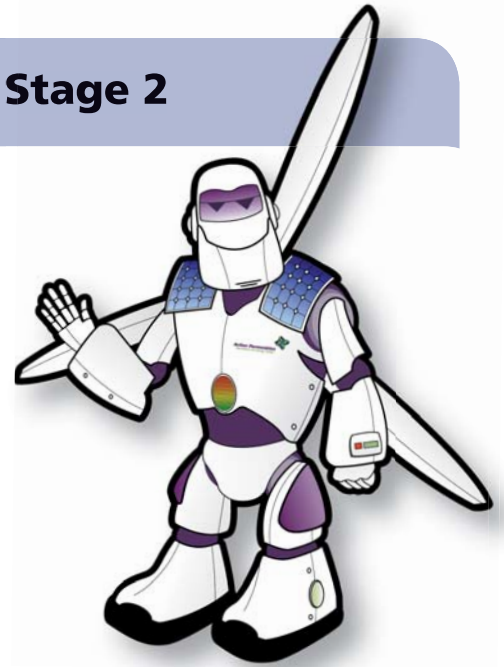


Wind Energy

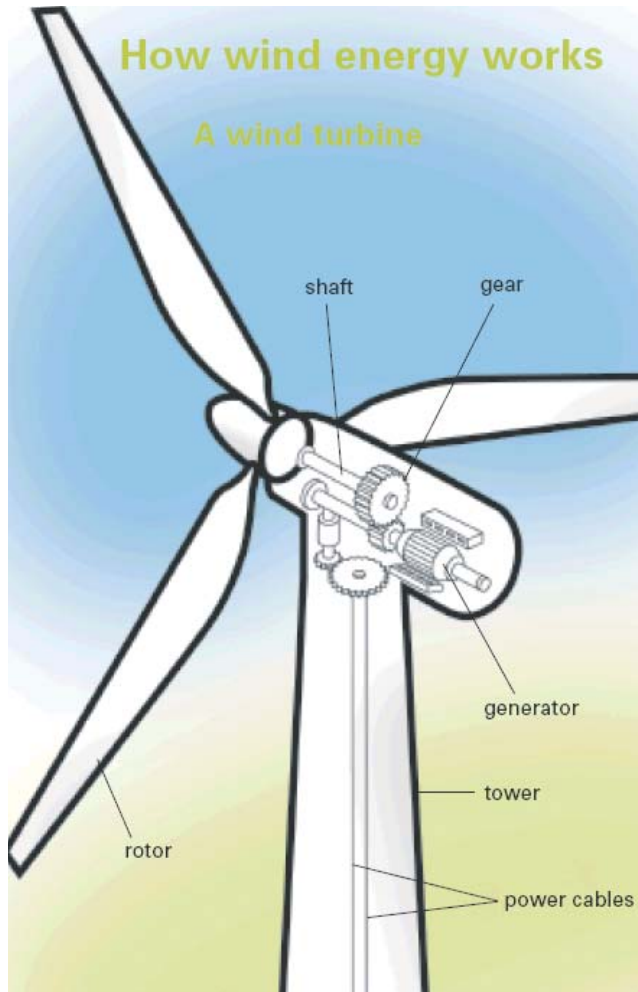
How can the wind be used as energy?

Renewable Robbie knows that years and years ago, people used windmills to run machinery. Windmills were used in Northern Ireland to grind corn and are still used in Holland to pump water.



Today, the wind can be used to produce electricity. A windmill that produces electricity is called a wind turbine. **Wind turbines** have blades instead of sails like older windmills had. The blades have a curved surface like the wings of an aircraft. The wind spins the blades round which makes electricity. The amount of electricity a wind turbine can produce depends on how strong the wind is and the size of the blades. If the wind is too strong, the turbine has to shut down.





Sourced DTI

Look at the picture of a wind turbine.

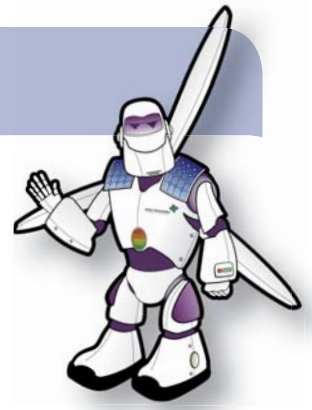
- The blades on the rotor turn round as the wind blows against them.
- The rotor spins a **shaft** inside the turbine and this is connected to the **gears**.
- The gears then turn a **generator**. A generator contains powerful magnets and coils of wire. The wire coils turn round quickly inside the magnets and produce electricity.
- The tower of the turbine is very tall so that the rotor faces the steadiest and strongest winds.

If you see a group of wind turbines together, it is called a **wind farm**! They are usually found on top of round hills, where the wind can blow freely and isn't blocked by trees or buildings. **Offshore** wind farms are found in the sea a few miles from the coast. The sea is flat so the wind is very strong here because there is nothing in the way of the wind blowing!



