Climate Chaos
Day 1 Morning session: Gathering information about climate change

Key focus: Developing an understanding of climate change

Activity 1: What do we know about climate change?

Time required: 20 minutes

You will need
Two sheets of flipchart paper, with:
• ‘Climate change – what we know’ written in the middle of one and
• ‘Climate change – our questions’ in the middle of the other

Aim
To find out what pupils already know about climate change and where the gaps are.

What to do
Ask the class to put up their hands if they have heard of ‘climate change’ or ‘global warming’, then brainstorm with them:
• What they know about it
• Questions they have about it.

Write the responses up as a connections web on the flipchart paper. At this stage, accept all their ideas and don’t attempt to clarify or explain. The activities that follow are designed to fill in some of the gaps. Pin up the two flipchart sheets to add to later.

Activity 2: Introduction to climate change

Time required: 20 minutes

You will need
• An interactive whiteboard or projector linked to a computer, and internet access
• The two partially completed sheets of flipchart paper from Activity 1
• An additional sheet of flipchart paper

Aim
To give a broad introduction to climate change and to begin to identify some of the causes.

What to do
Watch the short film produced by the Australian Government on climate change as a whole class: https://www.youtube.com/watch?v=ko6GNA58YOA

Explain that the example of the damaged ecosystem used in the film (the Great Barrier Reef) is just one of many ecosystems affected by climate change.
Note down ‘ecosystem damage’ on the ‘our questions’ flipchart if it is not already on the ‘what we know’ flipchart. Briefly get children to think of some other ecosystems they care about (in New Zealand or around the world), and note these down next to where ‘ecosystem damage’ is written.

Tell pupils that you are going to play it again. Remind them that we cannot see greenhouse gases and that if we could see the gases, the causes of the problem would be more obvious to everyone. Ask the class to look out particularly for the causes of climate change identified by the film, and to think of other causes.

Go back to the flipchart sheets from the first activity:
- Do they want to add anything about what they know?
- Has the film answered any of their questions?
- Has it raised more questions they want to add?

Add anything they say to the appropriate flipchart.

**Activity 3: Why is climate change a problem?**

**Time required:** 20 minutes

**You will need**
- An interactive whiteboard or projector linked to a computer, and internet access
- The two partially completed sheets of flipchart paper from the previous activity
- An additional sheet of flipchart paper

**Aim**
To begin to identify some of the problems caused by climate change.

**What to do**
Show the two-minute film clip, ‘Global warming: The signs and the science’, part of a promotion for The Great Warming, a film starring Keanu Reeves, to the whole class. [http://www.thegreatwarming.com/globalwarmingpromo-qt.html](http://www.thegreatwarming.com/globalwarmingpromo-qt.html)
(if link does not work with your computer settings, the film is also available on [www.youtube.com](http://www.youtube.com) by searching for ‘The Great Warming Trailer’)

After you have watched it once, tell the pupils that you are going to play it again. Ask them to look out particularly for the problems caused by climate change that the film identifies.

Go back to the flipchart sheets from the previous activity:
- Do they want to add anything about what they know?
- Has the film answered any of their questions?
- Has it raised more questions they want to add?

Add anything they say to the appropriate flipchart.

Note: It might be helpful at this point to highlight that we are using the term ‘climate change’ in preference to ‘global warming.’ This is because although overall the world is getting hotter, there are lots of other changes happening to the climate including stronger winds and storms, longer droughts, heavier rains, and some places might even get colder! Global warming is a process that is resulting in climate change.
Activity 4: What is causing climate change?

Time required: 30 minutes

You will need
- An interactive whiteboard or projector linked to a computer, and internet access
- Enough copies of the worksheet ‘What is the Greenhouse effect?’ for each pupil, or one between two (see below)
- The two partially completed sheets of flipchart paper from the previous activity
- An additional sheet of flipchart paper

Aim
To explore how the greenhouse effect works.

What to do
Play the Australian Government’s animation ‘Greenhouse Effect’ as a class, getting a volunteer to click and/or read each stage.

Hand out the worksheet. Ask pupils to sequence the pictures. After they have completed their worksheets, play the animation again so that they can check their worksheets. Ask them if they have any questions about the greenhouse effect and make sure they understand the process.
Go back to the flipchart sheets from the previous activity:
- Do they want to add anything about what they know?
- Has the film answered any of their questions?
- Has it raised more questions they want to add?
Add anything they say to the appropriate flipchart.

Source: The ‘What is the Greenhouse Effect?’ worksheet, written by Prue Poulton and designed by Fiona O'Sullivan, is reproduced with permission from Ecoactive www.ecoactive.org.uk.
What is the Greenhouse Effect?

Cut out these pictures and arrange them in the right order to show how using electricity to boil a kettle adds to the Greenhouse Effect or global warming.

Write your own explanation of how global warming is caused.
Activity 5: How do everyday actions contribute to climate change?

Time required: 20 minutes

You will need
- An interactive whiteboard or projector linked to a computer, and internet access
- The two partially completed sheets of flipchart paper from the previous activity
- An additional sheet of flipchart paper

Aim
To revise what they have learnt from the previous activities and to explore in more detail how everyday activities contribute to the greenhouse effect and climate change.

