

Shout about climate solutions



**Friends of
the Earth**

Activity pack for Key Stage 3: 11-13 year-olds

Shout about climate solutions

Activity week

Shout about is Friends of the Earth's annual activity week for 11-13 year olds. It invites young people, through their school or youth group, to learn more by getting active on environmental issues. 5-9 November 2007 is Shout about climate solutions week.

Why climate change?

Climate change is our generation's biggest challenge; it is the most serious threat facing people and the environment on which we all depend. Most scientists agree that global warming is driven by human activity – chiefly the amount of greenhouse gases being released into the atmosphere since the Industrial Revolution. To curb climate change we need to make big cuts in greenhouse gases, especially carbon dioxide. This means changing the way we power industry, travel and keep our homes warm, by moving away from a dependence on fossil fuels like oil, coal and gas. Making these changes will involve everyone, from governments and businesses to organisations and individuals.

Why are we focusing on young people?

The people who will be most affected by climate change are today's children. They therefore need to understand the issues and their own potential to contribute to the solutions through active citizenship and the positive choices they can make. Friends of the Earth's Youth and Education Programme provides ways for young people to explore sustainable development, citizenship and environmental issues, either via teachers and youth workers or on their own.

About this resource

The *Shout about* activity pack has been developed with input from teachers and climate change experts. This pack looks at climate change and explores its main causes: carbon dioxide (CO₂) emitted from transport, heating and electricity generation. The fully updated information and activities enable young people to explore the solutions that exist and make the connection between their own lives and tackling climate change.

The pack includes a brand new section on how the UK Parliament works and how individuals and non-governmental organisations (NGOs) like Friends of the Earth can influence Government policy. It takes as a case study the Climate Change Bill currently being considered in Parliament.

Contents:

- > Educators' notes including a list of useful resources.
- > Five booklets with information and activities on the following topics:
 - ● Booklet 01: Climate change: causes and effects
 - ● Booklet 02: Electricity: problems and solutions
 - ● Booklet 03: Heating: problems and solutions
 - ● Booklet 04: Transport: problems and solutions
 - ● New for 2007 – Booklet 05: How laws are made: the Climate Change Bill
- > DVD containing visual aids on climate change and solutions

Solutions to climate change

We can start to get to grips with climate change by saving energy and using cleaner, safer fuel from renewable sources like wind, solar and hydro power. Focusing on how this can be applied in their own schools, communities and homes is a useful starting point for young people to develop their understanding and ideas. To find out more about climate change and Friends of the Earth's analysis of the solutions visit www.foe.co.uk/campaigns/climate

Let us know how you get on

Whether you run a whole week of activities or just a day, we'd love to hear about it. Tell us what you are planning in advance and we might visit your school or youth group. Last year your stories featured in our Shout about magazine, and on www.foe.co.uk/learning

We really value feedback from participants in developing new resources, so please tell us what you think about Shout about 2007, email shoutabout@foe.co.uk

shouts from last year



Shout about week has provided a way to show pupils that they are part of a bigger picture, that they are not alone in trying to slow down climate change.

Jane Burnet, Teacher, All Saints School

If we educate students about climate change maybe when they grow up they will decide to live an eco-friendly life.

Aniqa, 14, Mulberry School for Girls, London

Shouts to...

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June 2007

Shout about climate solutions

Educators' notes

These educators' notes explain how the pack fits Curriculum requirements. They include great ideas for larger activities and contacts for further information.

The *Shout about climate solutions* pack is designed for 11-13 year-olds (Key stage 3).

The topics can be studied as a series of lessons and/or youth club activities, or as part of a themed day or week.

The information and activities explore the effects of climate change and possible solutions. We have also put together some fantastic visual resources to help you; you will find these on the *Shout about DVD* (available from September 2007).

Curriculum education initiatives

"We need the next generation to think about their impact on the environment. If we can instil in them an understanding of how our actions can mitigate global warming then we lock in a culture change that could, quite literally, save the world... There can be no more important subject worthy of study in our schools."

Alan Johnson, Education Secretary, February 2007

Climate change relates to the National Curriculum requirements for Citizenship and PSHE*, Geography and Science.

In May 2007, as part of the DfES Sustainable Schools Year of Action, secondary schools in England received a climate change film pack designed to raise awareness around the issue (the Welsh Assembly Government and Scottish Executive announced similar schemes early in 2007). The activities suggested in this Shout about pack complement and develop the themes explored in the DfES resource by encouraging young people to discuss, decide and create school/youth group actions that will contribute to solving climate change.

Through the activities suggested students will develop:

- Communication skills.
- Research, recording and data presentation skills.
- Ability to relate energy use to climate change.
- Understanding of how personal behaviour affects the wider environment and people.

* *Global Citizenship and PSE in Wales; Local and Global Citizenship in Northern Ireland; and Citizenship and PSD in Scotland.*

- Critical awareness of solutions to climate change.
- Understanding of the social, economic and natural issues that need to be addressed in designing solutions.
- Understanding of the role individuals and organisations can play in creating policy change.

Suggestions for larger activities:

- Hold a whole-school climate change day/week.
- Invite a speaker in – don't forget your network of Friends of the Earth local volunteers who may be able to visit.
- Create materials for an awareness-raising campaign in your local community – hold a green fair, or approach your local library or another school and ask if you can put up a display.
- Monitor your school/youth group's energy use, ask the students to come up with ways to reduce it, implement these and record the change in energy use.
- Visit an alternative energy site.
- Contact schools/groups that have installed renewable energy and invite the teachers and students to visit and talk about their project.
- Plan and raise funds for a wind turbine or solar panels for your school/youth club – organise small fundraising events or apply for a grant (see the more resources page for contacts).
- If you're confident your school/youth group can reduce its CO₂ emissions, make a bet with your local council or a local business – if you succeed, they have to do it too.

Baithazar Serreau/Friends of the Earth



The table below indicates how the pack can link to a number of core and non-core subjects:

	Citizenship (PSE/PSD/PSHE)	Geography	Science	English	Maths	Art	ICT	DT
Climate change: causes and effects	•	•	•	•	•		•	
Electricity: problems and solutions	•	•	•	•		•	•	
Heating: problems and solutions	•		•		•	•	•	•
Transport: problems and solutions	•	•	•	•	•	•	•	•
How laws are made: the Climate Change Bill	•	•	•	•		•	•	

Pull out and pin up

Useful resources

Friends of the Earth
www.foe.co.uk
 Tel: 020 7490 1555

Contact us for further information on Shout about and climate change or to ask about our other campaigns and education resources.

Friends of the Earth Cymru
www.foe.co.uk/cymru

Climate change

Intergovernmental Panel on Climate Change (IPCC)

www.ipcc.ch

Good for teachers, if you want to find out more from the leading authority. Latest reports *Climate change 2007: the physical science and climate change 2007: Impacts, adaptation and vulnerability* have just been published. Summaries are available at www.ipcc.ch

BBC Weather Centre

www.bbc.co.uk/climate

Presents the evidence on climate change and talks about impacts, adaptation and policies. The links and chat section lets you listen to interviews with some key people in the climate change debate.

Science Museum

www.sciencemuseum.org.uk/antenna/climatechange

Presents the facts about climate change in an easy-to-follow format, from breaking down the jargon to explaining the local and global impacts of climate change. Includes an interactive game to show how our daily living affects the planet and some great information about future technologies.

Renewable energy

British Wind Energy Association

www.bwea.com/edu

Extensive information about wind, wave and tidal energy. Includes resources for Key stages 1-4 and a section for studentseducators where you can learn how to calculate the energy in wind, how to extract this energy and find out the location of UK wind farms.

Energy Savings Trust

www.est.org.uk

Information, practical advice and help with curriculum resources on energy efficiency. Find out about its Energy Certification for Schools programme, funding opportunities and read some interesting case studies from community groups and schools.

National Energy Foundation

www.nef.org.uk/powerd

For teachers and children who want to know more about alternative sources of energy. NEF produces three renewable energy kits, with activity sheets for Key stages 2-4.

Centre for Alternative Technology (CAT)

www.cat.org.uk/education

Organise a schoolgroup visit to the centre or make use of CAT's information service and online resources. Covers everything from renewable energy, environmental building and energy efficiency to alternative sewage systems.

Nuclear power

Nuclear Industry Association
 – Energy Choices

www.energy-choices.com

Established by the NIA in response to the energy debate in the UK, this site provides facts, figures and reference material, setting nuclear energy in the context of other energy sources.

Campaign for Nuclear Disarmament
www.cnd/uk.org

CND's report *Nuclear power: not worth the risk!* provides some facts about nuclear energy.

National Curriculum education

Teachernet

www.teachernet.gov.uk/wholeschool/sd

Developed by the Department for Education and Skills to support the education profession, the website provides information about sustainable development in the National Curriculum. Includes energy focus pages that talk about solutions in schools and provide case studies.

CREATE

www.create.org.uk/schools/default.asp

With a dedicated area for teachers, and a kids' zone, this website offers information about energy and climate change. Includes downloadable lesson plans, newsletters, an energy monitoring chart and information on how energy education relates to the National Curriculum.

Politics and young people

The British Youth Council

www.byc.org.uk

Enables young people in the UK to exercise their right to participate in decisions which affect them. BYC will be preparing a response to the public consultation for the draft Climate Change Bill.

Heads up

www.headsup.org.uk

Hosts an online debating space for young people to share their views on political issues and events. It's also a space politicians can use to consult with young people and find out their ideas, experiences and opinions.

Headliners

www.headliners.org

A UK-wide news agency producing news, features and comment by young people on issues important to them. Stories are published in national and local newspapers, magazines, television and radio. Read environment stories at www.headliners.org/storylibrary/environment.htm

Climate change: Causes and effects

What is climate change?