Sourced DTI





There are many **advantages** of using wind power.

- Wind is a renewable form of energy; it will never run out
- Wind is free and no fossil fuels are used, which means it does not cause pollution.
- The land beneath wind turbines can still be used and they often attract visitors to come and see them.
- Wind energy costs no more than coal energy.

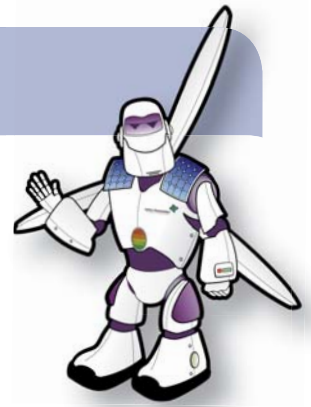
There are some possible **disadvantages**:

- The turbines do not work in very weak or very strong winds.
- Some people think wind farms spoil the look of the environment while others disagree.
- Some people worry about the noise of wind farms although they are quieter than many people think.

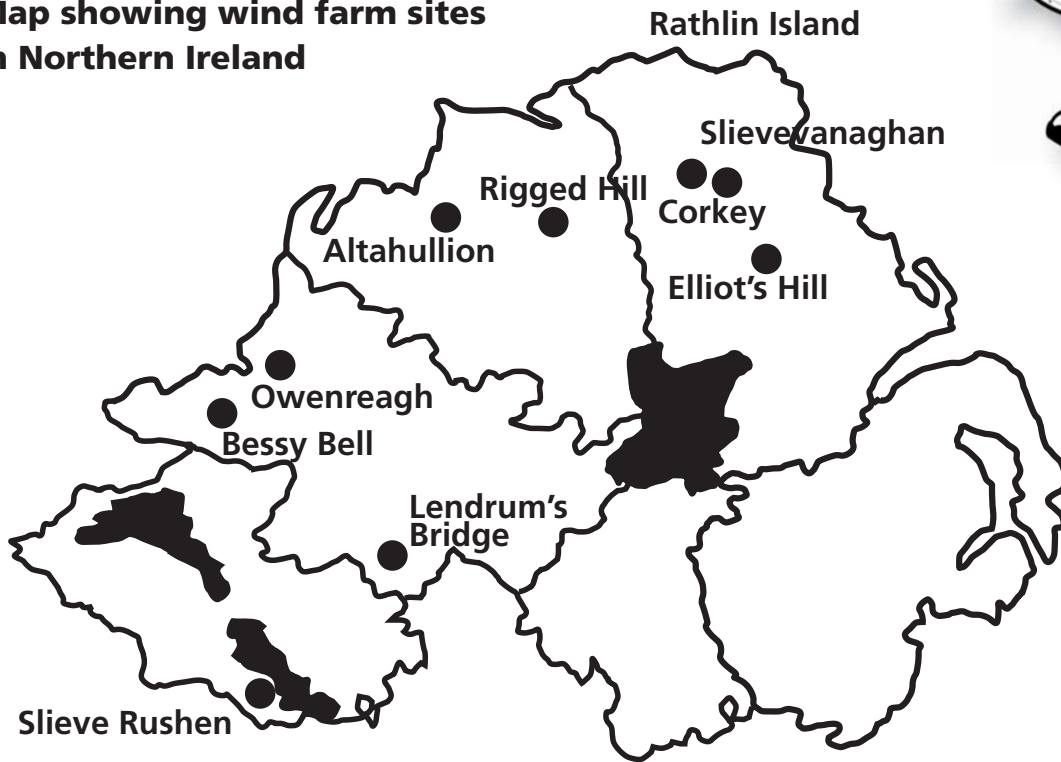
Examples of Wind Energy

In Northern Ireland, our wind farms are quite small; there are usually about 10 turbines at each wind farm. Here is a map to show the location of wind farms in Northern Ireland:





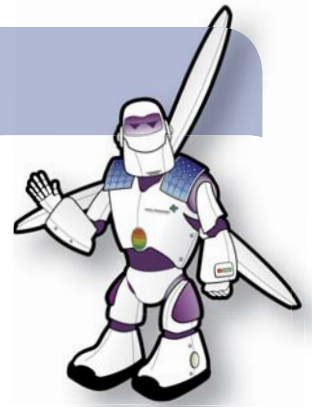
Map showing wind farm sites in Northern Ireland



Renewable Robbie went to see some wind turbines in Northern Ireland.

This picture is taken at a Primary School called Holy Trinity in Enniskillen, County Fermanagh. It provides energy to power storage heaters.





This next picture is from a Church, the Church of the Nativity in West Belfast.



This is the first Church in Ireland to install a wind turbine. It is committed to the environment and it used by about 700 people a week. The wind turbine provides electricity in the Church and a community centre beside it!

Renewable Robbie really loved learning about wind energy and hopes you will join him to complete the Activity Sheet.

