Name:

Read through the content and then answer the question(s) at the end. When you have finished don't forget to save the document to your device or computer.

Renewable and Non-renewable Energy

JSH Learning's Presenting Physics

5-10 minutes

Renewable and Non-renewable Energy

Non-renewable energy is that from resources that **will eventually run out or cannot easily be replaced**.

Non-renewable energy resources include coal, crude oil, natural gas and nuclear fuels such as uranium and plutonium.

Renewable energy is that from resources/sources that **will not run-out or which is easily replaced**.

Renewable energy resources include biomass, solar, wind, tidal, geothermal, hydroelectric, wave, ground source heat pump and landfill methane.

Energy from the wind is a renewable resource.

Fossil Fuels

Coal, crude oil and natural gas are called **fossil fuels**. They are stores of **chemical potential energy**.

Fossil fuels provide **a more concentrated source of energy** compared to renewable energy.

Fossil fuels are **easily transported** to where they are needed e.g. by road, rail, ship or pipeline. Fossil fuels can be accessed through **drilling, mining and quarrying**.

There are peaks and troughs in demand for electricity during the day. With non-renewable schemes you can **burn more or less of the fuel as needed** to meet electricity demands.

Natural gas is a fossil fuel.

Fossil Fuels

Fossil fuels take **millions of years** to form from the **remains of once living organisms**.

The current use of fossil fuels is **unsustainable**. Eventually fossil fuels will **run out**.

Using (burning) fossil fuels causes **atmospheric pollution** such as **smog**, **acid rain** and the **greenhouse effect**.

As fossil fuels are so polluting and will eventually run out, **alternative energy resources have been sought**.

Fossil fuels are burned in power stations to generate electricity.

Nuclear Energy

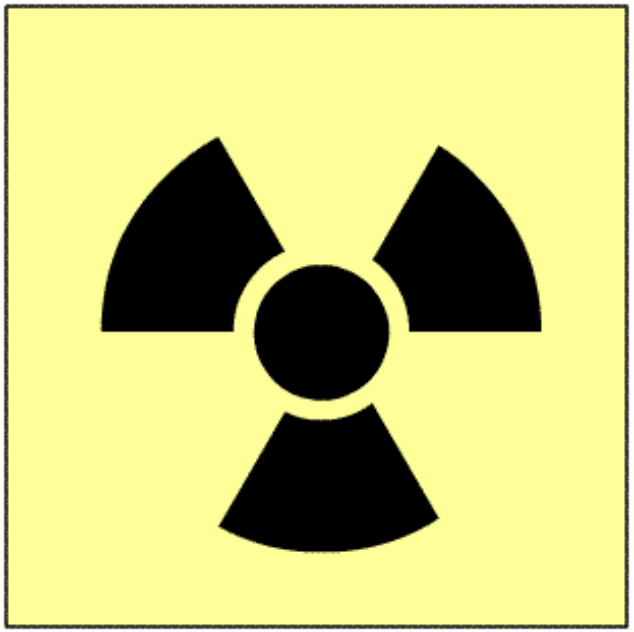
Nuclear energy is one alternative to fossil fuels. **Uranium** and **plutonium** are two nuclear fuels used in nuclear energy.

Currently (2017), nuclear energy relies on **nuclear fission** (splitting atoms), which has an **associated radioactive waste issue**.

Earth's total supply of nuclear fuels was deposited when the Earth first formed billions of years ago.

Once the Earth's nuclear fuels are exhausted, **they cannot be replaced**.

Nuclear energy though has its **critics** who think issues regarding radioactivity negate any possible advantages using nuclear energy brings.



Radioactive hazard warning symbol.

Renewable Energy

Renewable energy resources are another **alternative to fossil fuel use**.

Some people prefer using renewable energy as they consider it **cleaner and less polluting** than using fossil fuels or nuclear energy. Once set-up and running, **the operating costs** of renewable energy schemes can be **quite low**.

However, atmospheric pollutants can be released as renewable energy schemes are built. The energy from renewable energy schemes can also be **dilute** compared to more concentrated forms of energy such as coal. It can be **hard to store the energy** from renewable schemes for times when it is needed due to the current state of battery technology.

Most, but not all, renewable energy resources, such as wave energy (shown), have the Sun as the original source of their energy. Geothermal and tidal energy are two renewable energy types though, that do not have the Sun as the original source of their energy.

Summary

- ✓ Non-renewable energy is that from resources that will eventually run out or cannot easily be replaced
- ✓ Renewable energy is that from resources/sources that will not run out or which is easily replaced
- ✓ Coal, crude oil and natural gas are called fossil fuels
- ✓ Uranium and plutonium are two nuclear fuels
- ✓ Some people prefer using renewable energy as they consider it cleaner and less polluting than using fossil fuels or nuclear energy

End notes

See also:

JSH Learning's Presenting Physics (2017). Types of Energy.

Knowledge Check

Enter your opinions below.

KC1 Describe four reasons why we should continue to use fossil fuels:

Knowledge Check

Enter your opinions below.

KC2 Describe four reasons why we should only use renewable energy:

Feedback/Notes

Enter text below as needed.