Our climate is changing. Temperatures and sea levels are rising, and ice caps and glaciers are melting. Scientists agree this is mostly a result of the increasing amounts of carbon dioxide (CO₂) released into the Earth's atmosphere from human activity – principally the burning of fossil fuels to provide energy. Almost 26 billion tonnes of CO₂ are released globally each year. CO₂ can stay in the atmosphere for up to 200 years, heating up the planet. If we continue to release CO₂ at the current rate or faster, scientists predict that temperatures could rise by up to 6 degrees centigrade by the end of the century. That's equivalent to the rise in temperatures from the last ice age to today – within 100 years the temperature could change by as much as it has over the past 11,000 years.

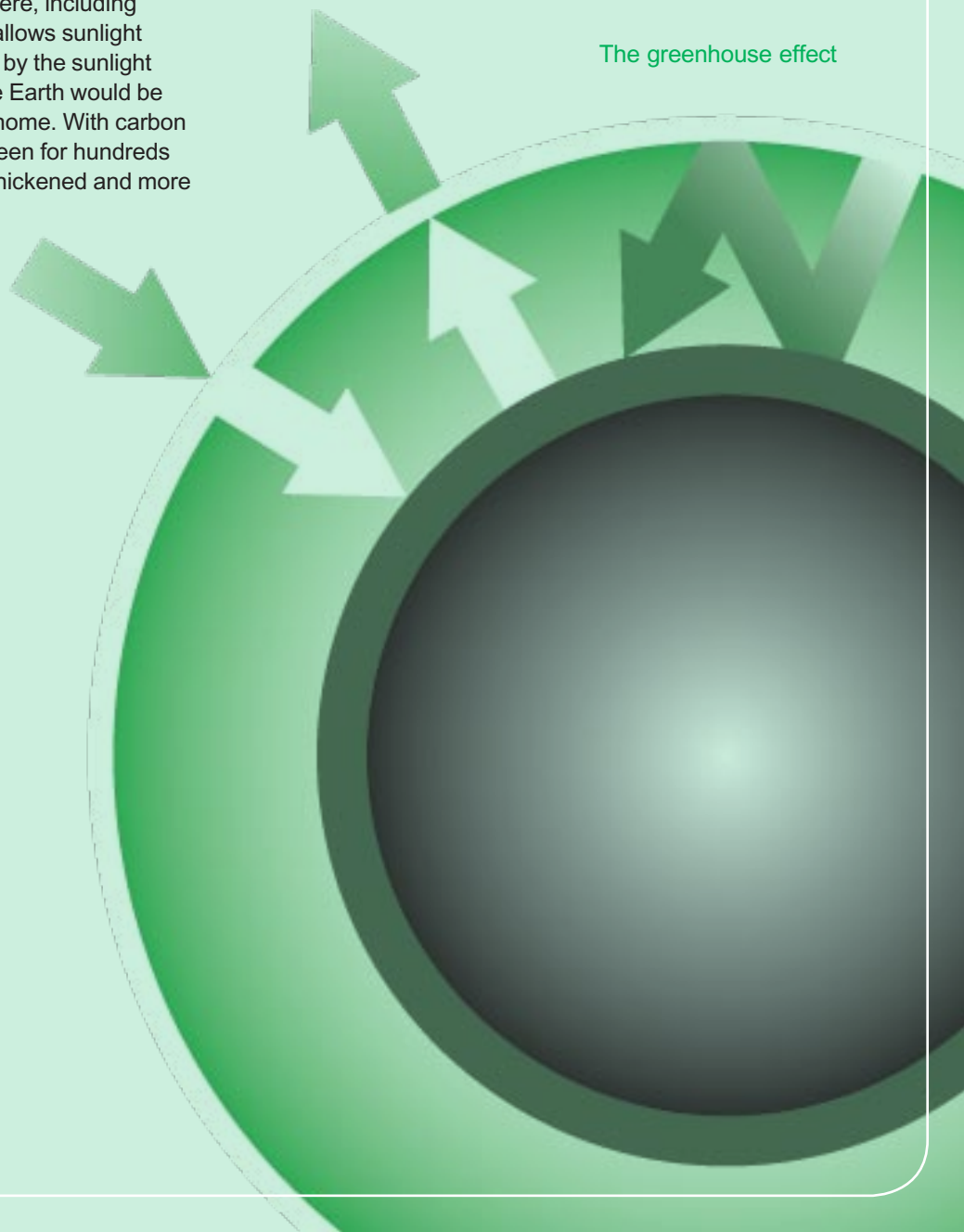
The greenhouse effect

The greenhouse effect is the term used to describe the process by which the Earth's atmosphere keeps our planet warm. The gases in the atmosphere, including carbon dioxide, act like a blanket. This allows sunlight in but does not let all the heat produced by the sunlight back out. Without this layer of gases the Earth would be -18°C; that's as cold as your freezer at home. With carbon dioxide emissions the highest they've been for hundreds of thousands of years this blanket has thickened and more and more heat is being trapped inside.

Where do our emissions come from?

The UK emits around 550 million tonnes of CO₂ into the atmosphere every year. Most of our emissions come from transport, heating and electricity generation. Every time we drive a car or hop on a plane we are contributing to the increase in CO₂ in our atmosphere. We use energy to keep our houses warm and to heat water for our baths and showers. We also use lots of electricity in our homes: to power light bulbs, televisions, toasters and fridges. Developing ways to reduce our energy use, as well as alternatives to burning fossil fuels, is vital if we are to minimise the effects of climate change, and we will need governments to lead the way.

The greenhouse effect



Glossary

Climate – the pattern of weather.

CO₂ – chemical symbol for the gas carbon dioxide, made up of one carbon and two oxygen molecules.

Fossil fuels – oil, coal and natural gas are all types of fossil fuel formed over millions of years from plant and animal matter that has been trapped and compressed underground. Petrol and diesel are produced by refining oil.

Greenhouse gases – carbon dioxide, methane, nitrous oxides and some other gases that wrap around the Earth like a blanket trapping heat.

Economic costs – the amount of money needing to be spent by an individual country or the world.

Climate change: Causes and effects

Effects

Climate change and the resulting erratic weather patterns are not just affecting the environment, they are having an impact on people all over the world. In Asia, more than 1 billion people could lose access to fresh water by 2050. And as early as 2020 crop growth could fall by half in many African countries. But people are already facing the consequences of climate change both locally and globally. If no action is taken to slow down climate change we will see many more events like the flooding in Boscastle, Cornwall, in 2004 which left people homeless; and the lethal hurricane in southern Brazil.

In March 2004 Hurricane Catarina, the first hurricane in the history of the South Atlantic, hit southern Brazil. The gusts of wind were terrifying: roofs were torn off, the river submerged entire towns, and in the sea the waves grew up to 5 metres high. Terezinha, who lost her husband, says:

“ We had no idea what was going on... Two trees fell on our house, and we went running to the neighbour’s house. When the wind stopped [the eye of the hurricane], we returned home to get blankets and sweaters. The tree that was on top of the house, when the wind came up again, fell on top of the car and killed my husband. From then on I didn’t see anything else because I fainted.

Terezinha da Rocha Quirino, Araranguá/SC

In August 2004 flash floods hit Boscastle, Cornwall. Michale Henderson’s home was hit. She told the BBC:

“ I was so shocked to see the floodwaters arrive, we had to evacuate from our house just five minutes before the big wave hit the side of the wall. It was terrifying to see such powerful waves; the first thing that came to my mind was The Day After Tomorrow, it was as if this freak weather system is something of our doing.

Tipping point

Imagine pushing a car towards a cliff edge. You reach a point when the car is so far over the edge that even if you stopped pushing it would still fall. It’s the same with climate change – scientists are concerned that we are approaching a tipping point where the changes we make to the climate will be impossible to reverse.

Many scientists predict that up to 30 per cent of the world’s species of animals and plants will be at risk of extinction if global temperatures increase by just a couple of degrees. For some species, such as corals in the Great Barrier Reef, there will no longer be a climate that is suitable for them to survive.

CO₂ stays in the atmosphere for up to 200 years. Already the build-up of our past emissions means we can’t escape some impacts of climate change; we’re going to have to adapt to them – for example building better sea defences to combat coastal flooding. But if we start to bring down emissions now – through increased energy efficiency and more clean power, heat and transport technologies – we can still avoid the worst predicted effects of climate change in the future. The economic costs of making these changes now are low, compared to the price we’ll pay in the future for not doing anything.



Hurricane Catarina left many people without homes and shelter.

Booklet 01**Climate change: Causes and effects****Activities****Activity 1: How is our climate changing?****Time:** 45 minutes**What you need:** Temperature records, graph paper and stationery.**Curriculum links:** Geography, Maths, ICT.**Learning aim:** To record information using graphs. To understand how the climate is changing.

Plot graphs either on paper or on a computer of the mean temperature in the UK/globally over the last 200 years. How have temperatures changed?

England temperature records can be found at:

www.met-office.gov.uk/research/hadleycentre/CR_data/Daily/HadCET_act.txt

UK/global temperature graphs can be found at:

www.ukcip.org.uk/climate_change/

You can then research and plot predicted climate change for next 100 years in the UK/for different countries around the world. Look at mean temperature.

Activity 2: Fact finding: where does your electricity come from?**Time:** 45 minutes**What you need:** Internet access/information about local power station.**Curriculum links:** Geography, Citizenship (PSE/PSD/PSHE), English, Science.**Learning aim:** To use the internet and other sources for research. To understand where the electricity they use comes from.

Generate a list of all the items you use that are powered by electricity. As a group discuss how big this list is – does anyone know where the electricity you all use daily comes from? Find your nearest power station and investigate:

- Whether it is gas-fired or coal-fired.
- What size area it supplies.
- How old it is.
- Whether the company has an emissions statement.

