



# Teacher Guide

Inspector Green ... follow those footprints!



Centre for Global and  
Development Education  
[www.glade.org](http://www.glade.org)  
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leading the British Government's fight against world poverty



# Inspector Green ... follow those footprints!

## The project aims to

- Raise awareness of climate change and its impact on people, the environment and the world
- Involve students in assessing their families' carbon footprints
- Provide stimuli for curriculum-related activities
- Collect baseline data on family energy consumption

## Introduction

'Follow those footprints' is just one of many possible starting points for introducing global warming issues to children and it is hoped that you will see it as a stimulus for more detailed learning activities. Of necessity, the 'Clue Finder' has to be relatively simple and fairly quick to complete. We have tried, though, to make it interactive by providing a storyline. Because it is important to make connections between social and economic dilemmas and the environment, enquiry exercises about global issues are included. To help you fit this project into your busy teaching schedule, we have identified links with other curriculum areas including some lesson ideas and a comprehensive list of useful and reliable websites. If you wish, you could use the complimentary PowerPoint in your lessons. This can be downloaded from the GLADE website - [www.glade.org](http://www.glade.org).

### What is a carbon footprint and why should we care?

Carbon is part of carbon dioxide (CO<sub>2</sub>), the gas produced when we burn fossil fuels such as oil and coal to heat homes, to travel or to generate electricity. CO<sub>2</sub> forms a layer around the Earth and traps the heat from the sun, causing global warming. This has dangerous consequences for our climate, sea levels, food production and health. Calculating our *Carbon Footprint* can help to change behaviour and therefore cut emissions.

#### TIP

Download the complimentary PowerPoint from [www.glade.org](http://www.glade.org).

## Six easy steps to use 'Follow those footprints':

**1** Spend a little time looking at the fold-out pupil 'Clue Finder' document. Each step and activity is numbered. The reverse side provides further information.

**2** Decide how you will introduce your class to the subject. It could be an action packed detective investigation. What will your approach be?

**3** Give out the 'Clue Finder' to each pupil and give them time to explore it. Explain that their tasks are to:

- Follow the footprints and fill in the clues on their Clue Finder
- Colour in the Eco-stars, they achieve as they go
- Use the Code Breaker to calculate their family's carbon footprint
- Enter their results on the GLADE website

**4** Let the children collect their data. Some of this will have to be collected at home with the help of an adult. There is some additional detective work to be done on the internet, concerning global issues. You could do this as a group activity.

**5** Spend time as a whole class discussing results. Get pupils to make a 'pledge' and enter their results on the GLADE website.

**6** Integrate the project into your existing teaching and learning. Use the class findings, the activities and the information to spark off related curriculum work.

- ★ Citizenship
- ★ Food
- ★ ITC
- ★ History
- ★ Geography
- ★ Numeracy
- ★ English
- ★ Art & Design
- ★ Science

## How to use the Clue Finder

*You will probably want to introduce the children to what the 'Clue Finder' questions are getting at and explain that their role is to act as detectives in search of clues. You may need to explain the notion of 'carbon footprint' and why it is important. For this purpose, you could use the downloadable PowerPoint presentation ([www.glade.org](http://www.glade.org)). This 'Carbon Footprint Calculator' is quite rudimentary, it is not exact science. The aim is to raise awareness about personal carbon outputs and where carbon savings could be made.*

*You may feel it necessary to provide a brief note for parents explaining what the project is about and alerting them to the fact that all data will be treated in strictest confidence and no names will be used in any reporting. This exercise could be used to inform parents about global warming and your school's actions to reduce their impact on the environment.*

## Unique Collective Footprint Assessment

The data collected by the children should be entered on the GLADE website, so that we can analyse the baseline data collected to form a picture of the collective carbon footprint in the region. This, of course, is fully confidential and children and families remain anonymous. The intention is to carry out a further survey in one or two years time to see what changes, if any, have taken place. However, before your pupils enter this data on the GLADE website, you may like to spend time comparing results. This could be done in small groups or as a class.

You might like to ask your pupils:

- What they thought of the questions?
- What the questionnaire was getting at?
- Why the scoring was as it was for different questions? (see *Code Breaker*)
- How far they agreed with the results?
- What they think they could do about global warming? (see *Eco-stars*)
- About averaging, using statistics and preparing charts

### Curriculum Links

- ★ Numeracy
- ★ ITC
- ★ Citizenship

## Starting points for further classroom activities and links with other curriculum subjects

*The following suggestions are designed to accompany each group of questions and are purely optional.*

### The home (Q 1&2)

The drawings of the home could be done to scale (on a sheet of paper) so that children could work out area (and possibly volume) of their homes. Doing scale drawings is useful for working with ratios and using scales. This could lead to work with maps.

