

Module 5: 'Climate Change Champions' (Climate Change Mitigation)

KS3 – Scheme of Work

Overview: This Module is set as a series of challenges, focusing on the following topics:

1. Understanding your carbon footprint
2. Reducing CO₂ emissions
3. Renewable energy
4. Sustainable living & citizenship

Accessing the Module: The Module is split into a series of challenges. You can choose to do as many or as few as you like. To cover the Module you would **need to complete at least 4 challenges**, one from each of the 4 topics addressed in the list above.

Challenge	Link to topic(s)	Challenge Type	Target audience
Design a school allotment	1, 4	Research, decision making, designing	All
Renewable energy kite	1, 3	Research, creative presentation	All
Traffic & travel debate	1, 2, 4	Discussion, debate, communication	All
Bag-free village	4	Research, presentation, communication, creativity	All
Design a community classroom	4	Designing, research, decision making	All
School manifesto, anthem or sculpture	4	Analysis, representation, creativity	All
Community broadcast	4	Research, enquiry, action, presentation	All
Local news report for 2060	2, 4	Research, presentation, Communication	All
Designing a carbon neutral house	1,2,3,4	Research & Calculation	Higher ability G&T
Food miles debate	1,2,4	Discussion & Presentation	All
Recycling factoids	1,2,3,4	Calculation of energy saving	All

Most children will: complete each given challenge and provide evidence of their contribution through the use of diary entries. Specifically, they will:

- engage with and reflect on different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems
- research, plan and undertake enquiries into issues and problems using a range of information and sources
- express and explain their own opinions to others through discussions
- represent the views of others, with which they may or may not agree
- explore creative approaches to taking action on problems and issues to achieve intended purposes
- work individually and with others to negotiate, plan and take action on citizenship
- reflect on the progress they have made, evaluating what they have learned, what went well, the difficulties encountered and what they would do differently

Some children will not have made so much progress and will: complete some of the given challenges and provide evidence of some contribution through the use of diary entries. Specifically, they will:

- engage with different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems
- research into issues and problems using given information and sources
- express their own opinions to others through discussions
- explore creative approaches to taking action on problems and issues
- work individually to reflect on the progress they have made, evaluating what they have learnt, what went well, the difficulties encountered and what they would do differently

Some children will have progressed further and will also: complete each given challenge and the extension tasks and provide evidence for all of their contributions through the use of diary entries. Specifically, they will:

- Analyze and evaluate sources used, questioning different values, ideas and viewpoints and recognizing bias,
- Express and explain their own opinions to others through discussions, formal debates and voting,
- Communicate an argument, taking account of different viewpoints and drawing on what they have learnt through research, action and debate,
- Justify their argument, giving reasons to try to persuade others to think again, change or support them,
- Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources appropriately,
- Analyze the impact of their actions on communities and the wider world, now and in the future,



- Reflect on progress, evaluate learning, what went well, the difficulties encountered and what they would do differently.