Discussion: Re-examine list of items used that are powered by electricity.

Which objects could be powered by alternative methods, such as using a solar charger for a mobile phone?

Activity 3: Effects of climate change: guesstimates.**Time:** 20 minutes**What you need:** Questions (overleaf) and answers (below).**Curriculum links:** Science, Geography.**Learning aim:** To understand the scale of the effects of climate change.

In small groups guess the answer to the questions below (all answers are numbers). Mark each group's answer on a line. For each question place a numeric value at each end of the line (the scale needed for each question is indicated below).

Alternatively run a piece of string along the length of the room, marking the relevant scale at each end. Answer individually by standing on the line.

Answers

1. 100 per cent (Scale 0-100)
2. 50 per cent (Scale 0-100)
3. 6°C (Scale 0-10)
4. 30 per cent (Scale 0-100)
5. 150,000 people (Scale 0-200,000)
6. 5 million (Scale 0-10 million)
7. 9 (Scale 0-10)
8. 25 per cent (Scale 0-50)
9. Up (Scale Up-Same-Down)

Extension activity

Discuss what else might indicate how the climate is changing. Prompt: sea levels, rainfall etc.

Set up a weather station that monitors temperatures in your local area.

Extension activity

Go on a field trip to your local power station or invite an employee from the power station to come and give a talk.

Extension activity

You can use the internet to discover the impacts of climate change in your area. You can also find out what the effects of climate change will be on different parts of the UK using the interactive map at: www.ukcip.org.uk/climate_impacts/location.asp

Climate change: causes and effects



Guesstimates

1

If temperatures rise by as little as 2°C by the end of the 21st century, what percentage of summer sea ice is predicted to have melted away?

2

By 2025 what percentage of the world's population will be living in areas at risk from storms and other weather extremes?

3

If emissions are left unchecked between 1990 and 2100, up to how many degrees centigrade is the temperature predicted to rise?

4

If temperatures rise by as little as 2°C what percentage of species could become extinct?

5

In the year 2000 how many people are estimated to have died as a result of climate change?

6

How many people in England and Wales are now at risk from flooding every year?

7

Last year (2006) was the hottest year in Britain. How many of Britain's 10 hottest years have occurred since 1989?

8

Five per cent of the world's population live in the United States of America. What percentage of the world's CO₂ emissions does the United States produce?

9

Since 2000 have the UK's CO₂ emissions gone up, down or stayed the same?

Electricity: problems and solutions

How is electricity produced?

Energy cannot be created or destroyed but is transferred or changed from one form to another. These forms of energy include heat energy, kinetic or movement energy, light energy, sound energy and electricity.

Electricity is a useful form of energy and we use it to power many things in our lives such as kettles, fridges and televisions. Most electricity is generated in power stations and then transported to people's homes along cables. In power stations heat energy is used to boil water and is transferred into kinetic energy as steam is produced. This steam turns a turbine and the kinetic energy is then transferred into electricity.

What's the problem?

Power stations use the heat energy from burning fossil fuels like coal, oil or gas. When fossil fuels are burnt, they release CO₂ into the atmosphere. In the UK generating electricity accounts for almost 30 per cent of CO₂ emissions, producing around 170 million tonnes of CO₂ per year. We need to find alternative ways of generating electricity that do not produce as much CO₂.

What needs to be done?

Some commentators and politicians suggest a solution is to build nuclear power stations, because they don't produce CO₂ as they make electricity. However, nuclear power produces radioactive waste and we do not yet know how this waste will be safely disposed of or what the impacts of climate change and land erosion will be on waste that remains radioactive for thousands of years.

There is a more significant reason why more nuclear power stations will not help much in curbing climate change. Research suggests that even doubling nuclear capacity would only result in an 8 per cent cut in CO₂ emissions from 1990 levels (the baseline year against which national and global emissions are measured). We need to cut emissions by 80-90 per cent. The UK Government's independent watchdog on sustainable development, the Sustainable Development Commission, has concluded that the contribution that nuclear power could make to CO₂ reduction targets would be limited.

There are other ways to generate electricity without producing CO₂ – by using renewable energy sources such as the sun, wind and waves. Plus we can reduce our emissions by simply using less energy, which can start with easy steps like remembering to turn off the light when we leave a room.

Glossary

Energy transfer – energy changing from one form to another, eg from heat energy to kinetic energy.

Fossil fuels – oil, coal and natural gas are all types of fossil fuel formed over millions of years from plant and animal matter that has been trapped and compressed underground. Petrol and diesel are produced by refining oil.

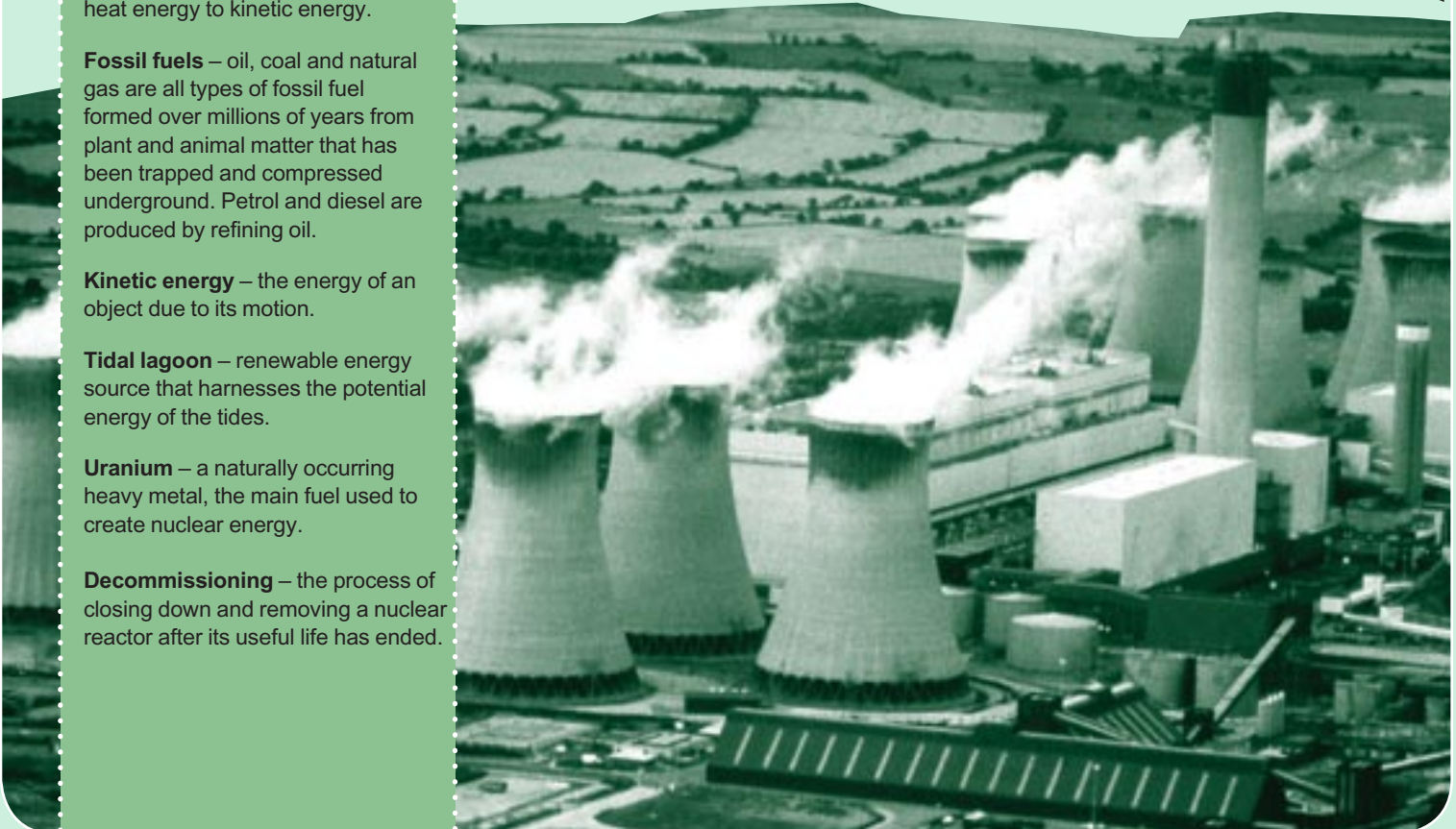
Kinetic energy – the energy of an object due to its motion.

Tidal lagoon – renewable energy source that harnesses the potential energy of the tides.

Uranium – a naturally occurring heavy metal, the main fuel used to create nuclear energy.

Decommissioning – the process of closing down and removing a nuclear reactor after its useful life has ended.

Carbon dinosaur: around 33 per cent of our electricity is still produced from coal burnt in old, inefficient power stations which make a massive contribution to climate change.



Electricity: problems and solutions

What are the solutions?

Government advisers say Britain could generate up to 87 per cent of our electricity from renewable sources.

Britain is Europe's windiest country and the wind blows hardest when we need energy the most – during peak daytime periods and throughout winter. We already use around 1,700 wind turbines in the UK to generate electricity. That's not many compared to Germany's 18,000. Building more both on land and in the sea would help reduce CO₂ emissions significantly.

Tidal lagoons have the potential to provide 6 per cent of UK electricity by harnessing the power of the tides. A lagoon is an area of water cut off from the rest of the sea. When the tide goes out the lagoon remains filled with sea water creating a difference in water levels between the sea and the lagoon. The water inside the lagoon is then released through turbines, generating electricity as it flows back to the sea. The lagoon is shut again until the tide has risen; when there is a large difference in water levels it is opened and the sea water rushes into the lagoon, again generating electricity.

