



Geography Year 11

Blended Learning Booklet

Y11-3 Resources

Name:

Form:

Aim to complete one lesson each week. Write down the **title and LI** for each lesson and then complete the tasks which are **highlighted**.

The Knowledge Organiser on page 3 has all the key information and vocabulary to help you with this unit.

Upload all work onto ClassCharts for feedback.





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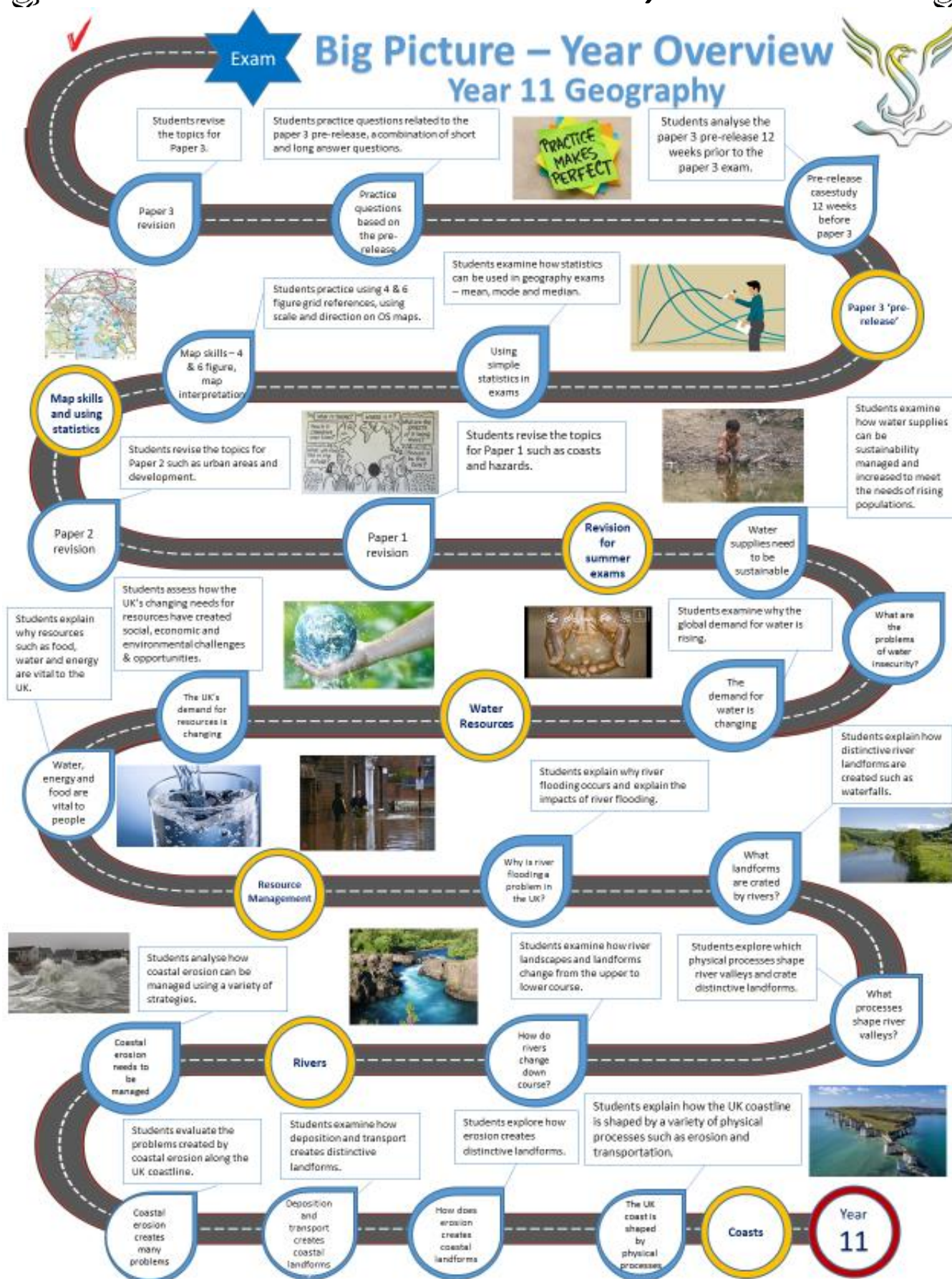
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Lesson One: Why do we need resources?

