

Climate Change

A call for stewardship and Global solidarity

Teacher's Handbook



TROCAIRE
Working for a Just World
www.trocaire.org/education

Climate Change

A call for stewardship and global solidarity



The world's wealthiest countries have emitted more than their fair share of greenhouse gases. Resultant floods, droughts and other Climate Change impacts continue to fall disproportionately on the world's poorest people and countries, many of which are in Africa.

Archbishop Desmond Tutu June 2005.

Introduction

Since its inception, Trócaire has been committed to bringing about a more fair and just world. We have witnessed the devastating impacts of Climate Change on some of the world's poorest communities. We recognise that Climate Change is not an issue that will be resolved in the short term. What we do in these early years to combat Climate Change will dictate what is possible in terms of poverty eradication and global justice in the years to come. We all need to adopt a more responsible approach to energy consumption and the natural environment. It involves all of us making small changes in our lives now which will, in turn, benefit all of us in the future. It's Up to Us!

The purpose of this resource

Trócaire is participating in an EU project which is aimed at secondary school teachers. The project is focused on the Millennium Development Goals- in particular Goal 7, environmental sustainability and Goal 8, global partnership. This resource will focus on environmental sustainability and will encourage teachers to explore our responsibilities in relation to this global justice issue, in the classroom.

The resource has specifically been designed to link with the Northern Ireland curriculum and the Republic of Ireland curriculum. In the Republic it will link with CSPE and in the North, it will link with Local and Global Citizenship looking at the concepts of Interdependence and Stewardship.

How to use this resource

- Each skills based lesson plan presented, will facilitate the students to develop a deeper understanding of environmental sustainability and ensure a knowledgeable and reflective approach to action.
- Each lesson contains a number of activities designed to be completed within a single class period.
- Each activity has an accompanying slide or slides and Student Handouts to support the teacher as they carry out the lesson.

Aims

1. To explore the concepts of Stewardship and Interdependence through the lens of environment sustainability from a global justice perspective.
2. To examine the Millennium Development Goals, with a particular focus on MDG 7 and 8.
3. To consider how to take action in response to the challenges explored in the lessons.'

Learning Outcomes

At the end of this module students will be able to:

- Examine environment sustainability with reference to the Millennium Development Goal, in particular Goal 7 & 8.
- Critically evaluate Climate Change and reflect on its impact.
- Discuss what our rights and responsibilities are here in Ireland in relation to energy consumption and environment sustainability.
- Prepare an Action Project to make an individual or class response to some of the challenges raised in the lessons.

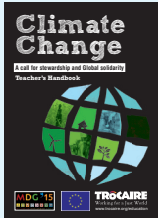
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Lesson 1:

For Lesson 1 you will need...



Teacher's
Handbook
Lesson 1



Student
Handout 1



Slides
2 & 3

Introduction

Aim: To introduce the Millennium Development Goals.

Time: 20 mins.

Key skills: Critical and creative thinking and working with others.

Preparation: Flip chart paper & markers.

How it works

1. Divide the class into groups of 4/5.
2. When the students have arranged themselves, explain the Millennium Development Goals using the background information.
3. Ask the students to discuss what their 8 goals would be.
4. Use the background information and discuss with class.
5. Display these 8 goals in the classroom and refer back to them at the start of your next lesson.

Background information

In 2000, world leaders came together in New York and agreed a set of time bound and measurable goals and targets. Through these goals, it is hoped that by 2015 the gap between rich and poor may have narrowed and a strong global partnership will have been built between the developed and developing world. These are now known as the **Millennium Development Goals (MDGs)**.

Development

Aim: To introduce the Millennium Development Goals.

Time: 20 mins.

Key skills: Critical and creative thinking and working with others.

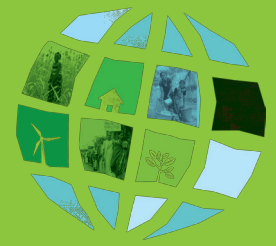
Preparation: Student handout 1.

How it works

1. As a class or in groups, discuss what each of the 8 symbols stands for.
2. When the students have finished the discussion on the symbols, handout student handout 1.
3. In pairs, the students should discuss how these goals are interconnected.