Tidal lagoons work best where there is a big difference between high and low tide. The UK has the second highest tidal range in the world.

But it's not just about Government utilising renewable energy sources. Together we need to reduce the amount of energy we use and each of us can do things now to achieve this.

Most of us use electricity without even realising it. When we leave our televisions or radios on standby they are still using electricity. In fact, we waste around 7 per cent of the electricity in our homes in this way. We need to make sure off really means off. You save energy every time you turn the television off from the mains rather than by using the remote control.

There are lots of energy-saving products around. Super-efficient light bulbs – compact fluorescent bulbs – last 10 times longer than a standard bulb and use a third of the electricity. If every household in the UK installed just three, we'd save enough energy in a year to light the UK's streets. The Australian government is already phasing out standard light bulbs, and many other countries could do the same.

Want to do your bit?

Start saving energy at home and at school by making sure you switch things off instead of putting them on standby. Turn the lights off when you leave a room and ask your friends and teachers to do the same.

Some schools are going even further, applying energy saving measures and installing their own renewable energy systems.



Brill CE Combined School

Brill school generates enough electricity to power the equivalent of five and a half homes.

shout about real life stories

When the lights at Brill Church of England Combined School in Buckinghamshire needed changing, staff and pupils chose to replace them with energy-saving light fittings and sensor switches. But the school didn't stop there. The greening of Brill School became a whole-community project involving the pupils, parents, teachers, governors and members of the local community. The school now has a wind turbine, solar panels, a ground-source heat pump and a meter that enables pupils to monitor the usage of electricity, water and oil every half hour. Head teacher Chris Hirst, says:

“ *The children have learnt a great deal about climate change and how to prevent it. They are very enthusiastic and are inspiring their friends and family to do their bit for energy saving.*

The school has saved over £1,000 on its electricity bill, reduced CO₂ emissions by 10.7 tonnes a year, and generates enough electricity to power the equivalent of five and half homes.

If you want your school/youth group to get involved Energy Certification for Schools offers lots of helpful information: www.est.org.uk/schools/

Electricity: problems and solutions

Activities

Activity 1: Energy transfer.

Time: 30 minutes

What you need: Pens and paper, collection of devices that work by transforming energy from one form to another [such as wind-up toys, solar powered calculator, light up yo yo].

Curriculum links: Science.

Learning aim: To understand how energy is transferred from one form to another.

Look at the objects and identify the original source of energy and what it is transferred into. For example, a wind-up toy transfers potential energy into movement (kinetic) energy.

Create energy transfer diagrams for how electricity is produced.

Extension activity

Create simple electrical circuits using batteries, wires, buzzers and lights. Look at how the electricity is transformed into heat, light and sound energy in the circuit.

Activity 2: Group work: renewable energy solutions.

Time: 60 minutes

What you need: Internet access, library access, pens, paper, and junk modelling material.

Curriculum links: Art and Design, English, Citizenship (PSE/PSD/PSHE), Science, Geography, ICT.

Learning aim: To research and discuss a current renewable energy source. To understand the arguments for and against different renewable energy sources.

As a class, list as many forms of renewable energy as possible, such as solar panels, wave and tidal energy, tidal lagoons, wind energy, micro-generation and biomass.

Split into small groups. Each group should use the internet and library to research a form of renewable energy and create an annotated diagram or 3D model and a list of pros and cons for each type of renewable energy source. You could also include how much it costs, jobs created, impact on area in which the energy source is based and the energy used in the construction phase for each.

Extension activity

Imagine you are government ministers responsible for setting next year's energy budget. Using the information collected in this activity, including the price of each energy resource, debate how to spend your £20 million energy budget. Don't forget other impacts of each energy source such as job creation and impact on people living nearby. This could be followed up with a real-life letter to the Energy Minister on the subject.

Activity 3: Practical: PR campaign – connecting the problem with individual actions.

What you need: Background information provided overleaf, postcard pictures, art materials, if possible digital cameras, animation equipment, editing software (get advice from your local City Learning Centre).

Curriculum links: English, Citizenship (PSE/PSD/PSHE), Science, Art, ICT.

Learning aim: To understand the link between individual actions and climate change. To use imaginative language and images to communicate a complex scientific concept.

In groups, students are asked to act as a public relations company. The brief is to design a campaign to raise people's awareness of the link between their personal electricity use (behaviour and actions) and climate change.

The target age group is 11-16. The campaign should include ideas sheets for a poster or billboard image, a television advert and a leaflet. Some background information is provided overleaf.

Present the campaign concept to a panel of students and teachers to decide who wins the contract.

Extension activity

Turn the ideas sheets into reality and run a public awareness campaign within your school/youth group or wider community through displays at the local library.

Electricity : problems and solutions

PR campaign: connecting the problem with individual actions



Background information

Attitude surveys have pointed out how people's awareness of climate change is building. In one survey it was found that 80 per cent of the UK public think climate change is having an impact on the UK now. And about three quarters feel a growing pressure to change the way they live in order to reduce the impact of climate change (Green barometer survey March 2007 – quarterly national tracker of behaviour and opinion, run by the Energy Savings Trust).

The problem is that some people aren't aware of what changes they can make to play their part in tackling climate change. They don't see the link between their actions (ie switching a kettle on for a hot drink) and the environmental or political impact of this. Eighty per cent want the Government to let them know what they can do to save energy.

This activity is an opportunity for you to explore the link between individual actions and climate change and to find ways of telling other people that what they do really can make a difference.

Heating: problems and solutions

How do heating systems work?

Many houses have either gas or electric central heating to keep the house warm and provide hot water for baths, showers and washing up. They work by heating water in a tank and pumping it into pipes. These pipes connect to radiators around the house and to taps. Eventually the water goes along the pipes and back into the boiler ready to be reheated. In a gas water heater the water is heated by a gas burner and in an electric water heater the water is heated by electric filaments. Both methods release carbon dioxide into the atmosphere. The gas water heater releases CO₂ when the gas is burned and the electric water heater releases CO₂ if fossil fuels are burnt at the power plant where the electricity is generated.

What's the problem?

The average home in the UK generates just over 6 tonnes of CO₂ per year. Boilers account for around 60 per cent of these CO₂ emissions. We need to reduce this contribution our homes are making to climate change. Many UK homes have poor insulation, draughty single-glazed windows and doors and inefficient heating systems. This means we waste vast quantities of energy attempting to keep homes warm that are literally leaking heat.

What needs to be done?

We need to reduce the CO₂ emissions produced from heating our homes by using less heat, reducing the amount of heat we waste and creating more efficient heating systems. If we waste less, we will need less. Energy consumption and CO₂ emissions could be reduced by 80 per cent in new homes if we take into account energy efficiency when building them.

Around a third of heat escapes from houses when they are not properly insulated.

Glossary

Cavity walls – a wall built or arranged to provide an air space within the wall (with or without insulating material).

Double glazing – windows with two panes of glass and a space between them which reduce heat loss.

Insulation – providing a barrier for the flow of energy, in this case preventing heat energy from escaping.

Energy efficiency – wasting as little energy as possible.

Passive solar heating – the use of the sun's energy to heat a house, through careful building design.



Heating: problems and solutions

What are the solutions?

We can all use less heat. Lots of us leave the heating on when we are out of the house to make sure it's warm when we return, but we could set the timer to turn it off 30 minutes before we leave the house and come on again 30 minutes before we are due back. Another way to use less heat is to turn down the thermostat. Did you know that if you turn your central heating thermostat down by one degree you could save up to £30 a year?

As well as using less heat we can make sure we waste less. Around a third of heat escapes from houses when they are not properly insulated. Have you ever noticed in winter in the same street, on some houses snow has settled on the roof but on others the snow has melted? One reason the snow may have melted is from poor insulation allowing lots of the house's heat to escape through the roof. By insulating lofts and cavity walls you can keep more heat inside the house. We can also use draught excluders to block gaps where heat might escape and replace old single-glazed windows with double glazing to help keep heat in.

But it's not just about making sure the houses we have keep in as much heat as possible – we also need to make sure new houses are more energy efficient. Authorities in Germany, Sweden, Switzerland and Canada are already planning ahead; from 2020 they expect to be providing mass housing that consumes no fossil fuel – at no extra building cost.

As well as well-insulated homes we can also keep houses warmer by designing houses that use alternative renewable energy sources such as the sun's energy. By making sure windows and conservatories are south-facing, and installing solar water heating, we can use passive solar heating – ie use the sun's energy to heat a house.

Want to do your bit?

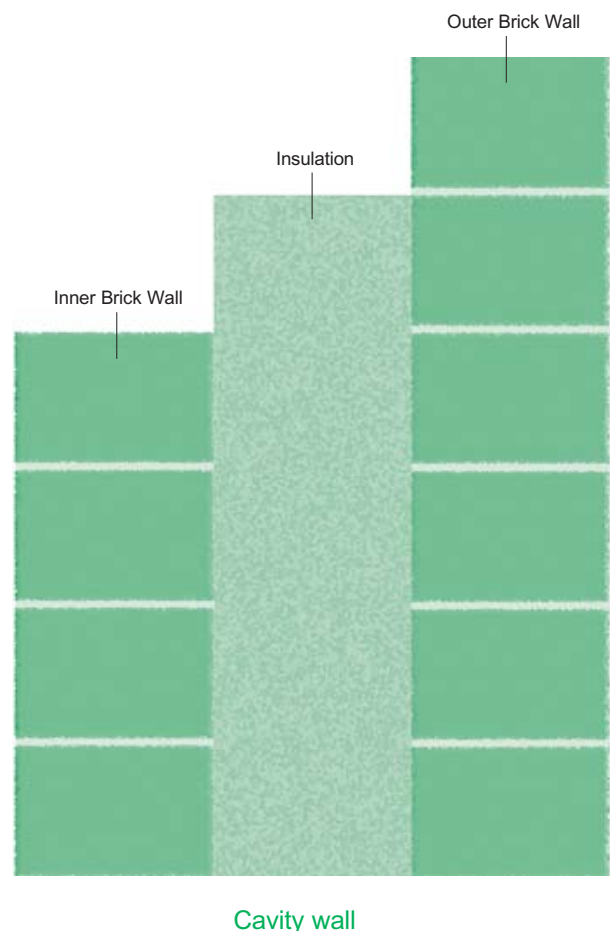
Every day there are small things you can do to make sure you are using or wasting less heat. If you're cold put a jumper on rather than turn the heating up. If you're hot turn the heating off before you decide to open the windows. Do you have any draughty windows or doors at home? Use draught excluders to keep the heat in.

