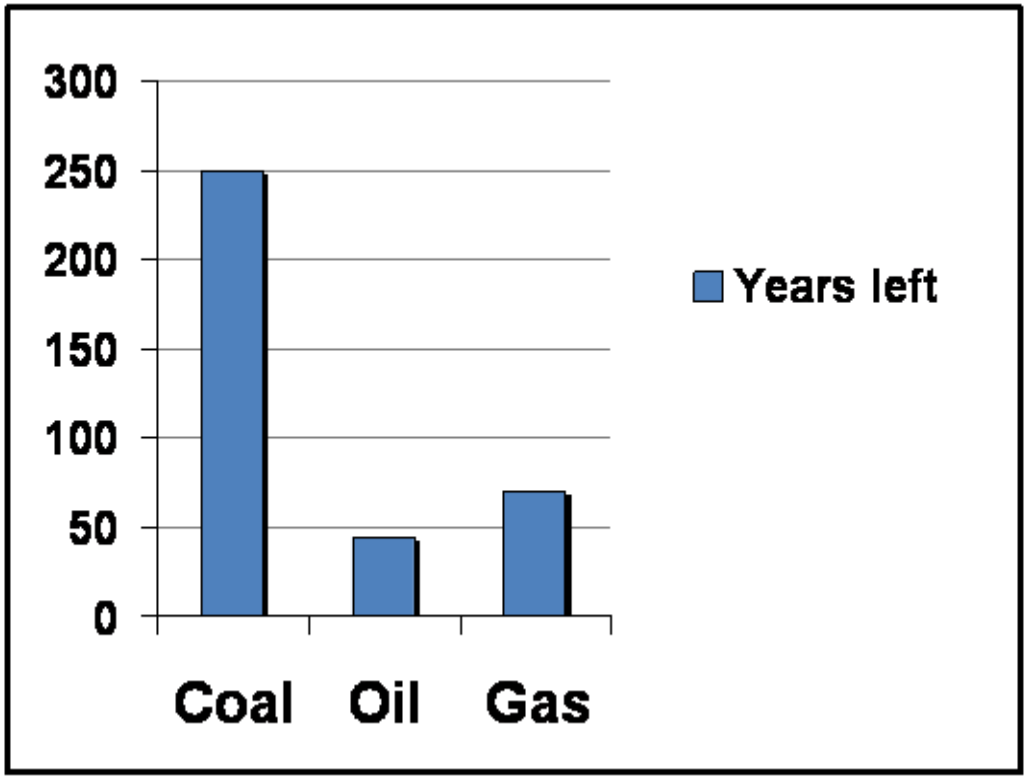
Renewable Energy

Why are alternatives to fossil fuels needed?

Burning fossil fuels has many bad effects on the environment.

However, environmental damage is not the only problem with continuing to rely on fossil fuels to supply our energy needs.

What does this chart show?



Governments and scientists are trying to develop alternative sources of energy to replace fossil fuel power stations.

What are renewable energy sources?

Renewable energy resources will not run out because they can easily be generated anew. The photograph shows a dam built for the generation of hydroelectric power.

