

Name:

Grade:

School:

Date:

WithOnePlanet

- > Module 1:
Carbon
- > Level:
Years 9 to 10
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Investigate
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I can change your
mind about climate
- > Student worksheet



Investigate

Lesson 5

Student worksheet

I can change your mind about climate

Years **9** to **10**



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INQuIRY     

I can change your mind about climate

Lesson 5a: Student worksheet

Introduction

A recent poll by the CSIRO found that just 50% of Australians attribute climate change to human actions. The issue is no longer only a scientific argument - it's political, and increasingly becoming personal.

We've never been more divided about who to believe and what to do. The attitudes towards climate change reveal our different beliefs, our different interpretations of the past and our competing visions of the future. Can one side of the argument convince the other? Can we break through the trenches and find a new way of engaging in this vital discussion?

In *I Can Change Your Mind About Climate* (Max Bourke, 2012, 60 minutes) two passionate, intelligent and successful Australians, former senator Nick Minchin and youth activist Anna Rose, separated by a generation, and divided by their beliefs, go on a journey of mutual discovery to see if they can change each other's minds about one of the most divisive issues in Australia today: climate change. It's an adventure that will challenge both their beliefs, while giving the Australian public a much-needed opportunity to think afresh about where they stand on the defining issue of our times: What to do about global warming?



I can change your mind about climate

<https://www.youtube.com/watch?v=STAxhSoJvak> (program overview)

<http://www.abc.net.au/tv/changeyourmind/webextras/>

<http://www.youtube.com/watch?v=b9qebUJK5I0>

(Running time: 66 min)



Source:

ABC, *I Can Change Your Mind About Climate* (Max Bourke, 2012, 60 minutes) <www.youtube.com/watch?v=b9qebUJK5I0>.

The evidence – Geoff Vickers

Q1a: What evidence does he offer?

[Empty dashed box for answer to Q1a]

Q1b: Do you find Vickers' information informative or the evidence persuasive?

[Empty dashed box for answer to Q1b]

The evidence – Jo Nova and David Evans

Q2a: What is their opinion on the issue?

[Empty dashed box for answer to Q2a]

Q2b: They are very critical of the climate models, saying that what was predicted to happen has not happened. Is this strong evidence to challenge the validity of the climate change science?

[Empty dashed box for answer to Q2b]

Q2c: Do you find Nova's and Evans' information informative or the evidence persuasive?

The evidence – John Barnes

Q3a: What information does he give about CO₂ and feedback?

Q3b: Why is feedback a significant issue in the debate?

Q3c: Do you find Barnes information informative or the evidence persuasive?

The evidence – Richard Lindzen

Q4a: What does he say about feedback?

Q4b: Do you find Lindzen's information informative or the evidence persuasive?

The evidence – Richard Muller

Q5a: What information does he contribute to the debate?

Q5b: Do you find Muller's information informative or the evidence persuasive?

The evidence – Marc Morano

Q6a: Do you find Morano’s information informative or the evidence persuasive?

The evidence – Anthony Leiserowitz

Q7a: What information does he have to offer to the debate?

Q7b: Do you find Leiserowitz’s information informative or the evidence persuasive?

The evidence – Bjorn Lomborg

Q8a: Do you find Lomborg’s information informative or the evidence persuasive?

The evidence – Zac Goldsmith

Q9a: Do you find Goldsmith’s information informative or the evidence persuasive?



The evidence – Ben Goldacre

Q10a: What is Goldacre’s attitude to the debate?



Q10b: Do you find Goldacre’s information informative or the evidence persuasive?



The evidence – Mike Hume

Q11a: What is the point that Hume is making?



Q11b: Hume claims that Anna and Nick are looking at 'risk' differently. Do you agree with this assessment?

Conclusion

Q12a: What is the final message of the film?

Q12b: Anna several times claims that in effect the science of climate change is settled. Do you agree?

Q12c: What is your attitude now – are you closer to Anna or to Nick?