What to do
Watch the film by GreenCollegeOnline on climate change:
https://www.youtube.com/watch?v=r6uMUjiYIM4

Tell pupils that you are going to play it again. Remind them that we cannot see greenhouse gases and that if we could see the gases, the causes of the problem would be more obvious to everyone. Ask the class to look out particularly for the causes of climate change identified by the film. While the film is playing the second time, they can raise their hand and input ideas (video would be paused as required).

Go back to the flipchart sheets from the first activity:
- Do they want to add anything about what they know?
- Has the film answered any of their questions?
- Has it raised more questions they want to add?
Add anything they say to the appropriate flipchart.

Activity 6: Local global question time

Time required: 40 minutes

You will need
One copy of the worksheet ‘Local–global question time’ between 3–4 pupils (see below)

Aim
To sum up and reinforce what pupils have learnt from the previous activities.

What to do
Ask the class to form groups of 3–4 and give each group a copy of the worksheet to complete together. Ask them to discuss each question in their group and write down or draw any answers they come up with. It does not matter at this stage if they do not manage to answer every question, but they should take the opportunity to explore each question.

Take feedback. Is there anything they want to add to either of the two flipchart sheets?

LOCAL-GLOBAL QUESTION TIME

1. How does it affect people in our local area?

2. How does it affect people in New Zealand Aotearoa

3. How does it affect people around the world?

4. How does it affect the natural environment?

5. What are the causes of it?

6. Are the causes the same for people around the world?

7. What are the solutions to it?

8. Are the solutions the same for people around the world?

9. When something happens in one part of the world, does it affect people in other places?

10. How is this a global issue?
Day 1 Afternoon session: More on climate change

Key focus: Reinforcing knowledge and understanding of climate change

Activity 1: The greenhouse effect in a jar
Time required: 40 minutes

You will need
- A sunny day
- Two small thermometers
- A large clear glass jar

Aim
To help pupils understand how the greenhouse effect works.

What to do
Ask groups of pupils to lay two thermometers side by side on the same kind of surface outdoors. They should then cover one of the thermometers with the large jar. Explain that this is their greenhouse. The groups should take and record the readings from each thermometer straight away; again after 30 minutes and again after an hour.

Discuss what difference in temperature, if any, there is between the two thermometers.

Recap on what the pupils learnt in the morning session: that gases such as carbon dioxide have a similar effect to the glass jar. This is why it is called the ‘greenhouse effect’. The greenhouse effect is important for us as it has made the Earth warm enough to support life. However, human activity is now making the layer of ‘greenhouse gases’ thicker, so the Earth is getting hotter.

Source: (This activity is based on one in ‘Climate Chaos’ (WWF 2005), which can be downloaded from http://www.wwflearning.org.uk/wwflearning-home/resource-centre).
Activity 2: Climate change – the missing words

Time required: 20 minutes

You will need
A copy of the worksheet ‘Climate change – fill in the missing words’ for each pupil. (See below)

Aim
To reinforce pupils’ understanding of climate change and to provide an individual record.

What to do
Hand out the worksheets and ask the pupils to complete them. When they have completed them, it might be helpful to go through the answers to make sure everyone has understood.

Source: Adapted from a Defra website
Climate Chaos Worksheet: Climate change – the missing words

Fossil fuels such as gas, oil and coal contain __________ from plants and animals that died millions of years ago. When we burn fossil fuels to heat and cool our homes or drive our cars, ______________ is released.

Carbon dioxide is a ______________, which traps heat in the Earth’s atmosphere. This has always happened and helps to keep the Earth warm enough to __________ on. But we are now using more and more fossil fuel __________ to power machines in the factories that make all the new things we buy, for __________ to work and school and on holiday, and to provide energy for our appliances such as DVDs, computers, __________ and tumble driers.

This means the blanket of greenhouse gases around the __________ is getting thicker and the climate is getting hotter. This will mean more droughts, floods and storms. People could suffer as it will become harder to __________ food in many places. 20 – 30% of plant and animal species could become __________. The sea level could __________, because the water in the oceans expands as it gets warmer and the ice caps are __________.

If governments, businesses and individual people work together to use less __________, we can slow down climate change.

________________________________________________________________

Use the words below to fill the spaces:

rise greenhouse gas  extinct energy melting carbon Earth refrigerators
live carbon dioxide  fossil fuels  transport  grow
Activity 3: Researching climate change

Time required: Rest of the day

You will need
Computer and internet access, for individuals or groups, or library books about climate change

Aims
To develop further pupils’ knowledge and understanding about climate change.
To develop their research skills.

What to do
Throughout the week, pupils will be building up a portfolio of information about climate change, either individually or in groups. At the end of the second day they will decide what they would like to do with this information and how they should present it. There are a number of useful, child-friendly websites about climate change that they might like to use during the week. Most have a mixture of factual information, activities and games. The library might also have books related to climate change that pupils can use for research.

How pupils use the websites is likely to vary throughout the week, and from pupil to pupil.

They may like to:
- Research some of the questions about climate change from the class flipchart.
- Follow up on something which interested them from the morning session.
- Carry out a climate change word-search, puzzle or energy-saving game.

Useful websites:

Animations, information, quizzes
http://www.epa.gov/climatechange/kids

Facts and stories presented by Otis the Otter
http://www.earthmatters4kids.org/main.html

Energy facts, tips and games
http://www.eia.gov/kids/

EcoKids, part of Earth Day Canada – interactive tips, action and games
http://www.ecokids.ca/