LI: To examine why food, water and energy are fundamental to human development

Resources - food, energy and water

Resources are things that people use. Some resources are essential for survival, whilst others are needed to maintain a standard of living.

Food

People cannot live without **food**. The average person needs to consume between 2,000 and 2,500 calories per day. The actual number of calories needed depends on factors such as gender, age, height and level of activity.

Eating too few calories causes weight loss and a lack of energy. People who do not have enough food to eat find it difficult to work. If there are too many people in a country who are unable to work, then that country will lose a lot of money. Consuming too many calories causes weight gain. People who eat too much can also find it difficult to work.

Water

People cannot live without **water**. **Water** makes up about two thirds of a person's body. We need it for our body to function, e.g. to absorb nutrients and get rid of waste. Each person should **drink** between 1.6 and 2 litres of **water** a day. The actual amount of **water** needed depends on factors such as the air temperature and the type of activity that a person undertakes each day.

Water is also used to keep ourselves clean and healthy, and is also needed to grow food and for industry. In drier countries or drier seasons, irrigation enables crops to grow. Industry uses **water** in many ways, such as cleaning, cooling and as a raw material in production.

Energy

Energy has many uses. It heats homes and offices, cooks our food and powers transport. Much of the energy that is used is in the form of electricity. This is called secondary energy - primary energy sources, such as fossil fuels or the wind, have been used to generate it.

Energy affects both food supplies and industry. Mining and growing biofuels required to generate energy takes up valuable farmland, which reduces the amount of food available to eat. And if energy is more expensive or in short supply, then it costs more to produce and transport food. This is passed on to consumers through an increase in the price of food.

Task: Explain in detail why people need the 3 essential resources – food, energy and water.

Task: Describe how your own use of food, energy and water each day. How much you use?

Task: Watch the video on resources: <https://www.youtube.com/watch?v=7pPa0mRCky4>

Task: Create your own revision cards or notes which describe and define the types of resources which people need and why they are important.



Lesson Two: Global resource inequalities

LI: To identify the global inequalities in the supply and consumption of resources

Inequalities in the supply and consumption of resources

There are inequalities in the global distribution of resources. The balance between the supply and demand for resources affects a country's wealth and security.

Food security and food insecurity

Food security is when people have enough nutritious and affordable food to eat. Food insecurity is when people go hungry or are malnourished.

Wealthier countries import food and subsidise farming to make food more affordable. This creates a food surplus and there is plenty to go around. Poorer countries have a **food deficit**. They struggle to grow enough to feed people and cannot afford to subsidise farming or import more food.

Water surplus and water deficit

There is a fixed amount of water on the planet. Some is stored in the oceans and ice caps and some circulates as the water cycle. The amount of water available in an area is dependent on factors such as rainfall, temperature and population.

- Higher rainfall leads to more water. Some places can have too much rainfall, which leads to flooding.
- Higher temperatures cause evaporation. If water evaporates, then less is available for people to use.
- Higher populations use more water. This means there is less available to share around.

Areas of water **surplus** have more water than they need. Excess water flows along rivers and out into the sea, but can become a problem if it floods the land. Areas of water **deficit** have too little water.

Energy security and energy insecurity

High income countries (HICs) and new emerging economies (NEEs) consume a lot of energy. The people living in these countries are usually linked to a national electricity grid. They use a lot of technology in their lives and have a high standard of living. Factories in NEEs also use energy to manufacture products. Low income countries (LICs) use less energy. Many people living in LICs are not connected to an electricity grid, but rely on primary energy sources, such as fuel-wood or animal dung.

Some countries produce large supplies of energy. They may have fossil fuel reserves or access to other energy sources, such as geothermal heat. Other countries are dependent upon imported fuel. Fuel prices are set by the exporting countries and so those importing fuel often have to pay high prices.

Places that have energy security produce a high percentage of the energy that they consume. Places that have energy insecurity consume more than they produce. Energy security is determined by the balance between the amount of energy produced in that country and energy imported from abroad.