Learning Objectives	Cross Curricular & Other	Key Resources:
<p>Participating actively in different kinds of decision-making and voting in order to influence public life.</p> <p>Weighing up what is fair and unfair in different situations, understanding that justice is fundamental to a democratic society and exploring the role of law in maintaining order and resolving conflict.</p> <p>Considering how democracy, justice, diversity, toleration, respect and freedom are valued by people with different beliefs, backgrounds and traditions within a changing democratic society.</p> <p>Understanding and exploring the roles of citizens and parliament in holding government and those in power to account.</p> <p>Exploring different kinds of rights and obligations and how these affect both individuals and communities.</p> <p>Investigating ways in which rights can compete and conflict, and understanding that hard decisions have to be made to try to balance these.</p> <p>Appreciating that identities are complex, can change over time and are informed by different understandings of what it means to be a citizen in the UK.</p> <p>Exploring the diverse national, regional, ethnic and religious cultures, groups and communities in the UK and the connections between them.</p> <p>Considering the interconnections between the UK and the rest of Europe and the wider world.</p> <p>Exploring community cohesion and the different forces that bring about change in communities over time.</p>	<p>Cross curricular key concepts, processes, content, opportunities</p> <ul style="list-style-type: none"> • Creativity • Interpretation • Participation • Collaboration • Innovation • Exploring & experimenting • Taking risks • Learning from mistakes • Competence • Analysing • Evaluating • Cultural understanding • Critical understanding • Critical thinking and enquiry • Reflection • Presentation • Form convincing arguments • Advocacy and representation • Take action • Make links – system thinkers • Developing own views and expressing reasons judgements • Work collaboratively • Community cohesion • Engage with the environment • Multidisciplinary • Diversity 	<p>Sustainable Living Challenge pupil diaries, planet poster, footprints, smiley faces, access to computers/internet – may be helpful to book access in advance, white board or projector to show videos and resource links, a video, paper for posters, pens & colouring pencils or paints, sustainable school posters</p> <p>Sustainable school assemblies can be used for reference or as part of the lesson: http://www.oneplanetliving.org/</p> <p>Carbon Neutral House Challenge Instructions and sheets A - F</p> <p>Recycling & Food Miles Challenges 'Factoids' and Power Point files</p> <p>Overall Outcome:</p> <p>Students will become environmentally and climate change aware citizens; become empowered with the knowledge and experience to find ways to help tackle climate change.</p>
	<p>Enterprise skills, attitudes, qualities: Decision making Leadership Risk management Presentation Self reliance Open mindedness Respect for evidence Pragmatism Commitment to making a difference Adaptability Perseverance Determination Flexibility Creativeness Ability to improvise Autonomy Willingness to make things happen</p>	<p>Links to external agencies and business: Groundwork: http://www.groundwork.org.uk/ Local allotment association Local radio station City Learning Centre Energy Agency Environment Agency One World Centre Local councillors Local businesses MP College or university architect / interior design students or local architects / interior designers School governors</p>



Sustainable Living Challenge

To deepen pupils' understanding of climate change and create an awareness of 'one planet' living through the use of the National Framework for Sustainable Schools '8 Doorways' and eco-footprinting. In the overall 'Sustainable Living Challenge,' pupils focus on how to reduce their eco-footprint using the National Framework for Sustainable School '8 Doorways.'

'8 Doorways' include:

- Food & Drink
- Energy & Water
- Purchasing & Waste
- Travel & Traffic
- Purchasing & Waste
- Buildings & Grounds
- Inclusion & Participation
- Local Well being
- Global Dimension

The 'Sustainable Living Challenge' **can be done as a year group with classes working as a team or it can be done as a class with individuals or small groups working as a team.** It is set up as a game. Each group will have a poster (A1 size for a class working as a team, A3 size for groups / individuals working as a team) with 3 planets on, each planet is covered with footprints. The pupils receive **FOOTPRINT POINTS** for completing each doorway challenge– these footprint points allow pupils to take away footprints from the planet poster. There are also **PEOPLE POINTS** awarded for demonstrating specific skills, e.g. for the extension / homework tasks being completed.

The overall aim of the 'Sustainable Living Challenge' is to **reduce the FOOTPRINTS** from the poster (at least to only one planet!) and to have as **many PEOPLE points** surrounding your planet. Depending on how you set up the subsequent challenges, you will need to decide how many footprints to put on the 3 planets to start.

Teams / individuals will have a **CHALLENGE DIARY** with 8 different doorway challenges. When each one is completed, they are awarded FOOTPRINT & PEOPLE points. The diary can be changed to suit each schools' needs. The student diary is a tool for pupils to record notes on aspects of each doorway challenge - pupils should summarise what they have done for each doorway challenge on the relevant pages, and teachers can award points in the diary. Teachers should also INITIAL the key skill words pages.

