

Lesson 1	Why Renewable Energy?	
Level	Key Stage 2	Time required 1 hour or two 1/2 hour sessions
National Curriculum Links		
Geography, Science, PSHE, ICT, D&T, Maths (view scheme of work for full details of links)		
Aims		
<ul style="list-style-type: none"> • The students will learn how electricity is generated and the potential problems this may cause • They will learn about two renewable sources of energy (wind and solar), and why this type of energy is important 		
Resources required		
Pen and paper, PC with internet access		
Web search keywords		
Renewable energy, sustainability, wind power, solar power, hydroelectricity, tidal power, wave power, ground source heat pump, geothermal, oil and gas supplies, North Sea gas, security of fuel supply, energy saving		

Introduction

Most of our energy comes from burning fossil fuels. The process of generating electricity in this way is damaging the environment and also these fuels will run out. We need an alternative source of energy.

What is Renewable Energy?

Ask the students to discuss renewable energy. What is renewable energy? What types of energy are considered 'renewable'?

(Renewable energy is energy that is generated from sustainable sources. Examples: wind, solar, hydroelectric, tidal, wave, ground source heat pump, geothermal)

Why is renewable energy important?

There are three main reasons why renewable energy will become increasingly important: economic, political, and environmental:

Economic

When our natural fossil fuel resources are gone we need to have an alternative already in place. The cost of a product is often dictated by its scarcity or availability. Energy would become very expensive as begins to run out.

The students can discuss the relevance of these using examples from their experience, e.g. cost of new Xbox or Harry Potter book when there are not many around.

Political

When one country runs out of fuel before another, it may become dependent on other countries. Political and economical differences may dictate the cost and availability of this energy.

Environmental

The burning of fossil fuels releases CO₂ and other gases that are believed to be a major contributor to climate change, which is already a noticeable feature of modern life.

Global warming will lead to unpredictable and potentially dangerous changes in the Earth's climate.

Scientists predict that even if we were to cease all CO₂ output today, global warming would continue beyond the year 2100.

Climate change will almost certainly have a severe impact on us and the world we live in.

The students can discuss the observations of seasonal changes their parents may have talked about (cherry blossom early, very few problems with snow)

We need to use less energy to make our remaining fossil fuel supplies last longer, since they are also essential for the manufacture of many plastics, chemicals and medicines.

We need to look at alternative ways of producing energy using renewable sources which do not produce CO₂.

We need to change our behaviour and attitudes towards our energy usage.

Renewable energy allows independent energy generation (discuss this with the students)

Task 1 – LogiCity Climate Change Game (Optional: depending on class ability)

Open the LogiCity game in Internet Explorer: <http://www.logicity.co.uk>

Registration is required. From the LogiCity web site:

'LogiCity is designed to be both fun and educational. Although it's aimed at older children (KS3+ and young adults), the gameplay and the concepts are suitable for most children from 10 or 11 years upwards. The game itself is split into 5 activities ranging from a family role-play about what forms of transport to use to a decision oriented game where players have to maximise carbon savings from a limited cash budget to a race against the clock round a fictitious office switching off electrical equipment.

Play the game. Discuss with the students what they have learnt.

Extension Activity 1 – Security of Supply

Ask the students to perform a web search of oil and gas pipelines throughout the world. Which countries produce the most oil and gas? What problems could there be with oil and gas pipelines crossing international borders?

Extension 2 – Climate Change

Ask the students to perform a web search to find images of the following types of renewable energy:

- Wind
- Solar
- Hydroelectric
- Tidal
- Wave
- Ground source heat pump
- Geothermal

Optional: print off, label and include in the students' portfolios.