- Average home sizes could be established for groups of children or the whole class.
- Comparisons could be made between the areas (or possibly volumes) of the children's homes with those of people in other parts of the world. This activity could help to question stereotypes (such as 'Eskimos live in igloos').
- The ratio of people per household to the size of the home could be explored and a discussion about the number of people per household and the impact on carbon emissions could follow.
- What would an energy efficient house look like? Design your own eco-home!

Heating is the biggest user of energy in domestic households.

- To calculate household emissions more precisely, you could use the 'Know Your Carbon Footprint' calculator which is downloadable from [www.glade.org](http://www.glade.org). This will help students to differentiate between gas, oil, coal, electricity and wood.
- The investigation required in Q2 is very elementary. It would be more interesting (and better science) if children measured the amounts of insulation in their homes e.g. thickness of roof insulation.
- Similar investigations could be carried out with regard to double-glazing and secondary glazing.

#### Curriculum Links

- ★ Numeracy
- ★ Citizenship
- ★ Art & Design
- ★ Geography
- ★ Science

## Use of electrical appliances, heating and lighting (Q 3,5,6)

Between 1972 and 2002, electricity use in households in the UK doubled and it is expected to increase by a further 12% by 2010.

- Children might like to discuss new gadgets and appliances their family has purchased recently and explore how much energy they use.
- Children could investigate energy requirements of a range of household equipment and produce comparison charts to illustrate this.
- The question on lighting could be developed in a number of ways:

*1 By investigating the differences in energy use of lights*

*2 By comparing power output of the different forms of lighting*

- The use of standby could provide a stimulus for a debate of ways in which the children might set about ‘persuading’ their family to turn off appliances after use.

### Curriculum Links

★ Numeracy

★ Science

## Washing clothes and dishes (Q 4a&4b)

- Provide children with marketing brochures for several makes of washing machines and dishwashers. Investigate energy and water requirements and compare models (eco-friendly with others, for example). Children could
  - 1 Discuss labelling on appliances*
  - 2 Discuss advantages and disadvantages of the use of washing machines and dishwashers, as well as considering the production and discarding of the appliances*
  - 3 Compare kitchens today with those in Victorian times or in a village or town in a poor country*
  - 4 Children could interview an elderly relative or neighbour to find out about washing clothes and dishes in the past*
- How much water do we use? Make a link between water usage that we can see (bath, laundry) and ‘invisible’ water usage such as used in the cotton industry (which has led to the drying up of the Aral Sea).

### Curriculum Links

★ History

★ English

★ Geography

## Refuse and recycling (Q 7a&b)

The calculations are based on a weekly bin collection. Please amend the outcomes accordingly if you have a two-weekly collection.

This is a good opportunity to discuss:

- 1 The 3 Rs: reduce, reuse, recycle*
- 2 Packaging (design environment-friendly packaging)*
- 3 What is 'rubbish' (re-use 'rubbish' in an art project, what else could you use it for?)*
- 4 The amounts of rubbish produced by the class – find out the volume of a wheelie bin and the total amount of waste for the class and work out the average per year*
- 5 Re-cycling and ways of persuading others to recycle*
- 6 The advantages of composting and what it does for the soil. You could start a wormery at school and study worms as well as the life cycle of plants*

### Curriculum Links

- ★ Numeracy
- ★ Art & Design
- ★ Biology

## Food and consumption (Q 8)

This could be extended to include not just food but also clothing. Every item we buy, from apples to CDs, has an energy penalty associated with it: the energy in gathering the raw materials, processing/manufacturing, transporting and then selling. There are further consequences for water supplies and biodiversity. The class could explore these processes for a range of products and produce a display.

• They could find out:

- 1 What raw materials are used (e.g. tin can, label, ink)*
- 2 Foodmiles: distances travelled to manufacturer, where the product originated, distances travelled to the shops*
- 3 What is the impact of fairtrade? How does this improve the lives of the producers and protect the environment? (Here you could compare historic slavery with modern slavery such as sweat shop practices and child labour)*
- 4 The advantages of organic food (impact of fertilisers and pesticides on the health of the planet as well as producers and consumers)*
- 5 Facts about the impact of farming on rainforests*

### Curriculum Links

- ★ Numeracy
- ★ Biology
- ★ Health
- ★ Citizenship
- ★ History

## Transport (Q 9&10)

These questions are quite rudimentary and would benefit from further exploration. The average shopping trip in the UK is 6.9 kilometres. Road transport accounts for a fifth of the UK's carbon emissions (33 million tonnes in 2004). Road traffic has increased by 10% since 1997 and the UK government spends £1bn per year expanding the road network.