The doorway challenges are structured to enable flexibility of delivery depending on your school timetable. Some may be completed in 1 hour, some could be completed over a number of weekly sessions. You may wish to focus only on 3 big doorway challenges and complete these over a specific period of time, or you may give certain groups / classes one doorway challenge to work on.

This 'Sustainable Living Challenge' could also be completed as a suspended timetable whole day activity. Each doorway challenge links to the National Framework for Sustainable Schools assembly series. The **assembly activities make for good starter activities** to introduce each doorway challenge - **for some doorway challenges, it is vital to do this as a starter.**

***NOTE: 'Sustainable Living Challenge' documents available to download**



Learning Objectives	Suggested Activities	Doorway Link	Extension	Outcomes
(1) Introduction (20 mins)				
<p>Engage with and reflect on topical and controversial issues and problems</p> <p>Analyze and evaluate sources used, questioning different values, ideas and viewpoints.</p> <p>Express and explain their own opinions to others through discussions.</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others.</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>	<p>Set the context of climate change why its important – why we all need to ACT now – Show You Tube video: 'All is One' film clip http://www.youtube.com/watch?v=IHvH3MPgZDo and discuss</p> <p>-OR-</p> <p>http://youtube.com/watch?v=E-3YpBfO2Ys&feature=Playlist&p=E6C4CB24D5A4E19C&index=6</p> <ul style="list-style-type: none"> • Introduce the theme of 'One Planet Living' & what is an eco-footprint http://www.youtube.com/watch?v=5vL--hesPJU (6 mins) • All individuals log on to WWF to complete their eco-footprint http://footprint.wwf.org.uk/ -OR- use 'Footprint Futures' http://www.footprintfutures.org.uk/index.php • Results should be recorded in diary – if done as a group or class the group / class average will need to be worked out and entered as an average – discuss differences. • Give a brief overview of each 'doorway' using the Sustainable Schools framework– http://www.northumberland.gov.uk/default.aspx?page=7073 • Explain that an important aspect of the challenge is to see how well they can demonstrate a variety of enterprise and employability skills alongside completing the challenge. (see list at end, these skills are also evident in the CHALLENGE DIARIES – for each skill signed by the teacher they will be awarded a people point • Explain the aim of the challenge game – show poster 3 planets full of footprints (you can puts as many or as little footprints – this will depend on the way you are organising the challenge and how many pupils / groups you are involving). The aim is to have the least FOOTPRINTS possible and to have one planet full of happy PEOPLE . Explain completing each challenge will allow you to get rid of FOOTPRINTS, and add extra PEOPLE points which are awarded for extension work or homework or demonstrating specific skills. <p>Use the student diary to give a brief overview to each of the challenges (these can be selected / deleted / changed as appropriate). Remind pupils of the time involved for each challenge. EACH GROUP WILL ALSO REQUIRE A CHALLENGE POINTS SCORE</p>			<p>Pupils will express an opinion and providing reasons for their opinion.</p> <p>Pupils will demonstrate an understanding of one planet living, the sustainable doorways, and how individuals eco footprints impact on the planet we all live in</p>
(2) CHALLENGE 1: *Getting smart about food (1-2 Hours)				
<p>Research, plan and undertake enquiries into issues and problems using a range of</p>	<p>Challenge Activities</p> <p>*indicate the Sustainable Schools assemblies that make good starters into the 'doorways'; these have links that will help with each of the challenges</p>	<p>Food & Drink – e.g. school allotment</p>	<p>Write a letter to a supermarket saying why you would or</p>	<p>Pupils will plan and design an allotment for their school, they will research</p>