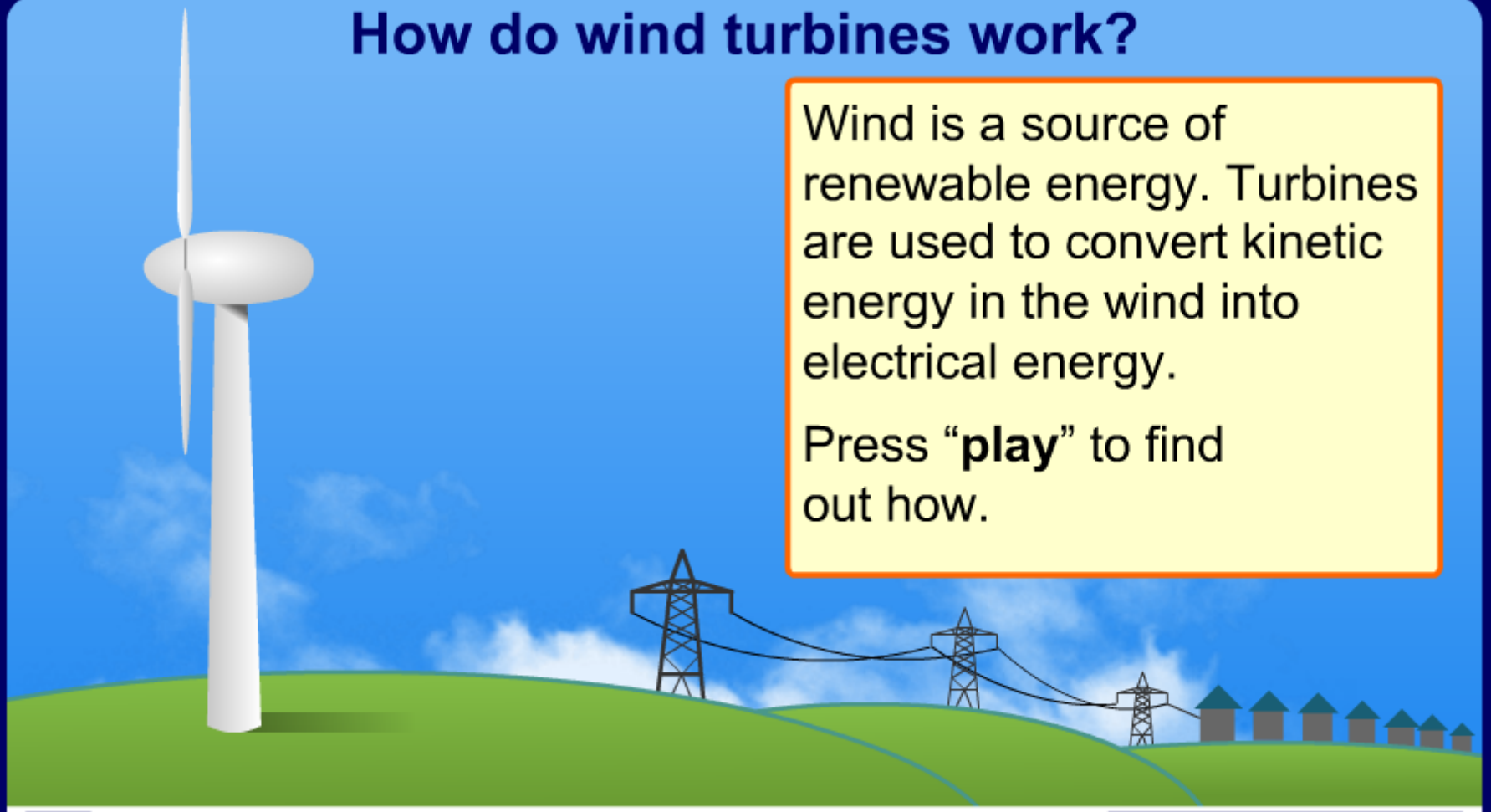
Other examples of renewable energy resources are:

- wind power
- solar power
- tidal power
- biomass

Only 7% of the U.S.'s energy comes from renewable sources. Why do you think this is?

How can the wind generate electricity?

How do wind turbines work?



Wind is a source of renewable energy. Turbines are used to convert kinetic energy in the wind into electrical energy.

Press "**play**" to find out how.

How is solar energy used?

There are a number of methods of generating electricity from the Sun's energy.

Passive solar heaters heat water directly using sunlight. Why are they black?

Solar panels convert sunlight into electricity directly. They are used on some new houses and also on calculators.

Mirrors can be used to focus sunlight onto pipes containing water. The hot water drives a generator.

Other renewable energy sources

What other forms of renewable energy are there?

Geothermal energy uses heat stored beneath the Earth's surface to create steam. This is then used to power turbines.

Biomass fuels are made of processed plant remains and are used in the same way as fossil fuels. More crops are grown to replace those used.

Tidal currents can be used to generate electricity. The moving water is forced through turbines, which generate electricity.