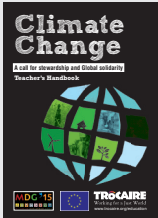
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Lesson 2:

For Lesson 2 you will need...



Teacher's
Handbook
Lesson 2



Slides
4, 5 & 6



Slide
Show

Introduction

Aim: To introduce the Millennium Development Goals, most specifically Goal 7 & 8.

Time: 15 mins.

Key skills: Critical and creative thinking and working with others

How it works

1. Refer the class back to their 8 Millennium Development Goals.
2. As a class, discuss the targets set out for Goal 7 and Goal 8.
3. Discuss why these might be seen as two of the more important goals.
4. Use the background information and discuss with class.

Background information

Goal 7:

Climate Change is something that affects all of humanity, but not equally. Poorer nations feel the burden of Climate Change so much more. Many families depend on the weather for agricultural production which in turn helps to feed their families and provide a wage. In recent years, we in Ireland are slowly beginning to feel the affects of Climate Change also. Governments need to work together to ensure that our environment is sustainable right into the future, for the benefit of all.

Goal 8:

No man is an island. If we are to live in a more just, equal world, we need to work together. We need to work in partnership. None of the previous 7 Goals can achieve their targets if we do not come together to conquer these challenges.

Development

Aim: Examine stewardship and interdependence, through the lens of Goal 7 and Goal 8.

Time: 20 mins

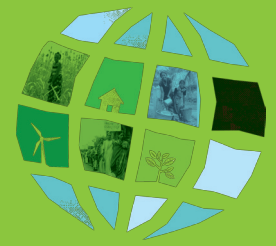
Key skills: Critical thinking and analysing.

How it works

1. Introduce the students to the two concepts stewardship and interdependence. What does each of these words mean?
2. Write up a definition of each word.
3. In pairs or in groups, students are to discuss how environmental sustainability and stewardship interconnected.
4. How are global partnership and interdependence interconnected?

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Lesson 2:

Extension Activity

Aim: To encourage students to reflect and analyse the lesson.

Key skills: Analysis, evaluation and reflection.

Time: 5 mins.

How it works

1. Ask students to reflect on the quote by Archbishop Desmond Tutu.
2. Students can reflect on the lesson by watching the photo slideshow. ([Click link to slide show](#))
3. Climate Change impacts continue to fall disproportionately on the worlds poorest people. How can your action or inaction affect this? Discuss as a class

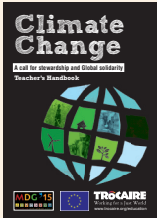
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Lesson 3:

For Lesson 3 you will need...



Teacher's Handbook
Lesson 3



Student Handout 2



Slides 12, 13 & 14



Slide Show

Introduction

Aim: To allow students to document their current knowledge and reflect on new information.

Time: 10 mins

Key skills: Information processing and reflective thinking.

Preparation: Copy and pen.

How it works

1. Under the 'K' column students should fill in all of the information they currently know about Climate Change.
2. In the 'W' column, ask the students to fill in what they would like to know about Climate Change.
3. The 'L' column can be filled in at the end of each lesson so that the students can reflect on what they have learned.

K (What I know)	W (What I would like to know)	L (What I have learned)
Climate change is linked to global warming	What causes Climate Change	
It affects poorer countries	What can I do?	

Background information

Before commencing a new topic, it is always useful to ask students to fill out a KWL chart. Students should do this on a refill pad page or using a double copy page. See diagram above. Allow the students 10 minutes to complete this exercise.

Development

Aim: To facilitate the students understanding of the difference between weather and climate.

Time: 10 mins

Key skills: Critical and creative thinking.

Activity 2: How it works

1. As a class brainstorm on what the difference is between weather and climate?
2. Group the answers and compare them to the definition provided.

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Lesson 3:

Background information

Weather or climate: Same difference?

Weather is what happens in the atmosphere at a given time – the students may explain it in terms of weather forecasts, which detail temperature, rainfall, periods of sunshine, storms etc. over the course of a day/week. A place can experience more than one weather event in a day, for example, and the weather is not the same everywhere. Climate however is explained by looking at the average and variations of weather in a place over many years.

Extension Activity

Aim: To allow students to gain a deeper understanding of Climate Change.

Time: 20 mins.