<p>information and sources</p> <p>Communicate an argument, taking account of different viewpoints and drawing on what they have learnt through research, action and debate</p> <p>Justify their argument, giving reasons to try to persuade others to think again, change or support them</p> <p>Represent the views of others, with which they may or may not agree.</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources appropriately</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>	<p>http://www.sustainableschools-ne.org.uk/Documents/SustainableSchoolsAssemblyGuide.pdf</p> <p>Design an allotment for your school so you can produce local food that can be cooked in school. Having maps of your school grounds would also be helpful. You will need to:</p> <ul style="list-style-type: none"> - Decide where to situate your allotment – why have you made this decision? - Decide whether your allotment will be ORGANIC – Give your reasons (go through the sheet on thinking organic) <p>Research what to grow and when to start planting (see seasonal food table) –think about growing plants and vegetables and fruits that are native to your local area. Research what types of food you could possibly grow to reflect other cultures or traditions. Look at this web site http://www.rhs.org.uk/schoolgardening/studentshome/default.aspa#crumbtrail</p> <p>Find out about composting (look at compost sheet)</p> <p>Draw a map of your planed allotment – clearly label all areas – use a key to identify all areas of your allotment. http://www.vegetableexpert.co.uk/ http://www.soilassociation.org/</p> <p>Points for completing challenge = 5 footprints</p> <p><u>Business or community link involvement</u> For the challenge you could invite in members from local allotment associations or Groundwork UK</p>		<p>wouldn't want to buy organic food. = 1 footprint</p> <p>Produce a poster to persuade others to try organic food = 1 footprint</p> <p>Create a seasonal menu using produce from your allotment (see seasonal food table) = 1 footprint</p>	<p>organic growing, seasonal food to grow and what are local fruit and vegetables.</p> <p>Pupils also may research the relationship of plants fruit and vegetables to culture and traditions</p>
---	--	--	--	--

(3) CHALLENGE 2: *Saving energy & water - Energy kite (1 hour)

<p>Research, plan and undertake enquiries into issues and problems using a range of information and sources</p> <p>Express and explain their own opinions to others.</p> <p>Analyze the impact of their actions</p>	<p>Research the range of renewable energy sources using the links below – record your findings in a diary:</p> <p>http://www.eia.doe.gov/kids/energyfacts/sources/renewable/renewable.html</p> <p>Select 4 renewable energy sources – create a design with impact to illustrate each renewable energy source. Each design should then be transferred to one section of the kite. Additional information about the energy source can be added to the kite tails. (NOTE: the kite template can be blown up into larger sizes than A4</p>	<p>Energy & Water – e.g. renewable energy kite</p>	<p>Create a poster for one of the top tips for saving energy at using images and no more than 10 words (create a slogan, too!)</p> <p>1 footprint for each top tip poster</p>	<p>Pupils will express and record opinion, providing reasons for their opinion.</p> <p>Pupils will understand the range of renewable energy sources available and some may be able to describe in detail how they operate.</p>
---	--	--	---	--

<p>on communities and the wider world, now and in the future</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p>	<p>if you wish).</p> <p>Make a kite (it can be as big or as small as you want) see kite sheet</p> <p>If you are doing the challenge as a class, try making a 'real' kite that will fly (you will need more resources to make a real one!) – follow this link - http://www.skratch-pad.com/kites/make.html</p> <p>Display your kites in a prominent place in school</p> <p><u>Business or community link involvement</u></p> <p>Invite your staff from your Local Authority (or a Local Councillor) to come in to support this lesson, especially if making a whole-class kite.</p>			
--	---	--	--	--