Think about how much hot water you are using each day. Try taking showers instead of baths – (as long as it's not a power shower) they use less water. When you make a cup of tea or boil the kettle for cooking don't overflow it. By only heating the water you need you will not waste electricity.

By using and wasting less heat we can reduce our emissions and the effects of climate change.



Turning down the central heating could save up to £30 a year.



Heating: problems and solutions

Activities

Activity 1: Practical: what makes a good insulator?

Time: 45 minutes

What you need: Plastic bottles, thermometers, different insulators and conductors eg cotton wool, silver foil.

Curriculum links: Science, Maths.

Learning aim: To understand how insulation can reduce unwanted energy transfer, ie keep heat in.

Discuss the concept of insulators and conductors.

Fill four plastic bottles with hot water. Wrap each bottle in either an insulator or conductor (good conductors include different metals and silver foil; good insulators include glass, wood and plastic).

Take the temperature of the water every five minutes. Plot graphs showing the temperature of the water. Compare the results of each bottle. Which materials were better at keeping the water hot?

Extension activity

Same exercise but task is to keep ice cubes from melting.

Activity 2: Group work: design an energy-efficient house.

Time: 45 minutes

What you need: Internet access, stationary, information and activity sheet overleaf.

Curriculum links: Science, CDT, ICT, Art & Design.

Learning aim: To understand how we can be energy efficient. Use a range of methods to record and present ideas. To work efficiently as a member of a group in order to fulfil a task.

In small groups, design an energy efficient house. Use the activity sheet overleaf to record your ideas.

Try these websites for some handy hints:

www.channel4.com/4homes/ontv/grand-designs/features/green_building.html

www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/passive_solar.htm

www.foe.co.uk/learning/educators/case_studies/kingsmead.html

Extension activity

Produce a brochure for these buildings, which highlights ways in which they are energy efficient. Visit a green building materials supplier.

Activity 3: Practical: make a draught excluder.

Time: 60 minutes

What you need: Art and craft materials including pieces of old cloth, pairs of tights.

Curriculum Links: Art & Design, Citizenship (PSE/PSD/PSHE).

Learning aim: To understand the purpose of and make draught excluders.

Use one leg of a pair of tights to make and decorate draught excluders. Stuff the tights with old pieces of cloth, paint or sew on decorations. Make them into snakes or dragons by adding faces and wings.

Explain that draught excluders can help make a house more energy-efficient by blocking places such as the bottom of doors or window sills where heat usually escapes. In this activity you can do something practical to help make your home more energy efficient.

Extension activity

Find a draughty home for your draught excluder.

Booklet 03

Heating: problems and solutions

What are the solutions?
Design an energy-efficient house.



What materials will you use?



Which direction will the windows face?
 Will they be double glazed?



How will it be heated?



Will it be insulated?



How will it be lit?

Inside

Outside



Will it provide any of its own electricity?
 If so, how?



Are there any additional energy-saving measures that could be included?

Transport: problems and solutions

How does transport contribute to climate change?

A car burns petrol or diesel inside its engine to provide the energy it needs to move – this is known as an internal combustion engine. In most cars the engine goes through four steps: intake, compression, combustion, exhaust. In the intake step the engine takes in some fuel and air. This mixture is then compressed and ignited by a spark. The fuel explodes and expands. The exhaust valve opens and the gases from the explosion, including carbon dioxide (CO₂), leave the cylinder and the car through the exhaust pipe.

In the past 50 years the way we travel has changed dramatically. In 1961 only 30 per cent of households in Great Britain had a car. By 2004 that number had increased to 80 per cent, with 29 per cent owning two or more. People are also travelling a lot further than they used to. The average distance people travel annually has increased by about a half in the last 30 years from around 4,500 miles to about 6,800 miles.

It's not just car use that has changed over the past 50 years. Cheap flights and the expansion of airports and runways have seen a huge increase in the number of people flying. Aviation is the fastest growing source of carbon dioxide emissions. Most jet planes have gas turbine engines. They work by taking in air and compressing it so it is under high pressure. Fuel is then added and burned causing an expansion in the air and a release of gases including carbon dioxide. This rush of gases and air is used to turn a turbine that powers the plane.

Glossary

Biomass – plant and animal matter such as wood, straw and dung that releases energy when it is burned.

CO₂ emissions – carbon dioxide released into the air.

Internal combustion engine – engine that burns fuel inside it.

Fuel – something we burn for energy.

Compression – squeezing to reduce something in volume.

Combustion – burning.

Fuel efficient – wastes minimum amount of fuel.

Hydrogen – an abundant and lightweight gas that forms water when mixed with oxygen, can be used as a power source.

What's the problem?

More cars being used more often spells bad news for climate change as petrol and diesel cars are a major source of CO₂. In fact, road transport pumps out more than a fifth of UK emissions. Aviation is the fastest growing source of CO₂ both in the UK and worldwide and could account for a tenth of UK emissions by 2020. Flying creates much larger emissions than driving. A holidaymaker flying to Florida and back creates as much CO₂ as the average British motorist does in a year. Cheap flights are one of the main reasons for the rapid growth in air travel, and this is only made possible because airlines do not pay tax on the fuel they use. We need to do something about the contribution that aviation is making to climate change; if we don't reduce carbon emissions then our planet is under serious threat.

What needs to be done?

We need to change the way we travel. We need to use cars and planes less, walk, cycle or use public transport more and find alternative modes of transport that create less CO₂ emissions. Six of the top 10 flight destinations from London can already – or could potentially be – reached by high-speed rail rather than air. And these destinations – Amsterdam, Edinburgh, Frankfurt, Glasgow, Manchester and Paris – account for one in seven of all plane passengers in and out of London. We also need to think about where we are travelling to. Holidaying in the UK rather than flying abroad, or working from home rather than travelling to an office every day are both ways in which we could reduce CO₂ emissions.



Transport: problems and solutions

What are the solutions?

The many solutions to reducing the impact of transport on climate change include changing the way we travel and changing the way we power our cars – making them more fuel efficient or running them on bio-fuels (petrol and diesel substitutes from renewable sources).

Travel wise

If we use cars less, and walk, cycle and take public transport more, we can each reduce our carbon dioxide emissions. If we do need to use a car it's best to share rides. This is something we can all do. Safer, more efficient public transport would encourage lots of people to use their cars less. The UK could invest more in this area. For example, for the cost of widening the rest of the M25 to four lanes each way, Government could fund safe routes to school schemes for every school in England.

Fill up

We could use biomass as an alternative fuel to power our cars. Biomass is the collective name for plant and animal matter, like wood, straw and dung that is used for fuel. Burning biomass produces carbon dioxide just as coal, oil and gas. But as long as the biomass burnt is replaced by an equivalent new growth of plants and animals and is not from a protected species or rainforest area, they are renewable and don't cause climate change. This is because the new plants absorb an equivalent amount of carbon dioxide as they grow (and animals ingest this carbon when they eat plants or other animals). Biomass can be used for heating and to generate electricity, as it is needed, in the same way as gas or coal. It can also be used to power vehicles when it is converted to a liquid.

Go green

As well as alternative fuels we can also make greener vehicles such as hybrid cars. Hybrid cars are powered by a combination of petrol or diesel and electricity. They work just like a normal car but when you drive at less than 30 MPH they are powered by an electric battery. When you drive faster than this the car switches to petrol/diesel.

If the battery runs down, the petrol engine kicks in and the battery recharges on its own. However, a big hybrid car such as a Lexus GS still pumps out more CO₂ (186g/km) with a combined engine than a smaller petrol/diesel car such as a Vauxhall Corsa (115g/km). There are also electric cars that just run on electricity and in the future it's possible that our cars will be run on battery-like fuel cells that are powered by hydrogen.

We need to change how we travel and develop greener technology in order to prevent catastrophic climate change.