Tasks:

Q1) Define 'surplus' and 'deficit'.

Q2) Explain why both a 'surplus' and 'deficit' of water can cause problems.

Q3) Explain why HICs like the UK and USA often have a surplus of food and other resources.

Q4) Why do many LICs struggle to grow enough food and why do they suffer energy insecurity?

Q5) Why does the UK use a lot of energy compared to a LIC like Somalia?



Lesson 3: The UK's demand for food

LI: To examine how the UK's demand for food is changing

Food resources in the UK

There is enough food to feed everyone on the planet, but globally there are still 1 billion people experiencing food insecurity. Food supply and consumption are not evenly distributed.

The UK does have food security. Around 40% of the UK's food has been imported and much of it has been processed.

The growing demand for food imports

In the past, people ate food that was in season e.g. cabbages and leeks in the winter and tomatoes and cucumbers in the summer. Nowadays, people in wealthier nations can eat any type of food at any point in the year. Heated greenhouses allow crops to grow out of season and cold storage allows food to be transported from other parts of the world. Trans-national corporations (TNCs) work in several different countries, processing food and exporting it across the globe.

'**FOOD MILES**' refer to the distance food travels from where it is grown to where it is consumed. The further the distance often means more **carbon dioxide** is produced as the food is moved by lorries, ships and even planes. This is bad for the environment as carbon dioxide is the main source of **greenhouse gases** which are causing **global warming**.

The diagram below shows the food miles of several products which are consumed in the UK



The demand for organic produce

Organic foods are grown without using any chemicals. They use natural fertilisers, such as animal manure, and natural predators instead of chemical pesticides. The consumption of organic produce has risen in the UK as fewer people are prepared to eat food that has been sprayed with harsh chemicals.

When farmland is converted to become organic, yields initially drop, but then they can improve to similar levels as non-organic crops. Organic farms are environmentally sustainable, in that they don't use artificial chemicals. Some people believe that organic farming is unsustainable as it can lead to a greater use of land area.



Questions:

Q1) Why has the demand for imported food increased in the UK? How much of our food do we import?

Q2) Using the map, give examples of foods we import and examples of countries where this food is produced. Why is importing food over long distances an environmental problem?

Q3) Explain why the demand for organic foods increased significantly in recent years.

Watch the video on organic foods: <https://www.youtube.com/watch?v=UnuP4vrLvc4>

Lesson Four: Agri-business in the UK

LI: To examine issues of food miles and agri-business in the UK

Food resources in the UK



KEY WORDS:

FOOD IMPORTS – Bringing food into the UK from abroad.

FOOD PROCESSING/FOOD MANUFACTURING – literally processing farm produce like wheat into foods such as flour, bread, biscuits & breakfast cereals.

FOOD SECURITY – The UK imports 80% of the food we eat from other countries. Natural hazards and wars can disrupt this supply.

FOOD MILES – This refers to how far our food travels. Most bananas in the UK are imported from Central America, a distance of 4000 miles.

CARBON FOOTPRINT – Moving food produces lots of CO₂ as our food is moved by lorries, ships and even planes. *Higher food miles = higher carbon footprint.*

ORGANIC FOOD – This is food produced without using chemicals such as *pesticides* which can be harmful to humans and the environment.

The UK food industry (Agri-business)

The **UK food** industry is worth £107 billion a year. This figure includes the money we spend shopping for groceries and the money which goes to our farming, fishing, food processing and food manufacturing industries.

In the UK, 4 million jobs are linked to the food industry with around 500,000 people working in farming and fishing and over 400,000 people in **food** manufacturing. There is enough food to feed everyone on the planet, but globally there are still 1 billion people experiencing food insecurity. Food supply and consumption are not evenly distributed. The UK

The UK enjoys strong food security as we are a HIC. Around 80% of the UK's food has been imported and much of it has been processed in other countries, but we have **the wealth to import virtually any foods** we want such as exotic fruit like avocados. If one source of food disrupted by a natural hazard (like a hurricane destroying the banana crop in Costa Rica) we have the money to buy bananas from another country.



