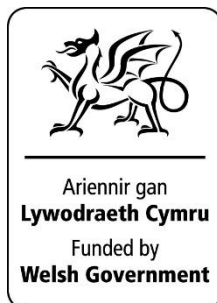


Topic based resource

Energy

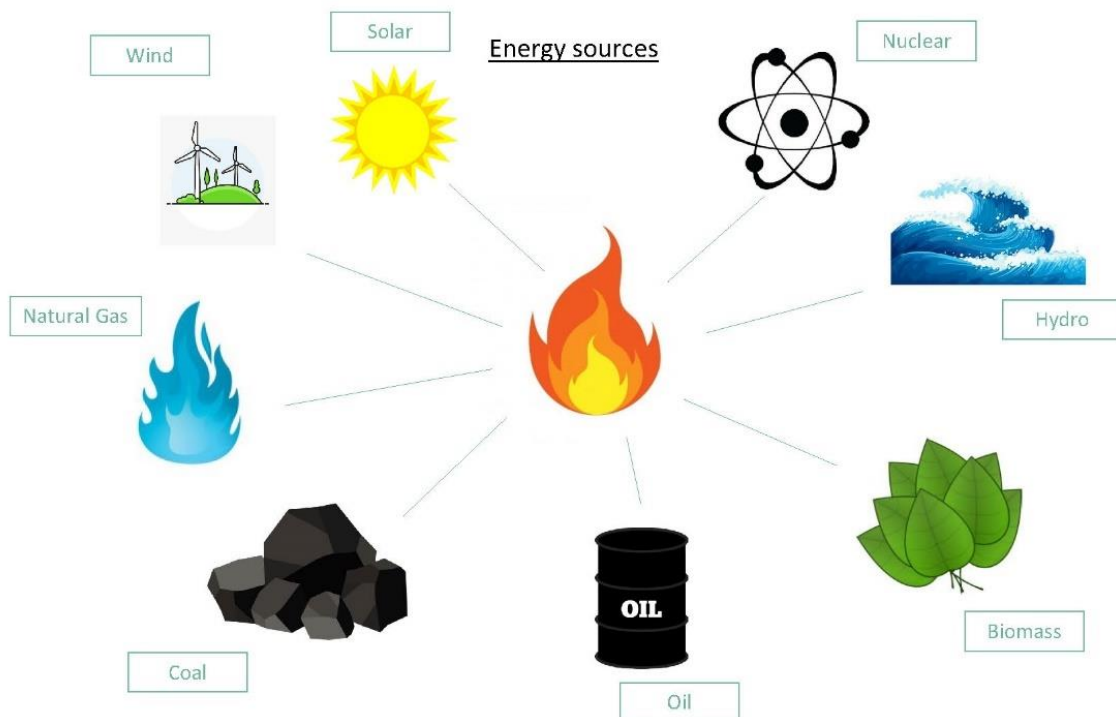
Foundation Phase



cadwch keep
gymru'n wales
daclus tidy

Background information

We need energy in all areas of modern life from watching television and cooking our food to powering our cars and manufacturing the goods that we use. Traditional sources of energy are coal, oil, and gas, but we now know that these fossil fuels are damaging the planet so we are looking to greener sustainable solutions to provide us with the energy we cannot manage without. These activities allow the children to explore a sustainable energy and understand how it works.



Climate perspective

The use of wind turbines is particularly important when it comes to climate change. The use of fossil fuels has long been known to be a huge contributor to climate change and the push is towards sustainable energy production. The UK is one of the windiest countries in Europe, so it makes sense to make the most of this. In 2017, 15% of the UK's entire electricity was generated from wind energy, enough to power 12.7 million

homes across the country and this figure is growing. We cannot rely on wind energy alone though as this is not a totally reliable source. Other forms of energy such as Biomass, Tidal power, Hydro, solar and Geothermal all have a part to play in the push towards green energy which will hopefully slow down climate change.