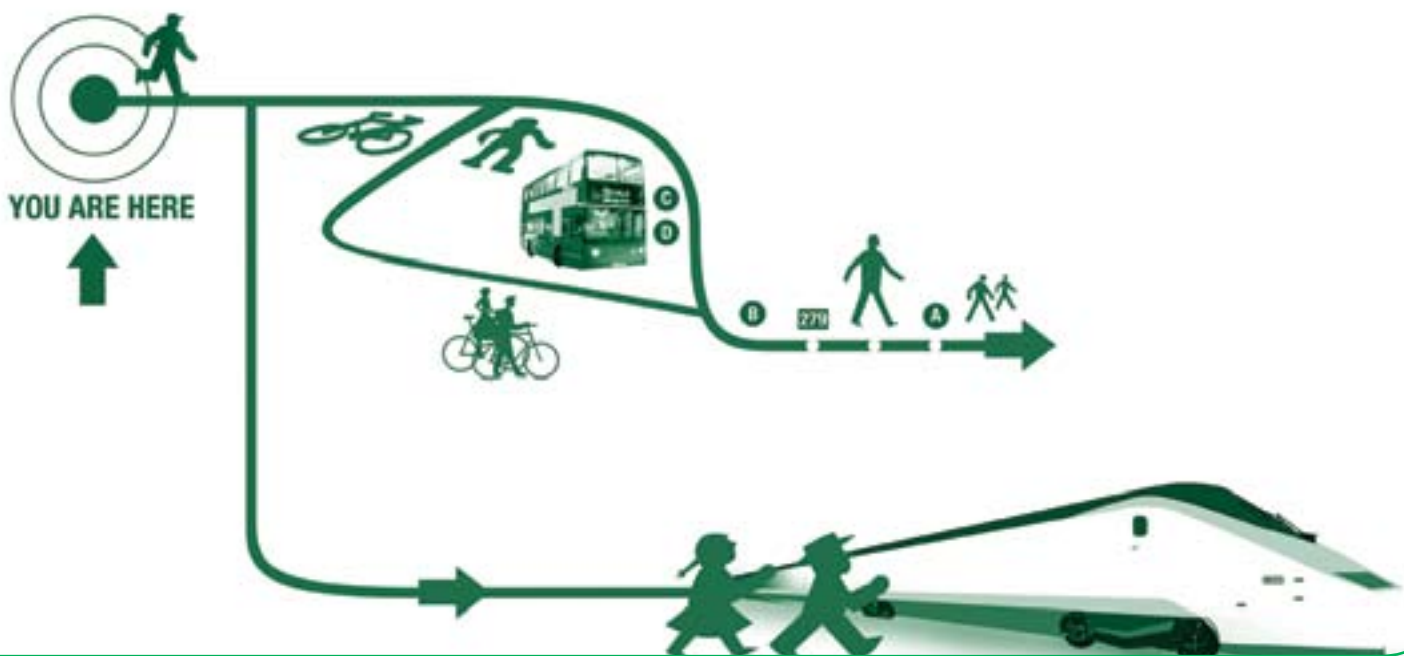
Want to do your bit?

Government research in 2000 found that 38 per cent of children aged 7-11 who are driven to school would prefer to walk or cycle. Many schools have addressed this by establishing a travel plan to allow pupils to use safer and greener routes to school.

shout about real life stories

Year 9s at Afon Taf High School prepared a bid to get funding from the Welsh Assembly's Safe Routes to Schools budget to build new cycle facilities as part of their geography coursework. During the year pupils gave up spare time to work on the project creating a video and CDROM as well as printed materials. The class split into different groups each preparing a different part of the bid. One group surveyed pupils' and parents' opinions, one looked at the design of the new sheds, one looked at upgrading a riverside path to create a traffic-free route to school and another looked at how the cycle-to-school scheme would work.

It worked: the school received £60,000 from the Welsh Assembly and is enjoying new benefits.



Transport: problems and solutions

Activities

Activity 1: Class activity: travel survey.

Time: 45 minutes

What you need: Stationary, other students/teachers.

Curriculum links: Citizenship (PSE/PSD/PSHE), Geography, ICT.

Learning aim: To understand how individuals travelling habits affect climate change.

Travel survey: Design a questionnaire to discover how people travel to your school or youth club. Carry out the survey.

Things to consider:

- How will you carry out your questionnaire? By a show of hands, or by asking individuals?
- What methods might people use to travel to school? Walk, cycle, bus, train, car, car share, taxi, coach?
- Are you going to ask how people would prefer to travel? If they would prefer to walk or cycle, find out some reasons why they don't (as a follow up activity you could discuss ways to overcome these)
- Ask how far people travel to school.

See www.saferoutestoschools.org.uk/ for help establishing safer routes to school.

Extension activity

Using the results from the travel survey and the following equation, calculate how much CO₂ would be saved over a year if each pupil who used a car walked or cycled instead.

Number of kilometres per day x CO₂ produced per km* x number of days travelling = CO₂ emissions per year.

**The average new car produces around 196 grams of CO₂ per kilometre.*

Activity 2: Group work: what are the solutions?

Time: 60 minutes

What you need: Internet access.

Curriculum links: ICT, Citizenship (PSE/PSD/PSHE), Geography, Science.

Learning aim: To use the internet and other sources for research. To investigate hybrid cars and present findings to others.

In small groups, research hybrid cars. How readily available are they? How much more environmentally friendly are they? How expensive? How are they being marketed? Do you know anyone who drives one? If so, find out why they bought a hybrid car and what they think of it.

Present your findings to the rest of the class.

Extension activity

Design a car of the future: What will it run on, how will the engine work? Build a model of your design.

Activity 3: Report: find solutions in your local area.

Time: 60 minutes

What you need: Local newspapers, internet, telephone access, digital camera, arts and craft materials, video equipment and *Shout about* DVD.

Curriculum links: Citizenship (PSE/PSD/PSHE), ICT, English, DT, Art and Design.

Learning aim: To use the internet and other sources for research. To understand that their actions make a difference to their future.

Use the local media and/or the internet to find an inspirational person in your local area who has done something to tackle climate change. Maybe they drive an electric car. Perhaps they set up a walking bus for your school; maybe they have installed a solar panel or wind turbine at home. Be a detective.

Then choose how you present the information. You could make a documentary, create a photo story, tape record an interview, or write a leaflet or a newspaper article (see if the local press will publish it).

Check out the *Your climate solutions* section on the *Shout about* DVD, or visit www.foe.co.uk/learning/news_archive/2006_competition_winners.html for inspiration.

Extension activity

Invite an inspirational person to school/youth club to give a talk.

For additional ideas on how to teach Transport in the classroom see www.foe.co.uk/resource/guides/lesson_plan_transport.pdf

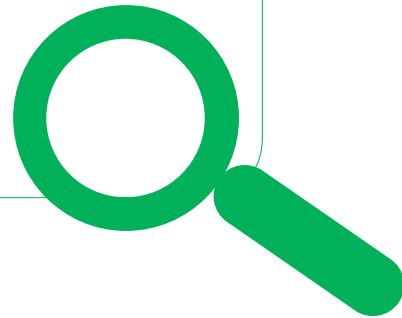
Transport: problems and solutions

Find solutions in your local area.



Use the local media and/or the internet to find an inspirational person in your local area who has done something to tackle climate change. Maybe they drive an electric car. Perhaps they set up a walking bus for your school; maybe they have installed a solar panel at home. Be a detective and find out.

Use the table below to help you plan your case study:



What have you found out from the local media?

What have you found out from researching on the internet?

Who's your local hero?

What have they done to tackle climate change?

What questions do you want to ask them?

How are you going to record the information?

How will you present this information? *You could make a documentary, create a photo story, tape record an interview, or write a leaflet or a newspaper article.*

Booklet 05

How laws are made: the Climate Change Bill

What's the problem?

To prevent the worst effects of climate change our carbon dioxide (CO₂) emissions must be significantly reduced. We could wait 50 years or so until we have no choice but to make drastic cuts. But there's a limit to how much CO₂ we can emit in the next 50 years before the changes we make to the climate become really dangerous, so this approach might be too little too late. Or we could make smaller, achievable cuts in CO₂ every year from now on.

Friends of the Earth thinks this is the best way to tackle the problem – a steady path that will keep us within our

limit, set a good example to other countries and give us all time to adjust.

Our cars, factories, offices, central heating and power stations all pump out CO₂. So to start bringing emissions under control Government, businesses and individuals will need to work together. But it might not happen if we rely on businesses or individuals to make CO₂ cuts voluntarily. The Government might have to legislate (make laws) to ensure action is taken by everyone for the good of the climate.

Law or no law?

What's the problem?

TVs left on standby waste electricity.

How can the problem be solved?

Run a campaign telling people to turn their TVs off standby.

People might not listen. X

OR

Pass a law to stop manufacturers making TVs with standby.

This would solve the problem with all new TVs straight away. ✓

Who's responsible?

Government and manufacturers.

How could it be enforced?

Ban sales of TVs from manufacturers who don't comply.

What's the problem?

Gas-guzzling cars are a major cause of CO₂ emissions.

Solutions?

Limit the number of miles people can drive a year.

Would be unpopular with drivers. X

OR

Tell people to buy more fuel-efficient cars.

People might not listen. ?

OR

Set high fuel-efficiency standards that all car manufacturers must meet. ✓

Who's responsible?

Government and manufacturers.

How could it be enforced?

Penalise manufacturers who don't meet high standards.



FL@33

There are lots of things the Government can do to tackle climate change and these two examples show that some decisions will be easier for them to make than others. Banning standby would be quite straightforward because it wouldn't change people's lives radically; however,

finding ways to reduce CO₂ emissions from cars could be more difficult because cars are an important part of many people's lives. It shows that what's needed is a package of policies – some big, some small – which will work together to achieve a steady reduction in our emissions every year.