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However, the UK food industry also produces a **high carbon footprint and high food miles**. We create huge amounts of CO₂ as we import so much food from all over the world. Fruit like avocados can travel well over 5,000 miles from the farms in South America where they are grown to UK supermarkets and finally to our homes. Most of our food is moved by lorries, ships and even planes.

QUESTIONS:

- Q1) What is food security? What factors can disrupt our food security?
- Q2) Why would buying more locally produced food reduce our carbon footprint?
- Q3) Explain why the food industry is important to the UK economy?
- Q4) Explain what is meant by food security.
- Q5) Why does the UK enjoy good food security?
- Q6) How many people around the world don't have good food security?
- Q7) Why has the demand for food imports increased?
- Q8) Why is the UK food and farming industry a very important part of our economy?
- Q9) How can the food industry be linked to climate change?



Lesson Five: Water insecurity in the UK

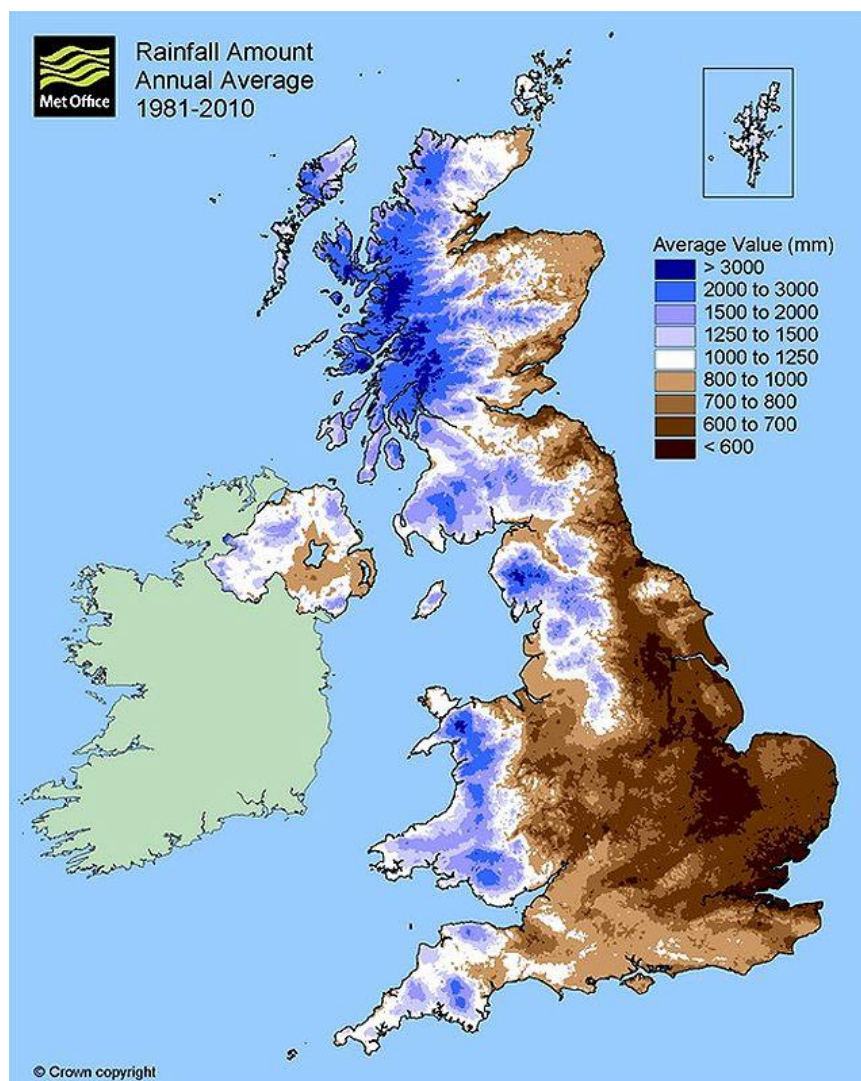
LI: To examine issues of water insecurity in the UK

Water resources in the UK

Around 80% of the global population experience water insecurity. Water supply and consumption are not evenly distributed.

The UK has an overall water surplus although there are variations in the amount of rainfall across the country, for example places in the west receive much more rainfall than those in the east. There are also variations in the population density, e.g. the south east (including Essex) has a much higher population density than Wales, but the south east receives much less rainfall compared to Wales.