BIG feet, small footprints

Lesson 5b: Student worksheet

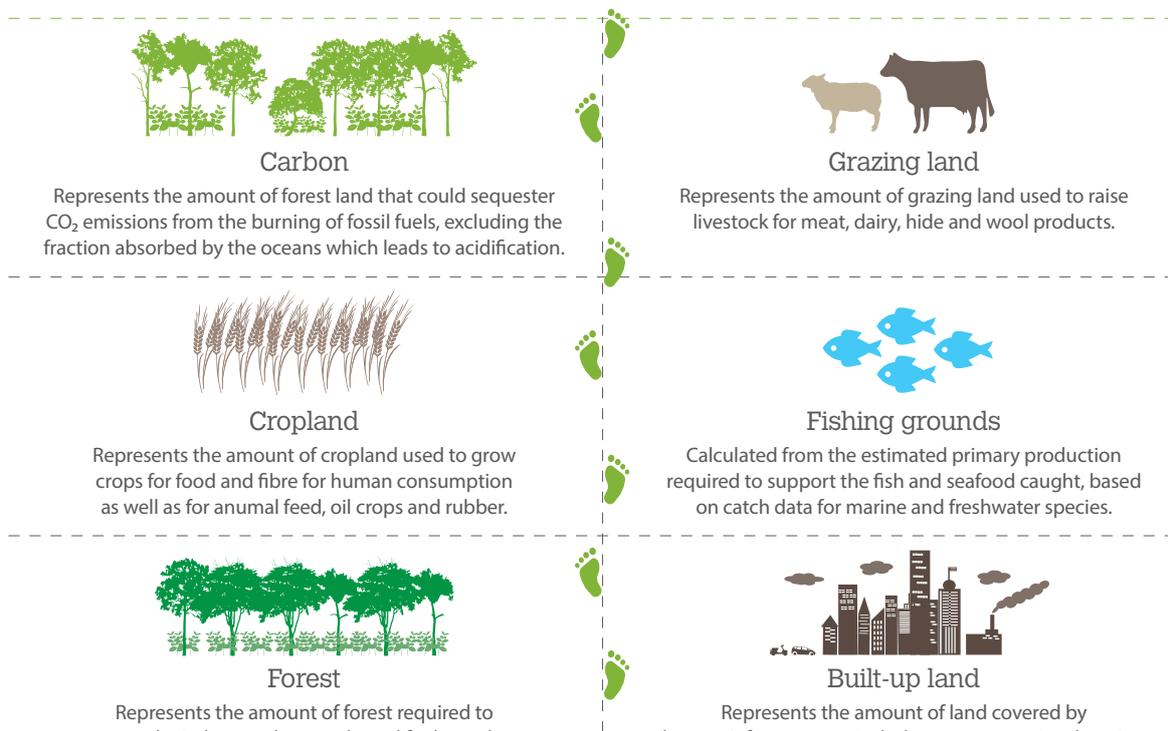
Introduction

An ecological footprint, or ecofootprint, is one way of measuring of how many resources you use over a year. This is shown in terms of the amount of land you need to supply all the resources you consume, and the amount of land required to deal with all the waste you generate.

The infographic below summarises this for you.

What is an ecological footprint

It is a measure of how much biologically productive land and water an individual, population or activity requires to produce all the resources it consumes, and to absorb the waste it generate. The Ecological Footprint is usually measured in global hectares (gha).



