Geography– Energy and Climate Change

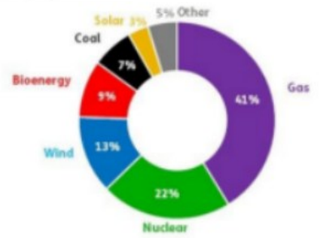
KNOWLEDGE ORGANISER

Renewable and non-renewable energy sources

We harvest energy from many different sources. These sources are either **renewable** (meaning they can be used over and over again without running out) or **non-renewable** (meaning they can only be used once and will eventually run out). Renewable energy sources are more sustainable because we never have to worry about future generations running out.

UK electricity generation

Proportion of total electricity generated from different sources in the 12 months ending September 2017



Key Word	Definition
Energy resource	Something with stored energy that can be released in a useful way.
Non-renewable	An energy resource that cannot be replenished and will be used up.
Renewable	An energy resource that can be replenished and will not run out. Examples are solar, wind, waves, geothermal and biomass.
Fossil fuels	Non-renewable energy resources formed from the remains of ancient plants or animals. Examples are coal, crude oil and natural gas.

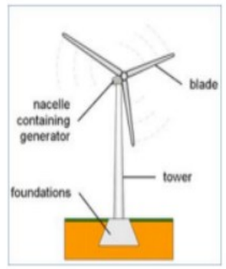
Nuclear Power

Nuclear power is created from the release of energy from nuclear reactions (**fission** or **fusion**). These reactions usually use uranium or plutonium.

Advantages	Disadvantages
- Does not release much carbon - Can provide cheap power to LICs - Only small amounts of fuel needed to produce lots of energy compared to fossil fuels	- **Non-renewable** - Produces dangerous waste to be disposed of - Accidents and leaks can be deadly and last for a long time

Wind Power

Wind energy is produced when the blades of the turbine spin and thus turn the generator which produces electricity.



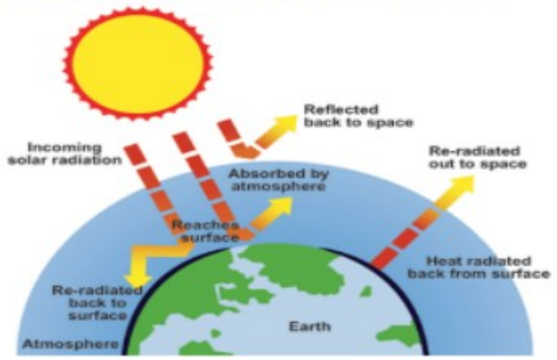
Advantages	Disadvantages
- Produce very little pollution - Renewable - Land beneath them can be used for other things e.g. farming	- Wind is unreliable and may not always blow - They can injure birds flying past - Difficult to store excess energy

Hydro-Electric Power

Fast flowing water is used to turn the turbines, thus generating energy. Water is often stored behind a dam in deep valleys.

Advantages	Disadvantages
- Dams can manage flooding and water resources - Reservoirs can be used for water sports - Can be used for irrigating crops	- Can damage wetland and aquatic ecosystems downstream - Expensive to build - Large areas of land must be flooded to create reservoirs

Global warming and the greenhouse effect



How are the rising global temperatures affecting the natural world?

- Rising global temperatures can cause extreme weather patterns.
- The increased global temperature is causing environmental change including melting of the polar ice caps and rising sea levels.
- Environmental change impacts eco-systems, food chains and population of animals.
- Animals such as polar bears, whales, sea turtles and snow leopards are at risk of extinction due to climate change.

What is climate and climate change?

- Climate describes the weather conditions that are expected in a region at a particular time of year.
- Climate change describes a change in the average conditions — such as temperature and rainfall — in a region over a long period of time.

How does location impact climate?

- Climate is dependent on location in relation to the equator, earths tilt and time of year.
- The distance from the equator affects the climate of a place, the closer a place is to the equator the warmer it is.
- At the poles, energy from the sun reaches the Earth's surface at lower angles and passes through a thicker layer of atmosphere than at the equator. This means the climate is cooler further from the Equator.

What are greenhouse gasses?

- Greenhouse gases are gases in Earth's atmosphere that trap heat. They let sunlight pass through the atmosphere, but they prevent the heat that the sunlight brings from leaving the atmosphere. The main greenhouse gases are water vapour, carbon dioxide, methane, ozone, nitrous oxide and chlorofluorocarbons.