Key skills: Communicating, summarising and working with others.

Preparation: Student Handout 2.

How it works

1. Commence the lesson by reading out and discussing the statement on the slide 'Why is climate change an issue?'
2. Ask students to arrange themselves into pairs - one A and the other B. Ensure each pair has a copy of the handout.
3. Student A has to read the statement on their Handout to student B.
4. B then has to summarise the points mentioned by A.
5. When the students have completed the exercise, teacher to read background information above.
6. Finally ask students to reflect on the quote by Barack Obama as the slideshow is playing. Allow some time to reflect on the days lesson by filling in the 'L' part of their KWL chart.

Background information

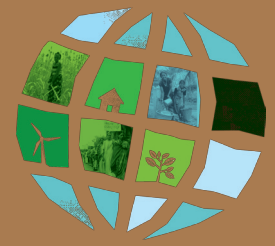
Why is climate change an issue?

The students have already identified the difference between weather and climate but remind the students that while weather can change dramatically in the course of a day, climate usually takes thousands of years to change. The reason why people are concerned now is because the climate is changing more quickly than before. People from the developing world who have done the least to cause the problem of Climate Change are being worst affected. While rich countries consume and use energy levels far beyond what is fair and sustainable, the greatest impact is being felt by the poorest people, who are least equipped to cope.

Adapted from friends of the earth - www.foe.ie

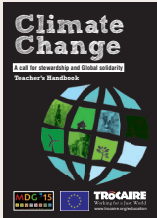
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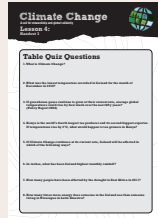


Lesson 4:

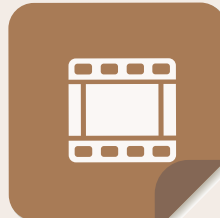
For Lesson 4 you will need...



Teacher's
Handbook
Lesson 4



Student
Handout 3



Slide
21



Slide
Show

Introduction

Aim: To introduce the human as well as physical impacts of Climate Change.

Time: 40 mins.

Key skills: Information processing, critical thinking and managing information.

Preparation: Quiz sheet- one per group. There can be more than one correct answer.

How it works

1. Ensure each group of students has a copy of the table quiz questions.
2. Allow time for the groups to discuss and answer each question- reminding them that there can be more than one correct answer.

After the quiz is complete

3. When students are finished, discuss the answers with the whole class.
4. Conclude the lesson by playing the slideshow of images and then ask the students for their feedback on the following questions: What surprised you the most? Have you learned anything new from the quiz?
5. If time allows, ask students to revisit their KWL chart.

Table Quiz Questions

1. What is Climate Change?

- a) Moving from winter weather to summer weather each year.
- b) Climate Change is caused by natural factors such as variations in sun intensity or volcanic eruptions.
- c) Climate Change is the change in our climate in recent years due to the build up of greenhouse gases in our atmosphere.

2. What was the lowest temperature recorded in Ireland for the month of December in 2010?

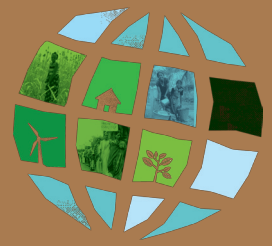
- a) - 12.5°
- b) - 17.2°
- c) - 20°

3. If greenhouse gases continue to grow at their current rate, average global temperatures could rise by how much over the next fifty years? (Policy Report 2008)

- a) 1-2°C
- b) 2-3°C
- c) 3-4°C

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Lesson 4:

4. Kenya is the world's fourth largest tea producer and its second biggest exporter. If temperatures rise by 2°C, what would happen to tea growers in Kenya?

