

ECO

**World
Savers**

REDUCING YOUR CARBON FOOTPRINT

G4004

Activities To Build Awareness & Understanding



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Acknowledgements

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REDUCING YOUR CARBON FOOTPRINT

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REDUCING YOUR CARBON FOOTPRINT

A Lot Of Hot Air

Teacher's Guide & Planning

The Key Issues

- Carbon dioxide is one of the 'greenhouse gasses' that make up about 1% of the Earth's atmosphere.
- These gasses play an important part in keeping the Earth warm.
- If the proportion of greenhouse gasses in the atmosphere increases it will become warmer. It could become too warm to support life as we know it.

Additional Activities

Language

- Explore the connotations of words connected with heat and build up a word-bank for descriptive poems: for example, baking, blistering, boiling, fiery, roasting, red-hot, scalding, scorching, searing, sizzling, steaming, stifling, sultry, sweltering, torrid.

Science

- Explain that 'greenhouse gasses' in the air act like a greenhouse (as modelled in the investigation on keeping the atmosphere warm). Point out that without these gasses the average temperature of the Earth's surface would be much colder.

Maths

- Introduce or consolidate the use of line graphs for continuous data, such as temperature. Demonstrate how to record temperatures of two or more places on the same graph.

Art

- Paint pictures of a scene using colour to show it as hot or cold.

Geography

- Compare the average noon and midnight temperatures of contrasting locations, decide whether an increase in temperature might be beneficial, and explain why.

Research

- Find out about surface temperatures of other planets and the Moon at the hottest and coldest times of the day. Note whether they have an atmosphere and what gasses are present.
- Look at diagrams of the 'greenhouse effect' and explain it in relation to the investigation on the activity page. (http://en.wikipedia.org/wiki/Greenhouse_gas)

More Information

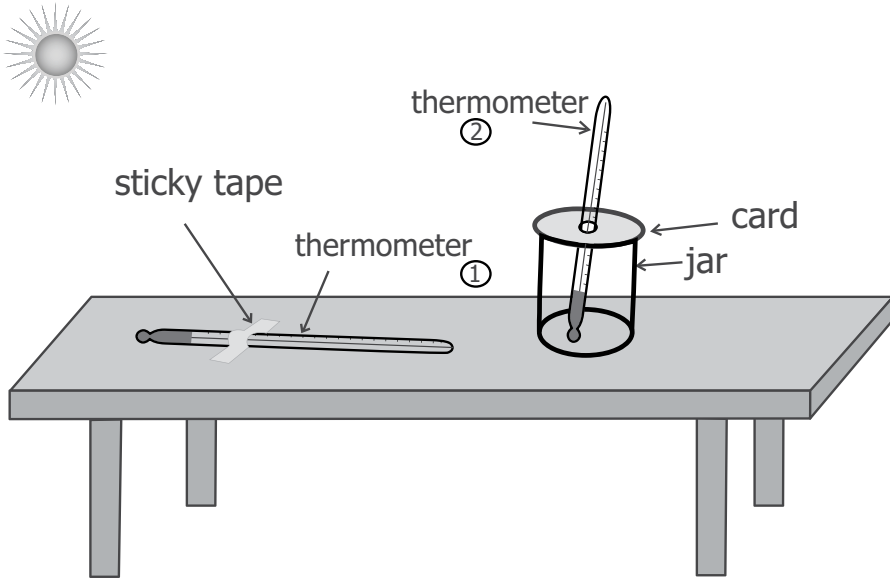
The Earth's atmosphere is made up almost entirely of nitrogen (about 78%) and oxygen (about 21%). These gasses are important in supporting plant and animal life but have very little effect on the climate. This is regulated by trace gasses in the remaining 1% of the atmosphere: carbon dioxide, methane, nitrous oxide, ozone, water vapour, halocarbons.

REDUCING YOUR CARBON FOOTPRINT

A Lot Of Hot Air

Investigate what happens in a 'greenhouse'.
Do this on a sunny day.