How laws are made: the Climate Change Bill

The path to a Climate Change law

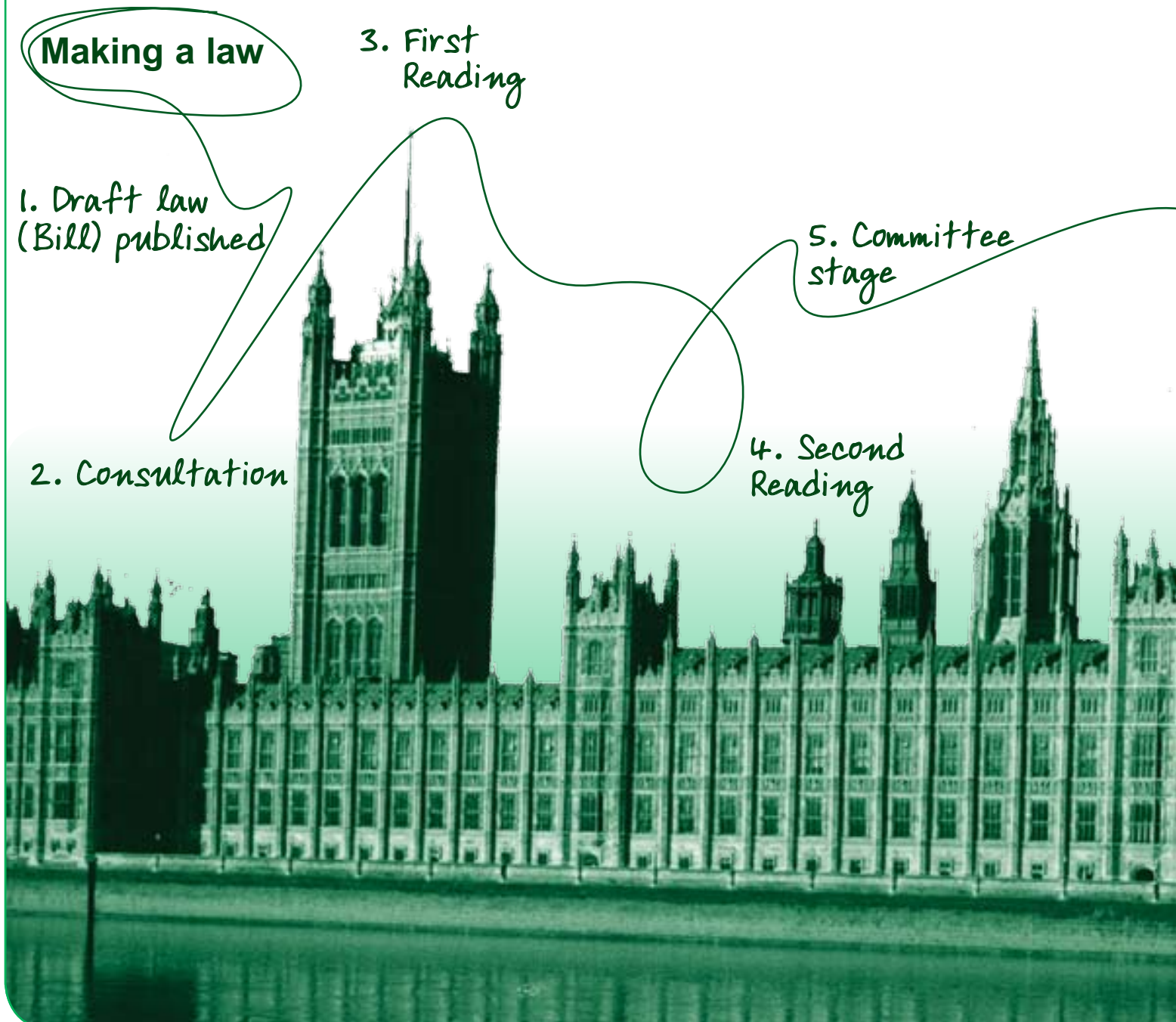
All the UK's political parties support long-term targets to bring down CO₂ emissions in the UK by at least 20 per cent by 2010 and 60 per cent by 2050. But since 2000 the UK's emissions have gone up by 2 per cent, which means these targets are becoming more difficult to achieve.

That's why Friends of the Earth is campaigning for a new law to tackle climate change in the UK. It aims to make it legally binding for the Government (and future governments) to bring down CO₂ emissions by at least 3 per cent every year – the minimum that research has suggested is needed from developed countries like the UK to avoid dangerous climate change. Because countries like the UK have historically pumped out more CO₂ than developing countries, it's fair that we should start by making the biggest cuts.

The law would:

- need to make clear what cuts must be achieved each year
- require annual progress reports
- require Ministers to take action if emissions go off track.

By November 2006 more than 130,000 people had joined Friends of the Earth's campaign to ask Government to introduce a climate change law. The Government responded to what people had to say and as a result introduced plans for a law (a Bill). The details of the Climate Change Bill are now being discussed but the signs are that it will become law in 2008. As the Bill passes through Parliament Friends of the Earth will be asking people to call on their MP to ensure that the law is strong enough to meet the UK's climate challenge.



How laws are made: the Climate Change Bill

How is a law made?

Most UK-wide laws are made in the Houses of Parliament in London. Parliament spends a lot of time considering a Bill before finally agreeing it and before it is put into practice. Although it seems complicated and time-consuming it's part of a democratic process which has existed for hundreds of years.

Hello Bill

Most Bills are put forward by the Government. Often the Government will set out its plans and ask people's views on them. This is called a **consultation**.

Based on the feedback the Government will provide more detail in the Bill that it introduces to Parliament. The first time that a Bill is announced (usually in the House of Commons) is called the **First Reading**.

At the **Second Reading**, which usually happens two weeks later, MPs get a chance to debate and discuss the general principles of the Bill. They will then vote to decide whether the Bill is one that Parliament should discuss further or simply reject.

The nitty-gritty

Next the Bill is given to a group of MPs chosen to sit down together in a committee to examine the detail of the Bill and suggest changes, which are called amendments.

The committee reports back to the House to give all MPs the chance to suggest further amendments to the Bill. This is the **Report Stage**.

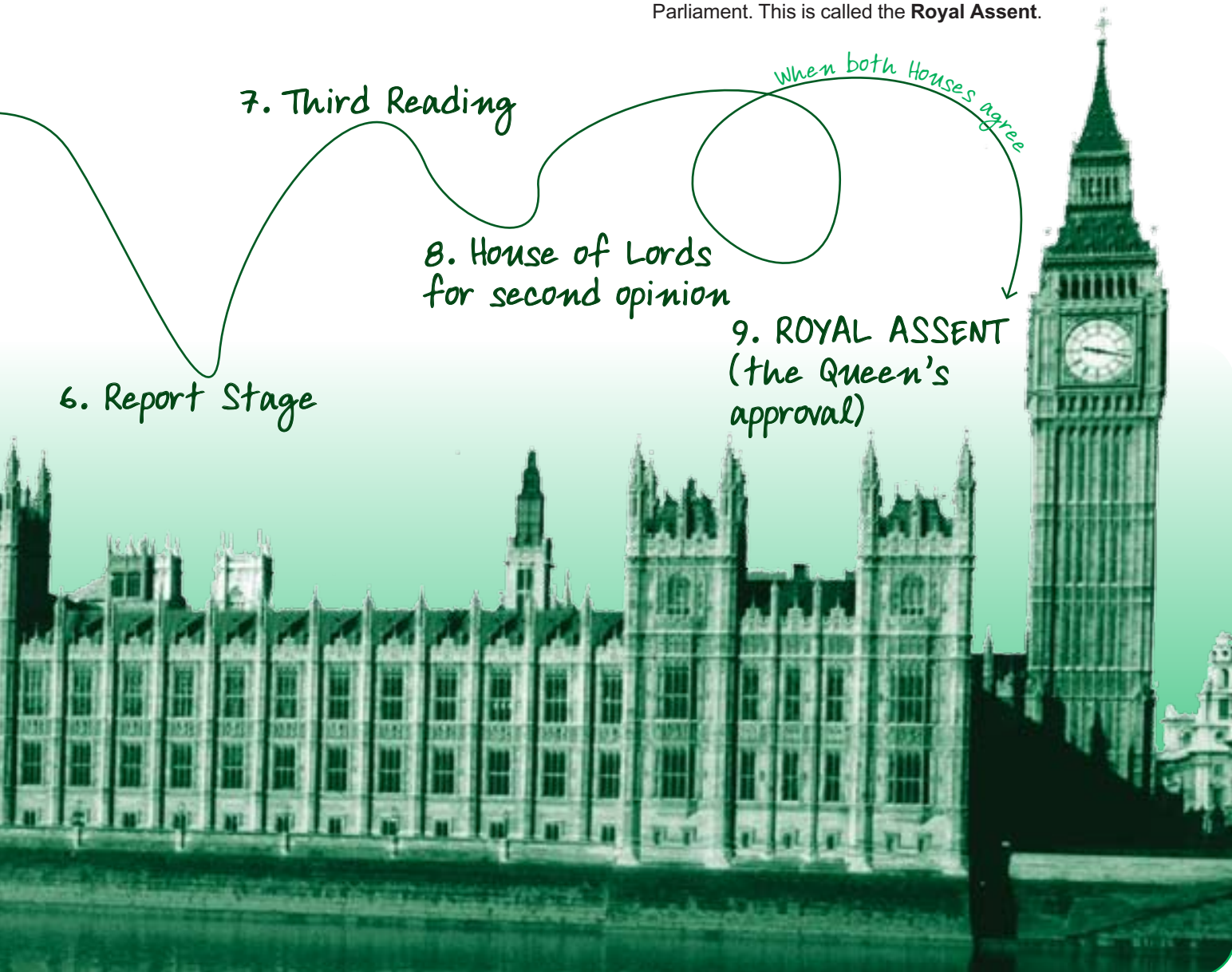
The **Third Reading** is the final chance for MPs to debate whether or not to pass the Bill after all amendments have been made.

Passing it over

Once the House of Commons has agreed on it, the Bill is passed to the House of Lords, in order to get a "second opinion". If the Lords agree with the House of Commons the Bill becomes a law. If they make amendments they send the Bill back to the Commons until both Houses agree.

Ta-dah!

It is only after the Queen has given her seal of approval that the Bill finally becomes a fully-fledged law or Act of Parliament. This is called the **Royal Assent**.



How laws are made: the Climate Change Bill

How individuals and organisations can create change

Your Member of Parliament (MP) represents you and everyone else who lives in your area. If you are concerned about something you can ask your MP to speak about it in Parliament – you can do this by email, letter and phone or in person. But sometimes they will be more likely to do what you ask if you get together with other people who want the same thing.

