

## Investigation 11 Solar energy

Solar power has been used to heat water in some parts of the world for hundreds of years. There are photographs showing farmsteads in Arizona, USA, with solar powered water heaters on their roofs during the mid-19th century. These devices usually consisted of blackened copper pipes running close to each other and laid flat on roofs. Cold water was intermittently pumped through the pipes allowing it to warm in the heat of the sun.

In developing countries, where cooking fuel is in short supply, solar powered cookers are used by communities to cook their food.

Here's how you can make your own solar powered water heater.

**YOU WILL NEED** A dish washing basin • Water • A thermometer • Tin foil • Black paint • Cling film • Two bowls •

- 1 Paint one bowl with black paint.
- 2 Cover the inside of the washing basin with tin foil.
- 3 Place some water in both bowls and leave them outside on the windowsill for ten minutes.
- 4 Take a note of the temperatures of the water in both containers.
- 5 Place the black painted bowl in the washing basin.
- 6 Place the other bowl in the open air beside it.
- 7 Using cling film, tightly cover the top of the washing basin containing the black painted bowl so that no air can get in.
- 8 Leave the basin in direct sunlight.
- 9 Record the temperature in both bowls at 15 minute periods for a double class or during a day.
- 10 Graph the temperature changes on a chart.

### Consider this

Does the temperature of the water in both bowls change?

Which bowl records the highest water temperature?

How is the solar powered water heater helping to increase the temperature?



### Tell Me More!

In Ireland we mostly use fossil fuels such as oil, coal and gas for heating our homes and water. Our sun is the primary source of energy and as technology develops more solar power is used in our daily lives. You can now find a number of homes in Ireland that use solar panels to heat water and some Irish city centre parking meters are powered by solar panels.