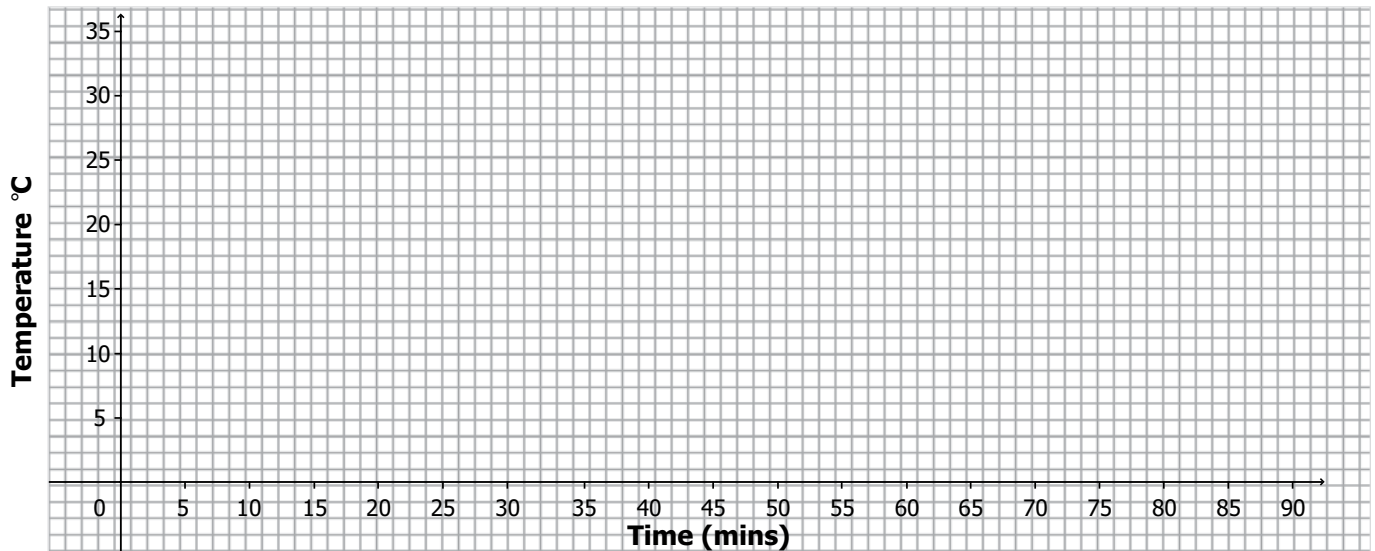
- Set up the two thermometers and the jar like this:



You need:

- a glass jar.
- 2 thermometers.
- sticky tape.
- a piece of stiff card with a hole just big enough to push a thermometer through.

- Record the temperature readings from each thermometer.
- Use a different colour for each thermometer.



- What difference do you notice? _____
- Explain this _____

REDUCING YOUR CARBON FOOTPRINT

Footprint On The Planet

Teacher's Guide & Planning

The Key Issues

- Carbon dioxide is the main greenhouse gas.
- A carbon footprint is calculated to include all the greenhouse gasses released into the atmosphere.

Additional Activities

Language

- Write non-chronological reports, with introductions and conclusions, about a survey of the carbon labels of different brands and models of home appliances such as cookers, refrigerators, washing machines. Different groups could report on different products.

Science

- Find out how plants produce their food through photosynthesis and use internet sources to calculate how much carbon dioxide is converted to oxygen during this process by plants (including trees) of different sizes.
- Compare plant and animal nutrition and respiration, and their by-products, and discuss the implications for a carbon footprint: for example, farming animals for meat creates a greater carbon footprint than growing food crops.

Citizenship

- Discuss each item that contributes to an average person's carbon footprint and decide whether this is fair to everyone: rich, poor, old, young.
- Find out about the carbon footprints of different countries and discuss fairness.

Research

- Visit the Carbon Trust website (www.carbontrust.co.uk) to find out how products can be given a carbon label. Everything we buy, produce or use has a carbon footprint: the total carbon dioxide and other greenhouse gasses it creates during its life, from production to final disposal. One of the first products labelled was a packet of crisps (carbon footprint 75–80g).
- Look at product labels to find their carbon footprints. Record the results in graphs or charts.

More Information

Measuring the carbon footprint to produce a 'carbon label' is a detailed process that includes collecting primary data from all members of the supply chain. The product's carbon footprint model has to be certified by an approved agent of the Carbon Trust. The process must include a detailed list of the materials used, where they came from, where they are going, the processes that use energy (fuel, such as electricity) and anything that could cause direct emissions.