The map below shows UK rainfall levels, the dark brown areas receive the least rainfall (including Essex!) and the dark blue areas receive the most:



Water transfer schemes

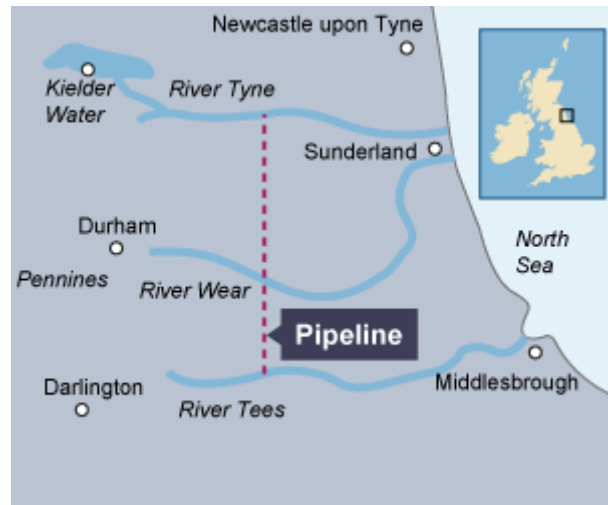
In the UK, there are systems in place to transport water from areas of surplus to areas of deficit. These are called water transfer schemes and they can be found in many parts of the UK. One example is Kielder



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reservoir in Northumberland. Kielder Water is located in an area of high land and so the rainfall is higher than many surrounding areas. Rainwater that collects in Kielder reservoir is transported southwards and released into rivers that flow to the cities and towns of Newcastle-upon-Tyne, Sunderland, Durham, Darlington and Middlesbrough. This can be seen on the map below:



The changing demand for water

In the past, people used far less water. Water use has increased as more people wash cars, take longer showers and water their gardens. The average person uses around 150 litres of cleaned and treated water every day. Farming and industry also use large quantities of water.

Only a proportion of the UK's total water use comes from within the country. Imported products, like food and cotton, use up water resources in the countries where they are grown. The UK's water footprint is a measure of the total water used both within the UK and in other countries through imported products.

The UK government has also considered creating a national water grid. This would work in a similar way to the national electricity grid, but it would be used to link up the country's water supplies.

Questions:

Q1) Does the UK receive equal amounts of rainfall across the country? Which areas receive the most and least rainfall?

Q2) What does 'water surplus' and 'water deficit' mean?

Q3) Why can unequal amounts of rainfall across the UK cause problems?

Q4) How might water transfer schemes help areas which experience water deficit?

Q5) How is the UK's demand for water changing?

Q6) How does the UK 'use' water in other countries? What does 'water footprint' mean?



Lesson six: The UK's changing energy mix

LI: To explain why the UK's energy mix is rapidly changing

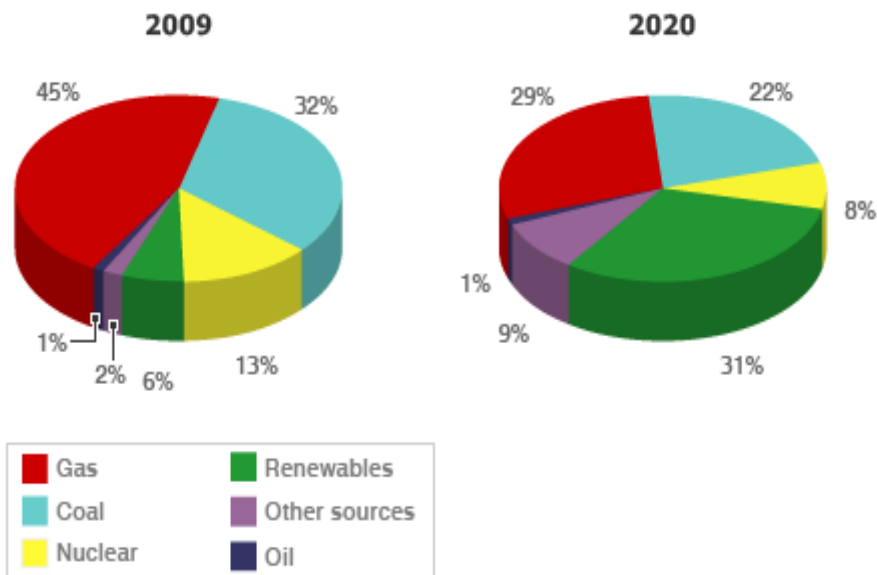
Read through the DART below:

Renewable energy resources in the UK

To help combat global warming and climate change, the UK has pledged to reduce its CO₂ emissions to zero by 2050. The UK has committed billions of pounds to develop **renewable energy** sources such as wind power and solar power. The mixture of primary energy sources used is called the **energy mix**.

The current energy mix of the UK consists mostly of gas, nuclear and renewables. The last oil-fired power station in the UK closed in 2015 and the last coal fired power station will close by 2025. Between 2009 and 2020, the UK's energy mix has changed dramatically with the amount of gas and coal being used falling and the amount of renewables increasing rapidly.

UK Electricity Generation



SOURCE: DECC

The growth of renewable energy

The UK has been reliant on fossil fuels such as gas and coal for many years. However, fossil fuels release CO₂ gas when they are burnt, and this is the main cause for global climate change and global warming. It is becoming environmentally unsustainable to use fossil fuels and the UK is shifting to using more renewable energy sources.

Renewable fuels make up less than 31% of the UK's energy mix. The UK has a lot of potential for generating renewable energy:

- Over 50% of all renewable energy generated in the UK comes from wind farms. Some of this is from onshore turbines, but the number of offshore turbines is increasing rapidly as the UK is an island and the windiest country in Europe as it receives much of its weather straight from the Atlantic Ocean.



- The amount of UK electricity generated through hydroelectric power (HEP) has remained the same since 2012. This will not increase unless new dams are built.
- Less than 0.01% of UK energy is generated through tidal power. The UK is an island nation and could generate around 20% of its electricity using waves and tides.
- Solar panels are becoming more common, particularly on peoples' homes. The UK government think that 4% of our electricity could come from solar power by 2020.

Questions:

Q1) using the diagram, describe in detail how the UK's energy mix has changed between 2009 and 2020. Include statistics in your answer.

Q2) Explain why the UK has decided to change its energy sources from non-renewable like coal and gas to renewables such as wind.

Q3) Why is offshore wind generation a very good option for the UK?

TASK: Watch the video about the UK's changing energy mix -

<https://www.youtube.com/watch?v=IA8USjDkcXk>

Issues associated with renewable energy exploitation

There are economic and environmental issues that are associated with the exploitation of energy sources:

Economic: Generating electricity costs a lot of money. There are initial costs, such as building power stations, dams and wind farms. There are also maintenance and running costs, such as buying fuel, repairing damage to structures and disposing of waste products. The government must balance these costs with other important things that the country must buy. They must also decide whether to invest in non-renewable or renewable options.

Generating electricity has many **environmental issues**:

- Fossil fuel powered stations create emissions, noise from trains transporting coal, and waste products like ash. They have also been linked to high levels of radiation.
- The uranium used in nuclear power plants is highly radioactive and the waste products have to be kept away from people indefinitely.
- Renewable energies like wind and solar power can be considered visual pollution. Tidal power and HEP dams may affect marine ecosystems.

Questions:

Q1) Explain why renewable energy sources can create economic and environmental problems in the UK.

Q2) What are the problems associated with using nuclear energy?



Lesson seven: Issues of energy production in the UK

LI: To examine the economic and environmental issues of energy production in the UK