- a) They'd be able to grow more tea in more parts of the country
- b) Many of the areas where they grow tea would become unsuitable for tea growing
- c) They would be able to grow better quality tea

5. If Climate Change continues at its current rate, Ireland will be affected in which of the following ways?

- a) Rainfall will increase in winter and decrease in summer
- b) Sea temperatures may rise by 2 degrees by the end of the century, causing intense, aggressive stormsFlooding and erosion from extreme weather conditions
- c) All of the above

6. In inches, what has been Ireland highest monthly rainfall?

- a) 20 inches
- b) 31 inches
- c) 40 inches

7. How many people have been affected by the drought in East Africa in 2011?

- a) 100,000
- b) 1 million
- c) 13 million

8. How many times more energy does someone in the Ireland use than someone living in Nicaragua in Latin America?

- a) 5 times more energy
- b) 10 times more energy
- c) 13 times more energy

9. According to Met Eireann, how many days without rain need to occur before Ireland can declare a drought?

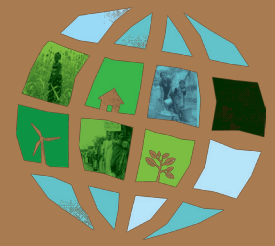
- a) 8 days
- b) 15 days
- c) 30 days

10. Taking a carrier bag with you to the shops, rather than collecting them in a drawer in the kitchen, would save how much carbon per shopper?

- a) 25 kg a year
- b) 15 kg a year
- c) 5 kg a year

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Lesson 4:

Table Quiz Answers

1. What is Climate Change?

B & C. Climate Change refers to the variation in the earth's global climate. This can be caused by natural factors. However, the term Climate Change is now generally used to refer to changes in our climate due to the build up of greenhouse gases (GHGs) in the atmosphere.

2. What was the lowest temperature recorded in Ireland in 2010?

B. December 2010 went down as the coldest month since modern temperature data was first collected in Ireland 130 years ago. Figures from Met Eireann also show that 2010 was the coldest year on record in Dublin, Mullingar and Knock. In Co. Mayo, a temperature of -17.2C was recorded on December 20, the coldest ever experienced in Ireland during the month of December.

3. If greenhouse gases continue to grow at their current rate, average global temperatures could rise by how much over the next fifty years? (Trócaire report 2008)

B. 2-3°C. If we continue at this level until the end of the century we could reach 5-6°C, which would result in devastating consequences. Impact of Climate Change up to 2°C: In the Andes alone, small glaciers will disappear completely with warming in the range of 0.5-1.5°C, threatening water supplies for around 50 million people. Impact of Climate Change beyond 2°C: The proportion of land area experiencing extreme droughts at any one time could increase from around 3% today, to 8% by 2020 AND TO 30% by the end of the century. Drought will probably last all year round in Africa by the time 3% is reached.

4. Kenya is the world's fourth largest tea producer and its second biggest exporter. If temperatures rise by 2°C, what would happen to tea growers in Kenya?

B. Many areas would become drier and hotter which would make conditions unsuitable for growing tea. In Kenya, 400,000 small farmers grow 60 per cent of the tea – these farmers couldn't afford to pay for new irrigation systems to adapt to Climate Change. So their source of income could disappear.

5. If Climate Change continues at its current rate, Ireland will be affected in which of the following ways? (Change.ie)

D. All of the above. The Irish weather conditions have undergone significant changes in recent years. Of the fifteen warmest years on record in Ireland, ten of these have occurred since 1990. The average temperature has increased by 0.7 °C during the period 1890-2004. It continues to rise.

6. In inches, what has been Ireland highest monthly rainfall?

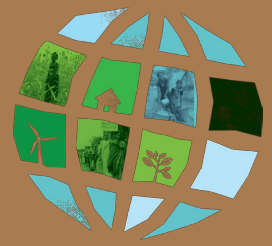
B. Ireland's highest-ever monthly rainfall total was recorded in October 1996 when 31 inches of rain fell over the Comeragh Mountains, Co. Waterford. This figure pales into insignificant when compared to the world record monthly total held by Cherrapungi, in India where in July 1861 a staggering 366 inches of rain was recorded. That's more than double the highest annual rainfall ever recorded in Ireland: 156 inches at Ballaghbeama Gap, Co. Kerry in 1960.

7. How many people have been affected by the drought in East Africa in 2011?

C. East Africa's drought has led to millions of people across Kenya, Somalia and Ethiopia being dependent on food aid, with up to half the population of certain affected areas suffering from serious malnutrition. The UN has declared that Somalia is now in famine. The failure of adequate rainfall to have hit the region for full year has plunged east Africa into humanitarian crisis. While the causes of the drought are complex, there is little doubt Climate Change is a major contributing factor.

