preventing future generations from meeting their energy needs.</p> 	<p>Carbon Footprint: Measure of the CO2 emissions produced by a person. It includes direct emissions (from things that use energy) and indirect emissions from the energy used to make the things we buy</p>
<p>Sustainable Design</p>	
<p>Insulation Less energy needed to heat homes</p> <p>Solar panels Fitted to roofs and provides low carbon renewable energy</p> <p>Electric cars More efficient than petrol and diesel versions</p> <p>Modern boilers More efficient so use less energy</p>	

Energy consumption is unevenly distributed

<ul style="list-style-type: none"> · Wealthy countries use a lot of energy per person. · They can afford a lot of energy. · Most people have access to electricity, electric heating and energy intensive devices like cars. 	<ul style="list-style-type: none"> · Poorer countries use little energy · They produce little energy. · Poorer countries might have resources that they can't exploit because they can't afford to.
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Economic factors	<ul style="list-style-type: none"> -The non-renewable resources left in the world are becoming increasingly difficult to reach and more costly to extract. -The prices of energy imports can vary massively, countries that have to buy their energy from other countries might not always be able to afford this. -Some LICs have potential energy sources but they can't afford to exploit them. -The building of infrastructure in order to get energy can be very high. E.g. Nuclear power stations.
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Political factors	<ul style="list-style-type: none"> -Wars in countries with large energy reserves means that these countries may not be able to export these reserves. E.g. during the Gulf War 1990-1991 the production of oil from the middle east decreased. -International agreements such as the Kyoto Protocol limits the amount of CO2 emissions from some countries, meaning they can't burn as much CO2 as they used to. -Concerns over the safety of using nuclear power has led to stricter regulations, this has made it more difficult for countries to build nuclear power stations and generate electricity. 
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A LIC scheme to generate sustainable power (increase energy) – Rice Husks in Bihar (India)

85% of people not connected to energy grid 2007 Rice Husk scheme starts in rural areas. Uses rice husks (waste product from growing rice).	1 generator can supply homes in 1.5km range. Local & efficient meaning energy doesn't have to travel far. Reduced need for diesel lamps reduced CO2 Local people employed in power plants
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Global Energy Demand is Increasing

3 main reasons.

1. Population has increased and will reach 9 billion by 2040.
2. Economic development has increased wealth – people can buy more things.
3. New technological devices need energy.

World Energy Consumption

A HIC Scheme to increase energy production

Fracking in UK: Fracking: Extraction of shale gas.

<p>Advantages</p> <ul style="list-style-type: none"> Lots of Shale in UK, fracking increases energy security Gas is less polluting than coal and oil. Releases half the CO2 of coal. Cheaper than some renewable sources but costs more than other gas sources Technology tested in USA and works. 	<p>Disadvantages</p> <ul style="list-style-type: none"> Gas is not a sustainable energy source Risk of polluting ground water Uses a lot of water People of the UK are against it. Investment in fracking might slow down investment in renewables.
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