(4) CHALLENGE 3: *Sustainable travel to school - Traffic & Travel debate

<p>Engage with and reflect on different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems</p> <p>Analyze and evaluate sources used, questioning different values, ideas and viewpoints and recognizing bias.</p> <p>Express and explain their own opinions to others through discussions, formal debates. and voting</p> <p>Communicate an argument, taking account of different viewpoints and drawing on what they have learnt through research, action and debate</p> <p>Justify their argument, giving reasons to try to persuade others to think again, change or support them</p> <p>Represent the views of others, with which they may or may not</p>	<p>Prepare the case FOR or AGAINST for a class debate. Choosing one of the following arguments:</p> <p>KS3</p> <ul style="list-style-type: none"> • It is more fun to walk to school than be driven? • It is more comfortable to walk than drive? • People should take responsibility for the pollution from motor vehicles. • There should be compulsory emission testing for cars every year. <p>Points for completing challenge = 5 footprints</p> <p><u>Business or community link involvement</u></p> <p>Ask a range of parents and members of the local community to come in and chair the debate</p>	<p>Travel & Traffic – e.g. class debate</p>	<p>Deliver your case as a real debate – take a class vote on who wins the argument. (Points awarded for extension activity = 2 people point for delivering. 1 footprint if your case wins the debate)</p> <p>Complete word search sheet – 1 footprint</p> <p>Make a Sustainable Transport Mobile – use collage- and hang it in places where people visit – 1 footprint</p>	<p>Pupils will express and opinion, providing reasons for their opinion.</p>
---	--	---	---	--

<p>agree. work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources appropriately</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>				
<p>(5) CHALLENGE 4: *Make fair trade your habit (4 hours)</p>				
<p>Engage with and reflect on different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems</p> <p>Research, plan and undertake enquiries into issues and problems using a range of information and sources</p> <p>Analyze and evaluate sources used, questioning different values, ideas and viewpoints and recognizing bias.</p> <p>Communicate an argument, taking account of different viewpoints and drawing on what they have learnt through research, action and debate</p> <p>Justify their argument, giving reasons to try to persuade others to think again, change or support them</p> <p>Represent the views of others,</p>	<p>Make your place (town or village) an non plastic bag place</p> <p>Research how the use of plastic bags affects the environment LOCALLY AND GLOBALLY</p> <p>Research attitudes to the use of plastic bags and the proposal of your town / village becoming a non plastic bag place. (Use of questionnaire / survey / video).</p> <p>Develop an action plan of how you can encourage your community to go non-plastic bag</p> <p>Create a presentation showing your findings to your school leadership team, Governors and selected local traders.</p> <p>Points for completing challenge = 10 footprints</p> <p><u>Business or community link involvement</u> One World Centre, Local Traders, Local council, MP</p>	<p>Purchasing & Waste – e.g. non plastic bag community</p>	<p>Contact relevant bodies to arrange an appropriate time to deliver presentation. Deliver presentation. 2 people points</p> <p>Design a school Bag for life – 1 footprint</p> <p>Design a school Bag for life Logo – 1 footprint</p>	<p>Pupils will create a questionnaire or survey to investigate local opinions and use this research to develop a plan of action for a community project. They will create a presentation to be delivered to the school leadership team.</p>



<p>with which they may or may not agree.</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources appropriately</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>				
--	--	--	--	--

(6) CHALLENGE 5: *A sustainable school estate (1 hour)

<p>Engage with and reflect on different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems</p> <p>Research, plan and undertake enquiries into issues and problems using a range of information and sources</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted</p>	<p>Design a new 'community classroom' space that can be used for activities in the school curriculum but also as a place for community learning to brings all the community together. Having maps of your school grounds would also be helpful.</p> <p>Create a spider diagram listing all the important aspect of being part of your community (think about all people in your community – old, young etc and what are their needs.) List ideas on how your new classroom could meet these needs. COMPLETE COMMUNITY CLASSROOM SHEET</p> <p>Draw up your design clearly identifying all the details needed for your community classroom. Identify where the community classroom is situated in your school grounds – you could use school maps. Remember it could be outside or inside the building. Complete the resource sheet needed and explain what they are for (the need they fulfil) and where they are situated. You also might want to think of any related cost to see if they are a feasible project and do the resources impact on the environment.</p> <p>Points for completing challenge = 5 footprints</p> <p><u>Business or community link involvement</u> Architect, interior designer (see local colleges if their students could come in and support</p>	<p>Buildings & Grounds – e.g. community classroom</p>	<p>Create a community lesson that could be delivered in the community classroom – write down all the activities and how you would involve pupils and the community working together. (You could act the lesson out) = 1 people point</p> <p>Create a poster advertising your new classroom and its activities to encourage a target community group = 1 footprint</p>	<p>Pupils will discuss community needs, to influence the creation of a community classroom</p>
--	---	---	---	--