REDUCING YOUR CARBON FOOTPRINT

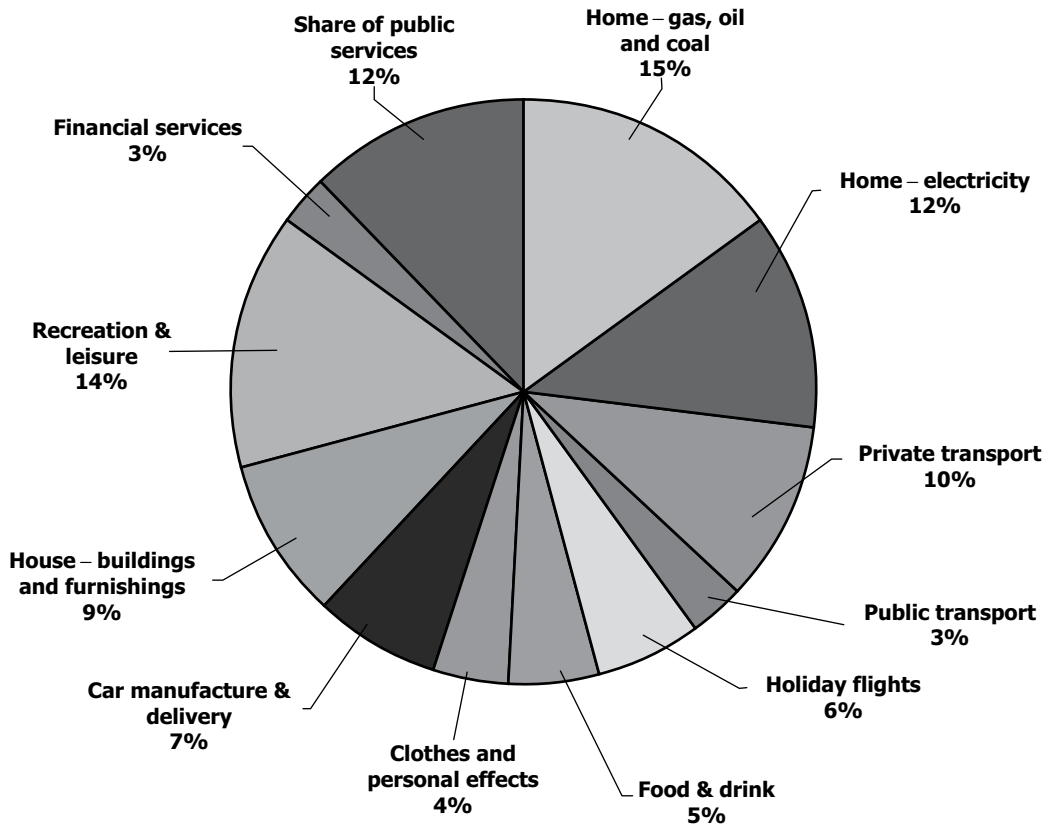
Footprint On The Planet

- Use the pie chart to help you to decide whether the statements below are true or false.
- Write **true** or **false**.

Discuss these with your group.



These make up an average person's carbon footprint



The biggest carbon output of all comes from cars.

For an average person, eating and drinking creates a greater carbon footprint than taking part in leisure activities.

Energy for our homes creates a bigger carbon footprint than transport.

Most people can control less than half of their carbon footprint because most of it is their share of the public services.

Most people create more carbon by going on holiday than by owning a car.

REDUCING YOUR CARBON FOOTPRINT

Big Foot

Teacher's Guide & Planning

The Key Issues

- The carbon footprint of an individual, household or organisation can be calculated.
- This enables carbon saving to be measured.

Additional Activities

Vocabulary and spelling

- Compile a glossary of terms that have evolved in connection with climate change: for example, global warming, carbon footprint, carbon neutral, greenhouse gas, virtual water, water footprints.

Writing

- Write information panels and blurbs for packaging made in art and design lessons. Choose words with connotations of wholesomeness, freshness, health and vigour. Use devices such as alliteration and rhyme for effect.

Speaking and listening

- Invite a representative of a local company to come in and give a talk about how they are measuring and reducing their carbon footprint.

Maths

- Exchange information with other schools about their carbon footprint. Record their performances on a chart or bar graph. Also use line graphs to record half-yearly changes at each school.

Art

- Design packaging for an environmentally-friendly product, using colour, shape and space to create a fresh or wholesome effect.

History

- Find out about the effects of burning fossil fuels in the past in cities: for example, 'smog' in London and other cities, soot particles that landed on buildings, artefacts, people, washing, plants and so on. Read about any legislation that led to change, such as the 'Clean Air Act' in the UK.

Research

- Compare the carbon footprints of different companies that produce or sell similar products. Find the reasons for any significant differences.
- Research different types of transport or fuel and use the internet to calculate their carbon footprints for similar usage.

More Information

Several websites provide carbon footprint calculators using slightly different data. Some include diet (vegan, vegetarian, mixed and whether any fruit or vegetables are home-grown). For a child-friendly version, see www.kidsfootprint.org. In the UK, Directgov has its own calculator: www.direct.gov.uk/actonco2. In the USA, the US Environmental Protection Agency site (www.epa.gov) has a calculator. The Global Footprint Network (www.footprintnetwork.org) also has useful resources.

REDUCING YOUR CARBON FOOTPRINT

Big Foot

- Work out your school's carbon footprint.
- First you need to collect information.

Share the task with your group or class.



Number of days in school year		Number of staff		Number of pupils	
Transport to and from school (per year)					
Pupils			Staff		
Number who come by car		Number who come by car			
Number of car trips per year		Number of car trips per year			
Average distance of each car trip		Average distance of each car trip			
Number who come by bus		Number who come by bus			
Number of bus trips per year		Number of bus trips per year			
Average distance of each bus trip		Average distance of each bus trip			
Energy used at school (per year)					With help, look at bills.
Electricity		Mains or bottled gas			
Number of kilowatt hours		Therms or kilograms			
Oil		Other fuel			
Litres		Kilograms			
Waste					
Kg of waste sent to landfill		Kg sent to incinerator			

- Use a carbon footprint website to calculate your school's carbon footprint.

- Write it here