



# EMPIRIBOX

## Primary School Science

Empiribox doesn't like to limit lessons to staying here on planet Earth; we want to launch up into space and see what science we can do up there! From the planets to stars, comets to rockets, we'll explore it all.

Climate Change is a huge focus for the space industry with many investing huge amounts of money on it. In this activity, your class will discuss what renewable energy sources there are and how their local areas could implement them to help prevent global warming.

Spectacular Science

Renewable Energy in  
Your Hometown

## Renewable Energy

Currently, we rely on fossil fuels to generate over 80% of the world's energy for things like heating our homes, generating electricity and driving our cars. Fossil fuels are things like **coal, oil, petroleum** and **natural gas** all of which are created naturally on Earth and found underground or under the sea.

Using fossil fuels is bad for 2 reasons;

- 1. We are using the world's resources and will eventually have none left also meaning that we have changed the makeup of the Earth**
- 2. Burning fossil fuels creates gases like methane, nitrous oxide and carbon dioxide known as greenhouse gases because of the way that they let radiation into the ozone layer (from the sun) but don't let it back out again resulting in the warming of the Earth. We call this Global Warming**

We don't have to use fossil fuels to generate our energy and scientist have found many new "clean" ways to generate energy, "clean" meaning that they do not emit greenhouse gases or aid in global warming.

We can use renewable energy sources like the ones below;

- 1. Solar**
  1. Energy from the sun that is captured using a solar panel
- 2. Wind**
  1. Energy is taken from wind power using wind-turbines
- 3. Hydroelectricity**
  1. Energy is taken from flowing water, such as a river, and captured in a dam or watermills
- 4. Geothermal**
  1. Using the Earth's own heat, energy is captured from the ground and used
- 5. Ocean**
  1. Motion energy can be gathered from the ocean waves that are caused by the moon cycles
- 6. Bioenergy**
  1. The energy created by the fermenting of plants or food waste
- 7. Hydrogen**
  1. Man-Made hydrogen can be used to fuel cars in the future as it emits little to no greenhouse gasses

Using these energy sources would be good because it would drastically reduce the amount of greenhouse gases being produced into the atmosphere, stop the infrastructure needed to obtain these gases, like fracking, and prevent physical damage to our planet that mining brings.

Power stations across the world need to be built to use these energy sources instead of using more fossil fuels. We could do everything from power and heat our homes and schools to run our cars without having a negative impact on the Earth.

While we may not have much control over the government and getting energy companies to transfer to a renewable source, we can install solar panels on our homes, make the jump to an electric car and buy products that either uses rechargeable batteries or can be generated by a renewable energy source, such as outside lights.

**Activity – can you think of ways your local area could use a renewable energy source?**

Using your knowledge of the local area, ask children to decide which renewable energy source would be best to install to generate energy to all the homes, schools and businesses nearby.

Working in pairs, pupils can put together a presentation for their chosen renewable energy source and present it to the rest of the class. Make sure they include why they have chosen this type of energy and where it would be installed and their reasoning for this. Example below.

**Town:** Tynemouth, Tyne & Wear

**Renewable Energy Source:** Wind Turbines

**Why:** Because this is a coastal town, there is a lot of wind that comes from the sea. This could be used to generate electricity

**Where:** 1 mile out to sea, so that it is not taking up land space and will get the full benefit of the sea winds

**Class Discussion**

As a class, can you discuss ways in which you can help save energy or use renewable energy in your own homes or school? Consider things like rechargeable batteries, solar powered lights, electric cars and solar panels on roofs.

**Upper KS2**

Can you think of reasons why local councils have not installed money saving, world saving energy sources? Consider cost, implementation and some people not believing they are good due to them being unsightly.