- Children could do more detailed calculations of the impact of their family car(s) by:

- 1 *Establishing their car's emissions in grams CO<sub>2</sub>/kilometre* ([www.vcacarfueldata.org.uk](http://www.vcacarfueldata.org.uk))

- 2 *Multiply the total emissions by kilometres/year (to convert miles to kilometres multiply by 1.609) and divide by 1000 to get total in kilograms. Divide by number of people sharing the car*

If you would like your students to do more calculations, you could download the 'Know Your Carbon Footprint' calculator from [www.glade.org](http://www.glade.org).

- Examine how children and families travelled in the Middle Ages and Victorian times. How has travel changed?
- Carbon emissions from flying doubled between 1990 and 2000. Air travel has a major impact on global warming because planes fly high in the atmosphere where they inflict most damage. It is estimated that a single long-haul flight from London to Sydney doubles a person's carbon footprint for the year. Although emissions from planes are relatively low per mile (comparable to a car), the impact is huge because they travel thousands of miles in a few hours.

- The best way to calculate carbon emissions from flying is to:

- 1 *Work out the length of the journey*

- 2 *Use [www.carboncalculator.org](http://www.carboncalculator.org) to find the carbon cost*

The site also suggests the 'offsetting' cost of your emissions. Some environmentalists claim that offsetting might be counter-productive, because we have to reduce CO<sub>2</sub> outputs now, not later. Others say it is an effective way of reducing CO<sub>2</sub> in developing countries. The government has now endorsed good standard offsetting schemes. Carbon offsetting might prove an interesting issue to discuss with older, more able pupils.

(<http://campaigns.direct.gov.uk/actonco2>)

### Curriculum Links

★ Numeracy

★ Health

★ History



## Websites

### Climate change

[www.wrap.org.uk](http://www.wrap.org.uk) (*recycling, packaging*)  
[www.newscientist.com](http://www.newscientist.com) (*debunking climate change myths*)  
[www.metoffice.gov.uk/climatechange/](http://www.metoffice.gov.uk/climatechange/)  
[www.thecarbontrust.co.uk](http://www.thecarbontrust.co.uk)  
[www.ipcc.ch](http://www.ipcc.ch) (*International Panel on Climate Change*)  
[www.bbc.co.uk/climate](http://www.bbc.co.uk/climate)  
[www.foe.co.uk](http://www.foe.co.uk) (*Friends of the Earth*)  
[www.create.org.uk](http://www.create.org.uk) (*teaching resources*)

### Global Learning

[www.dfid.gov.uk/discoveryzone](http://www.dfid.gov.uk/discoveryzone)  
[www.unesco.org/education/tlsf](http://www.unesco.org/education/tlsf)  
[www.earthcharter.org](http://www.earthcharter.org)  
[www.wiserearth.org](http://www.wiserearth.org)  
[www.globe.org.uk](http://www.globe.org.uk)  
[www.miniature-earth.com](http://www.miniature-earth.com) (*the world as a village of 100 people*)

### Educational sites for children

[www.wearewhatwedo.org](http://www.wearewhatwedo.org)  
[www.oxfam.org.uk/coolplanet/kidsweb/](http://www.oxfam.org.uk/coolplanet/kidsweb/) (*Bangladesh, Kenya, Brazil*)  
[www.bbc.co.uk/bloom](http://www.bbc.co.uk/bloom)  
[www.bbc.co.uk/food](http://www.bbc.co.uk/food)  
[www.eattheseasons.co.uk/](http://www.eattheseasons.co.uk/)

### Pictures

[www.earthfromtheair.com](http://www.earthfromtheair.com)  
[www.goodplanet.org/en/](http://www.goodplanet.org/en/)  
<http://earth.google.com/>  
[www.wildscreen.org.uk](http://www.wildscreen.org.uk)

### Carbon Footprint Calculators

[www.carbonneutral.com](http://www.carbonneutral.com)  
<http://campaigns.direct.gov.uk/actonco2>

### Approaches to enquiry learning

[www.tidec.org](http://www.tidec.org)  
[www.qca.org.uk/geography/innovating](http://www.qca.org.uk/geography/innovating)  
[www.enquirylearning.net](http://www.enquirylearning.net)

### Sustainable schools and Eco-Schools

[www.ecoschools.org.uk](http://www.ecoschools.org.uk)  
[www.carbondetectives.org.uk](http://www.carbondetectives.org.uk)  
[www.teachernet.gov.uk/sustainableschools/](http://www.teachernet.gov.uk/sustainableschools/)