<p>change, using time and resources appropriately</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>				
<p>(7) CHALLENGE 6: *Decisions in our school (1 hour)</p>				
<p>Represent the views of others, with which they may or may not agree.</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources appropriately</p> <p>Analyze the impact of their actions on communities and the wider world, now and in the future</p>	<p>Write a short statement saying what you think your school ethos is.</p> <p>Think about who makes the decisions in school and what types of decisions have to be made. Look at the list from the **Decisions in our school assembly THE TEACHER SHOULD SELECT ONES THAT ARE PARTICULAR TO THEIR SCHOOL. Complete the WHO DECIDES SHEET – detailing who makes the decisions on key aspect of school life at the moment and how do pupils contribute to this or how could they contribute.</p> <p>Think about how your school demonstrates respect for human rights, freedoms, cultures and creative expression. Complete think sheet</p> <p>Create a school manifesto or poem or school anthem (song, rap etc) or design a sculpture (to be placed in the school entrance) to show how your school includes all pupils and respects human rights, freedoms, cultures and creative expression. This could be displayed at the front of the school.</p> <p>Points for completing challenge = 5 footprints</p> <p><u>Business or community link involvement</u> Head teacher, school bursar, school governor</p>	<p>Inclusion & Participation – e.g. school Manifesto, anthem or sculpture</p>	<p>Extension Perform your song / rap etc to an audience = 1 people point Make your sculpture using only recycled materials = 3 footprints</p>	<p>Pupils will understand who is responsible for making decision in the school and understand how they can contribute to the decision making in their school.</p> <p>Pupils will discuss how their school considers: human rights, freedoms, cultures and creative expression.</p>
<p>(8) CHALLENGE 7: *Happiness and well being</p>				
<p>Research, plan and undertake enquiries into issues and problems using a range of information and sources</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action</p>	<p>Use the **Happiness and well being assembly as starter to introduce the challenge.</p> <p>Complete the what makes me happy & what makes a happy community sheet</p> <p>Watch http://www.youtube.com/watch?v=t-otqBgCYyc and then complete the happy index questionnaire at http://www.happyplanetindex.org/ record finding in diary sheet.</p> <p>Create a 'Community Broadcast' for your local radio / podcast / banner on the importance of being happy & a top ten list of creative ways to be happy.</p> <p>Points for completing challenge = 5 footprints</p>	<p>Happiness & Well-being – e.g. community broadcast</p>	<p>Get 2 members of the school staff to complete their happiness index = 2 people</p>	<p>Pupils will investigate well being and happiness individually and as a community.</p> <p>They will share opinions and create a community broadcast.</p>



on issues	<p><u>Business or community link involvement</u> Contact your local radio to see if you can get your broadcast aired</p>			
(9) CHALLENGE 8: *Climate chaos				
<p>Engage with and reflect on different ideas, opinions, beliefs and values when exploring topical and controversial issues and problems</p> <p>Research, plan and undertake enquiries into issues and problems using a range of information and sources</p> <p>Express and explain their own opinions to others through discussions, formal debates. and voting</p> <p>Communicate an argument, taking account of different viewpoints and drawing on what they have learnt through research, action and debate</p> <p>Represent the views of others, with which they may or may not agree.</p> <p>Explore creative approaches to taking action on problems and issues to achieve intended purposes</p> <p>Work individually and with others to negotiate, plan and take action on citizenship issues to try to influence others, bring about change or resist unwanted change, using time and resources</p>	<p>Review the main causes and effects of climate change using www.yourclimateyourlife.org.uk/ Complete the <u>cause and effect sheet</u>. In the third column, think about what would happen in the extreme if we do nothing. Think about how each aspect could affect our local area.</p> <p>Write a script for a news report from your local region in the year 2060 illustrating the effects of climate change in your area – act it out – make a video – get it on You Tube (Parental consent required)</p> <p>Points for completing challenge = 5 footprints</p> <p>As an extension, try 'My 2050' resource from the Department for Energy & Climate Change http://my2050.decc.gov.uk/ 'Can you reduce our CO2 emissions to 20% of 1990 levels and help to avoid dangerous climate change?'</p>	<p>Global dimension – e.g. local news report 2060</p>	<p>Get your script on You Tube = 3 footprints</p>	<p>Pupils will examine the cause and effect of climate change and how this may affect our local area. Consider the possible impacts in future years.</p>