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Lesson 4:

Table Quiz Answers

8. How many times more energy does someone in the Ireland use than someone living in Nicaragua in Latin America?

C. The average person in Nicaragua uses 13 times less energy than the average person in the Ireland. Because people in Nicaragua use a lot fewer resources, they produce a lot less carbon.

9. According to Met Eireann, how many days without rain need to occur before Ireland can declare a drought?

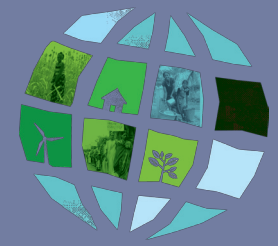
A. It only takes 8 days of no rain before Ireland can declare a drought. In 2011 for East Africa, rainfall over the previous 3 to 5 years has been poor, which gradually worsened the food situation in the area. The rains of the previous autumn failed and the spring rain of 2011 was less than 1/3 its normal volume. This tipped the region into crisis, leading to widespread crop failure and death of animals/ livestock.

10. Taking a carrier bag with you to the shops, rather than collecting them in a drawer in the kitchen, would save how much carbon per shopper?

A. 25 kg a year! It's a really easy way to help lower your carbon footprint.

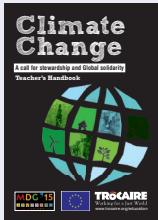
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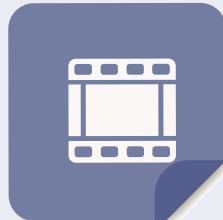


Lesson 5:

For Lesson 5 you will need...



Teacher's
Handbook
Lesson 5



Slides
27, 28,
29, & 31



Video
Clip 1



Video
Clip 2

Introduction

Aim: To allow students to explore the realities of Climate Change and its impact on people in developing countries.

Time: 20 mins

Key skills: Working with others, critical thinking and communicating

Preparation: Flip chart paper; markers.

How it works

1. Before showing the video to the class, read the background information below and discuss briefly as a class.
2. Show the students video clip 1.
3. Divide the class into groups of 4/5 and hand out flip chart and marker to each group.
4. Ask students to divide their page in two: Kenya on one side and Ireland on the other.
5. Ask students to brainstorm on the impact of Climate Change on people in both countries.
6. Each group to feedback to the class.

Background information

East Africa

In 2011 East Africa experienced its worst drought in sixty years. It is estimated that thirteen million people in Ethiopia, Kenya and Somalia are now dependent on food aid. Drought is not new in this region, but people's capacity to cope has been eroded by conflict, increased competition for land and water, and the impacts of Climate Change. Poor people are being hit the hardest and have the least means to cope.

Development

Aim: To allow students to make real connections between their own lives and the lives of others

Time: 20 mins.

Key skills: Working with others, critical thinking and communicating

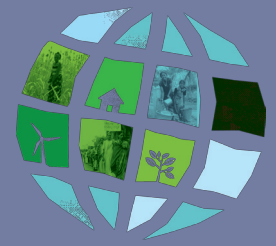
Preparation: Flip chart paper; markers

How it works

1. Read the following statement from Sustainable Energy Ireland (SEI) to the class – link with slide 29.
2. Show the students video clip 2.
3. Hand out a second piece of flip chart. Ask students to divide the page into my home, my school, my community.
4. Ask each group to make a list of the small changes they can make.
5. Each group to feedback.

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Lesson 5:

The energy for life... - Adapted from Sustainable Energy Ireland - www.sei.ie

Energy is essential to our daily life. It heats our homes, fuels our transport and supplies our electricity. We're probably using energy when we don't even realise it; your freezer at home, the coffee machine in the staff room, or the traffic lights at every junction.

At the moment, most of the energy we use comes from **fossil fuels** such as oil, gas, coal and peat.

Unfortunately there is a limited supply of fossil fuels in the world and we are using them up at a fast rate. The other downside to fossil fuels is that **burning them for energy produces CO₂, a greenhouse gas, which causes Climate Change.** Undoubtedly some energy usage is crucial in the modern world, but there are many ways in which you can make a difference and reduce your energy consumption.