Waves can generate electricity by causing buoys to rise and fall. This kinetic energy is converted to electrical energy.

Other renewable energy sources

Which form of renewable energy is each statement about?

Producing energy using renewable resources has many advantages. Unfortunately, there are also drawbacks to most forms of renewable energy. Can you match these pairs of advantages and disadvantages to the correct source of renewable energy?

Click **"start"** to begin.

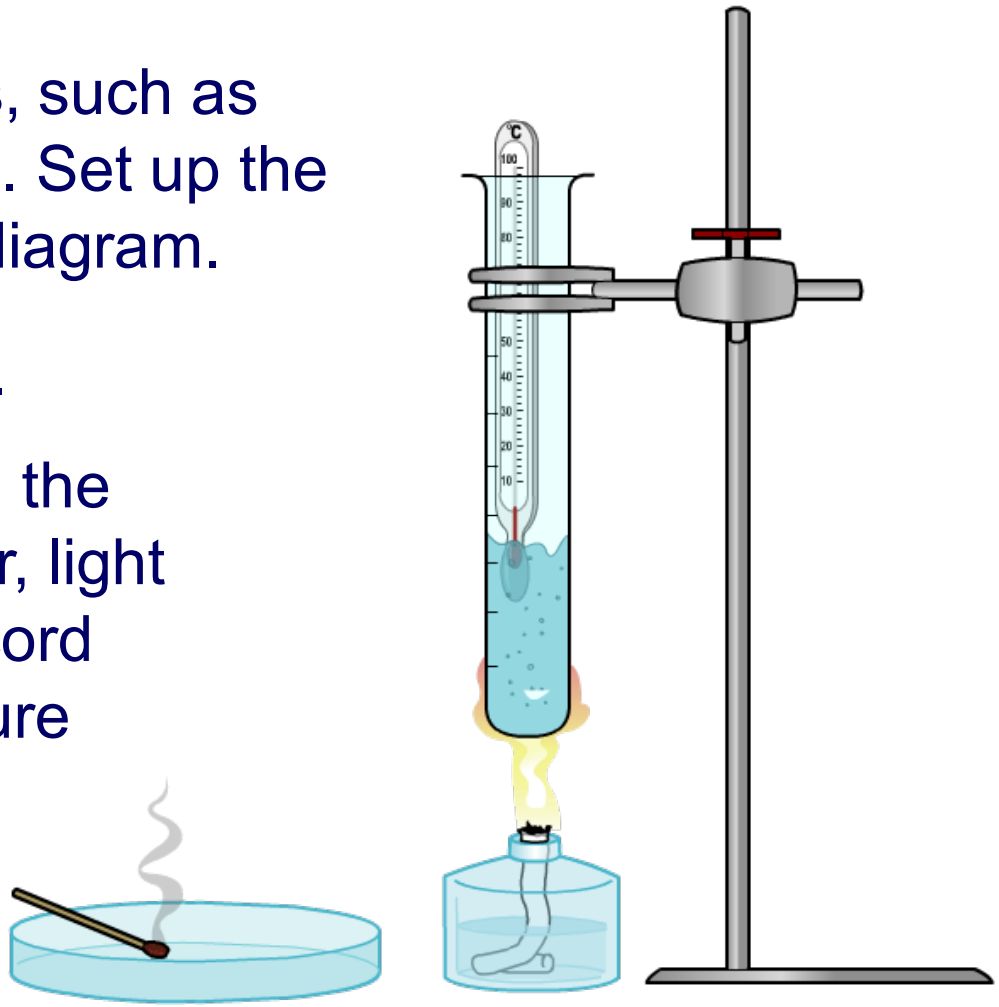
start

Renewable energy: summary

Comparing fuels

How can we compare the energy content of renewable and nonrenewable fuels?

Choose some different fuels, such as wood and methylated spirits. Set up the apparatus as shown in the diagram.



1. Weigh each of the fuels.
2. Place one of the fuels in the container or spirit burner, light with the match, then record the maximum temperature reached by the water.
3. Repeat for each of the types of fuel.