appropriately				
---------------	--	--	--	--

Zero Carbon House Challenge

Learning Objectives	Suggested activities	Extensions	Outcomes	Key resources
(1) What are the typical energy requirements				
To be able to calculate the weekly energy needs of a typical family house.	In groups, decide on the electrical appliances that are essential for a house and how often they would be used each week. Research the typical power rating of these appliances and use these values to calculate the weekly energy consumption.	Use a spreadsheet to calculate the energy needed to run these appliances each week.	Groups will have an understanding of electrical energy needs and power ratings of appliances. They will be able to calculate energy consumption.	Resource sheet 'A' in Zero Carbon House pack (downloadable from Lead Schools site) http://www.daftlogic.com/information-appliance-power-consumption.htm
(2) How can we reduce the energy needs of a house?				
To explore ways of saving energy in the home.	In groups, investigate a range of energy saving ideas that could be used in a family home and look at the advantages and disadvantages of adopting them. One group could concentrate on reduced usage, another on forms of insulation	Calculating the possible pay-back time of adopting a particular method.	Groups will be able to record the advantages and disadvantages of different methods of energy saving.	Resource sheets B & C in the Zero Carbon House pack (downloadable from Lead Schools site)
(3) Generating energy from Carbon neutral resources				
To explore how the energy needs of the house could be met using renewable resources.	In groups, explore the different ways in which the energy required for heating water and to run electrical appliances could be generated. Consider the advantages and disadvantages of each of the proposed methods	Use a spreadsheet to calculate the cost and efficiency of a chosen system	Groups will be able to understand the advantages and disadvantages of different methods of renewable energy sources.	Resource sheets D & E (and F as an extension) in the Zero Carbon House pack (downloadable from Lead Schools site)
(4) Putting it all together				
To consider different aspects and solutions to a problem through	Each group to present their findings to the whole class. Through debate the class to choose a	Interested members of the class could develop the chosen ideas	Groups will be able to present an argument based on research.	



presentation and debate.	final design brief.	into a completed solution		
--------------------------	---------------------	---------------------------	--	--