A non-governmental organisation (NGO) is an organisation whose members are not employed by a government. There are thousands of NGOs in the UK and around the world – some big, some small, working on many different issues.

As an NGO, Friends of the Earth helps people find solutions to environmental problems. Part of this work involves lobbying – asking the Government to make changes to policies that will benefit people and the environment.

Sometimes lots of NGOs who want to achieve the same thing will get together in a coalition. For example the **Make Poverty History** coalition was formed in 2005 to put pressure on governments around the world to end global poverty. The campaign mobilised massive public support with rallies, the wearing of white wristbands and the Live8 concerts which were watched by around 3 billion people worldwide.

Crowds called on world leaders to Make Poverty History in 2005.



Glossary

Act of Parliament (or Act)

– the final version of a Bill, which becomes law.

Bill – a proposal for a new law.

Campaign – a series of actions intended to achieve a specific goal or raise awareness of an issue.

Coalition – a temporary union between different groups.

Democracy – a system of government based on the principle of majority decision-making.

Government – a group of people with the power to propose and enforce laws. In the UK the Government is formed by members of the winning party at a General Election.

Lobbying – trying to influence government policy.

Member of Parliament (MP)

– person elected to represent people's views in an area of the UK.

Minister – person chosen by the Prime Minister to work in a Government department, for example Minister for Education, Health or the Environment.

Non-governmental organisation (NGO) – a local, national, or international organisation whose members are not employed by a government.

Parliament – law-making body which holds the Government to account and votes on what the Government proposes. Like most Parliaments in the world, the UK has two chambers: the House of Commons which is elected and the House of Lords which, for historical reasons, is not elected.

Policies – a programme of actions the Government introduces to solve a problem.

How laws are made: the Climate Change Bill

Activities

Educators' notes

In March 2007 the Government published plans for a new climate change law; the activities in this section help students explore the purpose of laws, the role of individuals and Government in implementing solutions to climate change, and the potential of individuals and organisations to influence policy.

The activities in this section will work best when run as a series of lessons, but activities one and four can stand alone.

Other useful resources

The Parliamentary Education Unit produces an educational resource about Parliament and Government, which develops some of the themes explored here. *You've got the power* for 11-18 year olds is available to order at www.explore.parliament.uk/Parliament.aspx?id=363

Activity 1: Fact finding: the purpose of laws.

Time: 40 minutes (or 2 x 20 minute lessons)

What you need: Activity sheet, access to teachers/staff for part 1, internet access for part 2

Curriculum links: Citizenship (PSE/PSD/PSHE), ICT.

Learning aim: To understand why we have rules and laws, how they are made and enforced.

Part 1: Think of some rules that apply in your school/youth group (eg no running in the corridors or no food in the library). Try and find out:

- Who decided each rule?
- What problem were they trying to solve?
- Did they consult with others about the rule?
- How is the rule enforced?

As a group, discuss what might happen if these rules did not exist (eg people run in to each other or slip over in the corridors, books get damaged/messy and need replacing more often). Without rules, how else could these problems be solved? Which approach do you think is most effective?

Part 2: Now run through the same process but choose a UK law as the point of research/discussion.

Activity 2: Debate: individual action or legislation?

Time: 60 minutes

What you need: Discussion notes from Activity 1.

Curriculum links: Citizenship (PSE/PSD/PSHE), English.

Learning aim: To discuss issues and to express and justify opinions that are not necessarily their own. To consider the role/effectiveness of individuals versus government in implementing solutions to climate change.

Using the discussion from Activity 1 for inspiration, debate the following:

“ We should take responsibility for tackling climate change in our own lives; we do not need the Government to pass a law to make us do so.

Split into two teams, one arguing for and one against. Once each group has presented its case, take a vote.

You may find it useful to consider the following questions:

- What makes people change their behaviour?
- Do people need an incentive (eg saving money) in order to do something?
- Some businesses will put making a profit before tackling climate change. How can individuals influence businesses to do the right thing?

Extension activity

Explore the other side of the argument – pair up with someone from the opposing team and swap roles.

How laws are made: the Climate Change Bill

Activities

Activity 3: Group work: your climate law.

Time: 2 x 60 minute lessons

What you need: Activity sheet (opposite), ideas and research from earlier activities*, internet access, stationary.

Curriculum links: Citizenship (PSE/PSD/PSHE), Science, Geography, ICT, English.

Learning aim: To explore the causes and effects of climate change, and its solutions at a UK level. To draft a climate change law. To work efficiently as a member of a group in order to fulfill a task.

Using the activity sheet and prompt questions opposite as a guide, draft your own climate change law for the UK.

Here's an idea: Survey other students, teachers and parents and find out what they would want included in a climate change law.

* Use the ideas and information generated from these earlier Shout about activities as background to this activity:

- Booklet 01: Activity 2: where does your electricity come from?
- Booklet 02: Activity 2: renewable energy solutions.
- Booklet 03: Activity 2: design an energy-efficient house.
- Booklet 04: Activity 1: travel survey.
- Booklet 04: Activity 2: what are the solutions?
- Booklet 05: Activity 1: the purpose of laws.
- Booklet 05: Activity 2: individual action or legislation?

Activity 4: Practical: plan a campaign.

Time: 45 minutes

What you need: Internet access, stationary, art materials (optional), *Shout about* DVD.

Curriculum links: English, Citizenship (PSE/PSD/PSHE), Art and Design, ICT.

Learning aim: To explore how individuals and organisations can create change. To understand the thought process involved in planning a campaign.

Using a local issue that you feel passionate about (perhaps you want a new skate park or you want your local council to improve recycling), plan and design your own campaign.

Remember to think about your campaign message (ie what you want your campaign to achieve), who your campaign will need to appeal to and be directed at, what evidence there is to support your campaign, how you can get other people involved and how you will fund the campaign.

The campaign should include ideas for a poster to promote the campaign locally.

Try these for some handy hints:

Shout about DVD: The Big Ask campaign

www.ukyouthparliament.org.uk/myp_handbook/Planning_a_Campaign.pdf

www.demgames.org/index_noflash (go to the Captain Campaign game)

Extension activity

Bring your draft law to life, using the *How laws are made* section for guidance; re-create the Parliamentary process in your school or youth group, take your draft law through the process and see if you can get it passed. You could even invite your local MP to get involved.

Track the progress of a Bill through Parliament at www.publications.parliament.uk/pa/pabills.htm

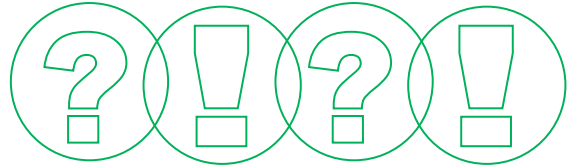
Extension activity

Invite a local campaigner in to give a talk. Check out your local newspapers or do an internet search to find a local campaigner. Don't forget Friends of the Earth's local group network www.foe.co.uk/learning/educators/shout_about/local_group_speakers.html

Booklet 05

How laws are made: the Climate Change Bill

Draft your own UK climate change law.



Think carefully about the problem you are trying to solve. Use the table below to help you plan your law and record the ideas from your group:

What is the aim of your law?

The only way to stop climate change getting worse is to cut down on the greenhouse gases we emit. Your law must say what you are hoping to achieve and by when.

? Here are some questions to get you thinking:

- Will you set one overall target to cut emissions by 2050?
- Or will you have annual targets too?
- How much will you aim to cut emissions by?
- The Government is proposing a 60 per cent cut in CO₂ emissions by 2050. Is that enough?

! Make a note of your ideas:

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Coming up with a plan.

Set out clearly what must be done to achieve your aim; for each solution, decide who would be responsible for doing it **eg** if you want people to drive more efficient cars will you make manufacturers build them or encourage drivers to buy them by offering grants?

? Here are some questions to get you thinking:

- What energy saving measures could you suggest?
- Will you set a target to generate an amount of electricity from renewable energy **eg** wind, solar?
- What about new houses/buildings – would you insist that they are energy efficient?
- Could your law require individuals to do their bit, perhaps by issuing “carbon rations” to every household?

! Make a note of your ideas:

Solution

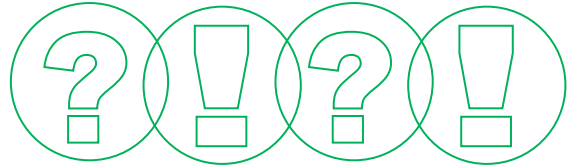
Who's responsible

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Booklet 05

How laws are made: the Climate Change Bill

Draft your own UK climate change law.



How will your law be enforced?

If someone breaks the law by speeding they can be fined, or if they are too dangerous they will have their driving license taken away. What is the best way to get people, businesses and future governments to stick to your law?

? Here are some questions to get you thinking:

- Do you need a deterrent (like fines) if they do the wrong thing, or can you offer incentives (like grants/money) to do the right thing?
- If your punishments are too severe would people turn against your law?
- If they are too weak, would people just ignore the law and not cut emissions?

! Make a note of your ideas:

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Reporting back: how will you monitor whether your law is working?

You will need some way to make sure your law is actually working and perhaps you want to tell people about it too.

? Here are some questions to get you thinking:

- Will you just measure the total amount of CO₂ emitted?
- Or do you need a way of checking that the solutions you suggested are being carried out?
Eg your law might have said that every house and business had to have energy efficient light bulbs. How will you know if they have?
- How will you make the results public – maybe you could have an announcement in every weather forecast?

! Make a note of your ideas:

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Explore the debate

Guardian Unlimited, March 2007

<http://environment.guardian.co.uk/climatechange/story/0,,2032712,00.html>

This article outlines the Climate Change Bill and gives the differing views on whether the proposed law is strong enough.