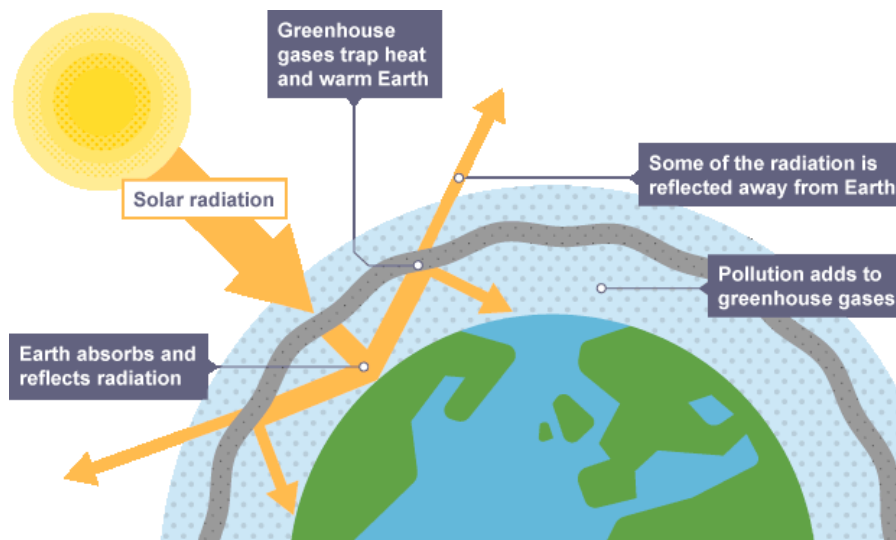
Read through the DART below:

Climate change and the UK

A natural function of the Earth's atmosphere is to keep in some of the heat that is lost from the Earth. This is known as the **greenhouse effect**. The mixture of gases in the atmosphere helps to maintain a stable climate. The atmosphere allows the heat from the Sun (short-wave radiation) to pass through to heat the Earth's surface. The Earth's surface then gives off heat (long-wave radiation). This heat is trapped by greenhouse gases (mainly carbon dioxide), which radiate the heat back towards Earth and this process heats up the Earth.

Carbon dioxide (CO₂) is the main atmospheric gas involved in the greenhouse effect. CO₂ is released by the breathing of animals and can be released naturally by wildfires. In turn it is absorbed by the oceans and plants.

This is a very carefully balanced system which have kept global temperatures stable for thousands of years. Human activity is changing this balance. Humans are rapidly increasing global temperatures as we use fossil fuels such as coal, oil and gas which when burnt release the main 'greenhouse gas' carbon dioxide. Global temperatures could increase by up to 3 degrees Celsius by 2100 if we do nothing.



Positive and negative impacts of climate change in the UK

Global warming can have **negative impacts on the UK**:

- sea levels could rise, covering low lying areas, particularly in eastern regions of England
- Scottish ski resorts may have to close due to lack of snow
- droughts and floods become more likely as extreme weather increases
- increased demand for water in hotter summers puts pressure on water supplies

However, there are some **positive impacts from a warmer UK climate**:

- crops such as oranges, grapes and peaches can be grown in the UK



- winter heating costs will be reduced as winters will be milder
- accidents on the roads in winter will be less likely to occur

Questions:

1) How does carbon dioxide (CO₂) contribute to global warming?

2) What negative impacts will global warming create in the UK?

3) Describe the positive impacts which global warming could create in the UK – which it help fruit farmers?

Energy conservation in the UK

New homes built in the UK have lots of energy-saving measures, like loft and wall insulation, radiator thermostats and smart energy meters that monitor energy use. This is because any homes that are built or rented out have an energy rating, where A-rated homes use the least energy and G-rated homes use the most.

Businesses and organisations like to be energy efficient because it saves money. Public buildings like schools and hospitals must display an energy certificate to show how much energy they use.

Local councils encourage people to use sustainable methods of transport. This could be through providing public transport, creating cycle lanes or introducing congestion charging. London has all these measures, plus an underground train network and a cycle hire scheme.

Better technology and changing cars

Modern life is dependent upon the use of electrical items. The EU has introduced a system that rates household appliances, like washing machines and dishwashers - A+++ items use the least electricity and D items use the most. This helps people to choose products that use less energy.



Many cars now use less fuel and some have batteries so that they can be charged using renewable electricity. The Vehicle Excise Duty (VED) is a tax for car owners. People who drive less energy efficient cars pay a higher VED. The UK is banning the sale of new petrol and diesel cars from 2030 in favour of electric cars as this is expected to further reduce our CO₂ emissions.

Questions:

Q1) Explain how the UK is attempting to reduce its energy consumption

Q2) What issues may result from the switch from petrol and diesel cars to electric cars? How many charging points will the UK need outside homes, in cars parks and other places such as schools?