Food miles & Emissions Challenge

Learning Objectives	Suggested Activities	Extension	Key Resources
(1) Starter			
<p>To calculate their own carbon footprint.</p> <p>To understand where UK food comes from and what is meant by 'Food Miles'.</p> <p>To understand what is meant by 'Food Miles Emissions'.</p>	<p>Visit website listed or download and print-out to help students calculate their own carbon footprint.</p> <p>Class survey of % of class who knows where their food comes from – e.g. 95% of fruit and 50% of vegetables are imported.</p> <p>In group, brainstorm:</p> <ul style="list-style-type: none"> - What are Food Miles? - What are Emissions? - What are Food Miles Emissions? - Where do the emissions come from? (Air, Sea, Lorry, Van & Car forms of transport.) - What other emissions are involved in food production through to arriving on the table? – e.g. tractors on the farms, fertilisers (use vast amounts of energy in their production and cause greenhouse gases such as nitrous oxides), Storage (temperature/light regulation, carbon dioxide as an anti-oxidant, refrigeration, etc.). <p>Show 'Food Miles Factoids' PowerPoint and highlight two or three factoids of choice for discussion about scale of the issue.</p>		<p>http://footprint.wwf.org.uk/</p> <p>Emissions facts to support these questions (downloadable from Lead Schools site)</p>
(2) Main			
<p>To understand different viewpoints concerning 'Food Miles' and to be able to present one of those viewpoints.</p>	<p>Take the 3 articles about 'Food Miles' and split class into three groups. One group takes the Farmer's Weekly 'facts' about food miles, the second group takes the BBC article about food miles, and the third group takes the article from the Guardian which questions the 'Myth of Food Miles'.</p> <p>Each group must present their own article and state why their position on Food Miles is the 'correct' one.</p>	<p>Each group takes a different random 8 of the 24 Food Miles factoids cards and puts them in their 'rank-order' of those having the biggest effect on climate change. Each group then presents these to the other groups and hosts a mini-discussion on why they put them in the order they did.</p>	<p>Three articles from:</p> <ol style="list-style-type: none"> a) Farmers Weekly b) The Independent c) www.bbc.co.uk <p>Food Miles Factoids (downloadable from Lead Schools site)</p>
(3) Plenary			

To understand a balanced argument concerning the issues surrounding the concept of 'Food Miles'.	Select the key points from each group and present a balanced argument concerning the issues surrounding the concept of 'Food Miles'.		
--	--	--	--

Recycling Issues Challenge

Learning Objectives	Suggested Activities	Extension	Key resources
(1) Starter			
<p>To calculate their own carbon footprint.</p> <p>To calculate % of class who recycle certain types of product.</p> <p>To understand some significant factoids about recycling.</p>	<p>Visit website listed or download and print-out to help students calculate their own carbon footprint (if not already done in previous session).</p> <p>Class survey of % of class who recycle which type of product – paper, glass, plastic, metal cans, clothes, cardboard, mobile phones, food (composting), other. Present this as pie/bar charts where ICT facilities exist.</p> <p>Show '24 Recycling Factoids' PowerPoint and highlight two or three factoids of choice for discussion about scale of the issue.</p>		<p>http://footprint.wwf.org.uk/</p> <p>Recycling Factoids Power Point (downloadable from Lead Schools site)</p>
(2) Main			
<p>To understand how much of day-to-day products can be recycled in the UK context.</p> <p>To understand how much of various products we use, how much we could recycle and how much energy we could save.</p> <p>To present some key facts about recycling (extension task).</p>	<p>Take the 24 recycling factoid cards and put them into five categories: Glass Bottles, Metal Cans, Plastic Bottles, Paper, Waste.</p> <p>Split class into three groups. One group takes the Glass Bottles Factoids (8, 9, 10, 11, 13, 14, 15, 16, 17) a second group takes the Metal Cans Factoids (1, 2, 3, 4, 5, 6, 7), and the third group takes the Plastic Bottles Factoids (16, 17, 18). NOTE: the Paper and Waste Factoids are kept for the Plenary.</p> <p>Each group works out how many of their 'Recyclable Products' they use per day, per week, per month, per year.</p> <p>They then use the Factoids to work out the energy they can save (in terms of hours of powering light bulbs, televisions, computers, etc) and CO₂ savings (where possible) if they recycled ALL of their products.</p>	<p>Extrapolate the results up to include the whole school, taking their own results as 'typical' or, where ICT access allows, find further factoids to present (www.recyclenow.com).</p> <p>Each group then presents their results to the other two groups. This could be as a simple factual presentation or using ICT facilities where they exist and depending on the abilities of the groups.</p>	<p>Recycling Factoid Cards (downloadable from Lead Schools site)</p>
(3) Plenary			
To understand some key facts about	Review as a discussion key points from each of the group's	Use the Paper and Waste	



recycling.	calculations.	Factoids as a point for further discussion.	
------------	---------------	--	--