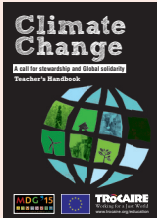
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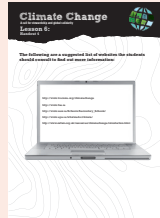


Lesson 6:

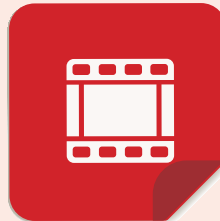
For Lesson 6 you will need...



Teacher's
Handbook
Lesson 6



Student
Handout 4



Slide 32

Introduction

Aim: To allow students to process the new information and analyse what information is still required.

Time: 45 minutes

Key skills: Working with others, critical thinking and information processing.

Preparation: Flip chart, markers, access to computers, student hand out 4.

How it works

1. Present Climate Change to the students on a mind map from the slideshow.
2. Students to brainstorm two or three words that come to mind when they think of Climate Change and add them around it. Make links between the words.
3. Divide the class into groups of 5/6 and hand out flip chart and marker to each group.
4. Ask students to start their own Climate Change mind map based on what they know.
5. When students have added all of the information they currently have, they should make notes on what information is still required.

The following are a suggested list of websites the students should consult to find out more information

<http://www.trocaire.org/climatechange>

<http://www.foe.ie/>

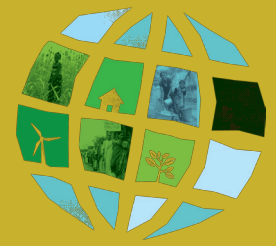
http://www.seai.ie/Schools/Secondary_Schools/

<http://www.epa.ie/whatwedo/climate/>

<http://www.oxfam.org.uk/resources/issues/climatechange/introduction.html>

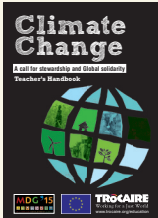
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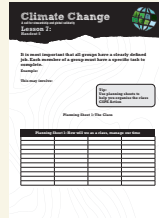


Lesson 7:

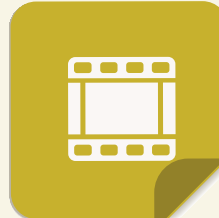
For Lesson 7 you will need...



Teacher's
Resource
Handbook



Student
Handouts
5 & 6 /
Student
Planning
Sheets
1 & 2



Slide
33 & 34

Introduction

Aim: To allow students time to decide as a class on what action project they will undertake.

Time: 40 minutes

Key skills: Working with others, communicating

Preparation: Flip chart, markers, student hand out 5.

How it works

1. Discuss the '6 Steps to Action' with the students and what is involved at each stage.
2. Have a look at some of the suggested ideas for some inspiration.
3. Hand out student planning sheets.

Background information

Through the Millennium Development Goals, Ireland made a commitment to improve the lives of hundreds of millions of people. It is now time to keep our promise!

Over the past few weeks we have explored the Millennium Development Goals. We have examined Goal 7 & 8. We have explored Climate Change and its impact on poorer countries. We, the people of Ireland, have the power to change this! We are global citizens, and Ireland is part of a global community that must respond to the climate crisis. One of the most positive contributions we can make to curbing Climate Change is to changes at home, in school and in our wider community to ensure Ireland plays its part in a global effort.

Now it's over to you! What type of action are you going to take??!!

6 Steps to Action

1. Having gone through the previous 6 lessons, now agree on what you would like to do your action project on.
2. Form teams/committees.
3. Each team/committee plan team tasks.
4. Complete the Action.
5. Evaluate the Action.
6. Report the Action.

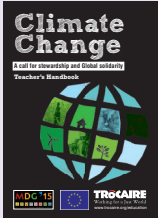
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A call for stewardship and global solidarity



Lesson 8:

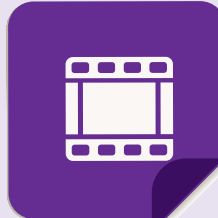
For Lesson 8 you will need...



Teacher's
Handbook
Lesson 8



Student
Handout
7



Slide
35

Reflection (To be completed after action project.)

Aim: To allow students to document their current knowledge and reflect on their project.

Time: 40 mins.

Key skills: Information processing and reflective thinking.

Preparation: Copy and pen, KWL chart.

How it works

1. Students should revisit their 'KWL' chart one last time and fill in any new information.
2. Ensure all students have a copy of student handout 7. Ask the students to fill out each section.
Discuss as a class



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