Wind Wands

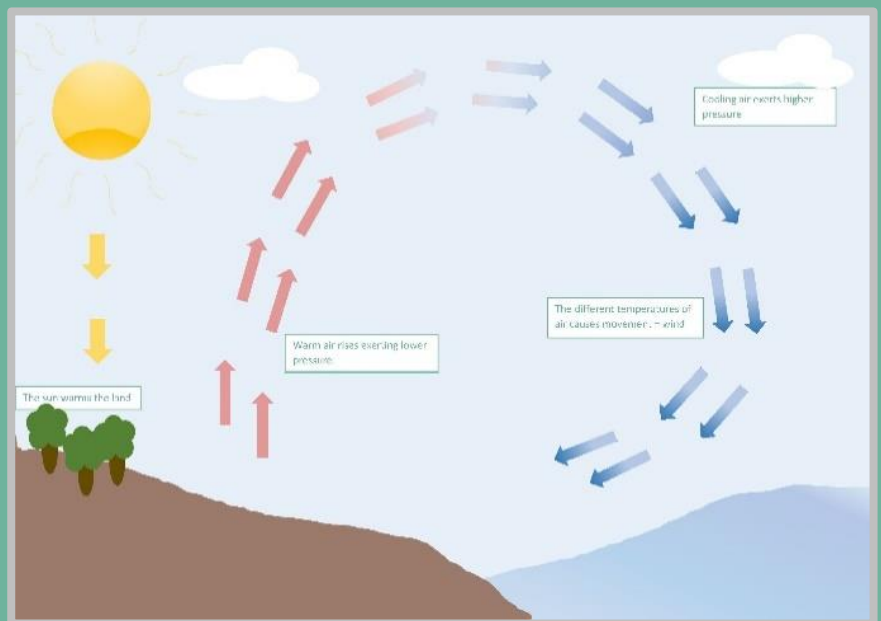
Foundation Phase

Investigating Wind Energy

What is Wind?

Before children can understand how wind turbines work and their importance when it comes to creating sustainable energy, they need to understand what wind actually is. Wind is something that is tricky to explain as we can't see it, but we can feel it on our skin, we can observe the effects of it – hearing the leaves rustling in the trees and we can see the leaves moving across the ground.

Wind is created by the uneven heating of the world's surface and differences in temperature cause the air to move. Warm air is less dense because the air molecules move apart and exert less pressure. Colder air exerts more pressure because the molecules are closer together making it denser. During the day, the land is warmed by the sun, so the lighter, less dense air above begins to rise. The cooler air over the seas exerts pressure and expands to fill the space. This movement of air of different temperatures causes wind. This process is exaggerated in areas where the contrast of temperature is more extreme.



To explain all this to children can be quite tricky so it is easiest to demonstrate using a wind wand or act it out and ask the children to behave like the wind or a wind turbine.

Materials needed:

- Sticks
- long thin strips of scrap fabric or ribbons
- scissors



Step 1

Find a stick about the same length as your forearm and cut long strips of ribbon or fabric.

Step 2

Tie the strips of fabric or ribbons firmly onto the stick a few centimetres from the top so that they are trailing down.



Step 3

Hold the wand up and observe the effect of the wind in different weather conditions or different areas of the school grounds on a windy day. Discuss how the force of the wind is moving the ribbon/fabric. What happens when the wind is stronger? Why does it change in different locations?



Step 4

Wind Turbine Game

Have the children seen wind turbines? Can they describe what they look like? Ask children where they have seen wind turbines e.g. on a hill, in a big open space, spread out. Explain how the wind is generated by the land



and air being different temperatures.

Step 5

Children stand in a space with their feet together and hold their arms out to look like a wind turbine. Choose some children to be the wind – when the wind blows gently (wind children walk around turbine children in space) the turbine rotor blades (arms) turn slowly, wind blows harder (children jog) and wind stops (everyone stops moving). Talk about why turbines do not move to avoid damage in high winds (no running or pushing!)

Where do children think would be the best place to put a wind turbine in the school grounds – discuss their ideas and use suggestions to decide where to test wind wands.

Follow up discussion!

Is Wind Energy the Answer?

- It is important that children form their own opinions as to what is best for the planet and people as individuals. The debate for and against wind farms has strong feeling on both sides and this can be introduced to children from a young age.
- Resources: picture books looking at wind energy e.g. Let the wind blow (Malgosia Bartosik, Philippa Nuttall Jones and Zam Zadeh)
- Read the book and discuss why we need wind energy e.g. climate change, pollution and why some people don't like wind turbines e.g. spoil the landscape, noisy, harm to birds.

Curriculum Links

Areas of Learning and Experience - Science and Technology

Statement of What Matters:

Forces and energy provide a foundation for understanding our universe.

Being curious and searching for answers is essential to understanding and predicting phenomena.

Areas of Learning and Experience - Humanities

Statement of what matters:

Our natural world is diverse and dynamic, influenced by processes and human actions.

Next steps and other ideas

Explore the power of the wind:

- Put up a washing line in a windy spot – children can wash the clothes and peg them out to dry
- Make a scarecrow or decorations for school garden using old CDs
- Make windchimes using repurposed kitchen utensils, keys, bottle tops or similar
- Use straws to blow cotton wool ball clouds across the table/sky
- Make Lego cars to power with balloon wind power
- Read – 'The Boy who Harnessed the Power of the Wind' by William Kamkwamba and Bryan Mealer