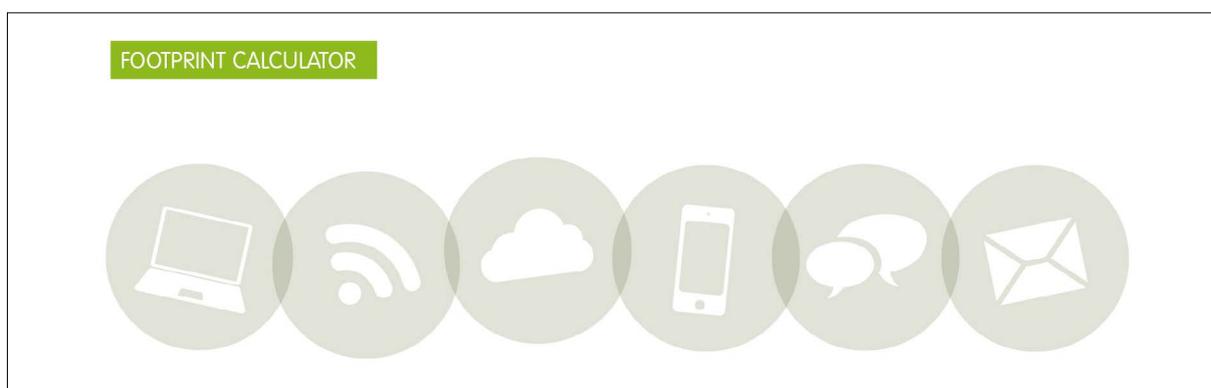
Source:
WithOnePlanet, *ecological footprint* infographic 2015.

How can I calculate my ecofootprint?

The simplest way to calculate your ecofootprint is to use an online calculator specifically designed to do just that. All you need to do is answer a series of questions about what products (e.g. a car, a clothes dryer) you use and how frequently you use them, as well as what services you use (e.g. home gas and electricity use) and how much you use them.

As well as your resource use, the ecofootprint calculator will take into account the environmentally friendly choices you make. For example, whether or not you use public transport rather than a car, whether your house has solar panels on it, etc.

A simple way of summarising what an ecofootprint calculator may include for different technology devices and the internet is shown below.



There are many ecofootprint calculators available on the internet. The best ones to use are often those that are designed for the country that you live in.

What does my ecofootprint tell me?

Once you have used the online calculator and entered all the necessary information, the calculator will convert this information into an equivalent **amount of land** needed to supply the resources you consume and to deal with all the waste you generate.

This amount of land is given in **global hectares**.

A global hectare refers to one hectare (approximately soccer field size) of biologically productive space with world-average productivity.

Your ecofootprint can also be converted into the **number of Earths** that you would need if ALL the individuals on the planet lived like you. The graph below explains this concept.



Source:
WithOnePlanet, *ecological footprint* infographics 2015.

How can I use my ecofootprint?

You can use your ecofootprint in two main ways.

1. To develop a personal plan for a more sustainable lifestyle.

You can analyse the different components that make up your ecological footprint and identify the areas where you could realistically reduce your consumption. You can then brainstorm some strategies that you could use to achieve this reduction in the number of global hectares you require. As a teenager, there are plenty of opportunities to make conscious personal decisions to reduce your resource consumption. Once you have the strategies in mind, you will need to make a plan for how to implement and sustain them. It is always a good idea to check how you are going regularly and update your plan as necessary.

2. To compare your footprint to the footprints of other people around the world.

You can also compare your own ecofootprint to that of other people (such as classmates), or even compare yours to the average ecofootprint of a person in a particular region (such as the state of Victoria), a particular country (such as Australia or Timor Leste), or the average global citizen.



Source:
WithOnePlanet, *ecological footprint* infographics 2015.

Calculate your ecofootprint

Below are two recommended Ecofootprint calculators that you can try.

The first is **EPA Victoria's personal Ecological Footprint calculator** - <http://www.epa.vic.gov.au/ecologicalfootprint/globalfootprint/index.asp>

This calculator takes approximately 15 minutes to complete if you use the 'basic' information version, and takes longer if you complete the 'detailed' information version. It ultimately provides you with both the number of Earths, and the number of global hectares of Earth's productive area, that you require in order to sustain your current lifestyle.

Once you have completed your personal ecofootprint, the website allows you to explore some simple actions that you could take to reduce it.

The second Ecofootprint calculator is the **Australian Greenhouse Calculator** - <http://apps.epa.vic.gov.au/AGC/home.html>

This calculator can be completed in 'quick' or 'detailed' modes across 11 modules (including transport, hot water, food and shopping, etc.) At the end of each module, you are shown the amount of greenhouse gas that you consume in order to sustain your household's current lifestyle. Data from all of the modules can be viewed as series of bars on a bar graph and can be compared to a typical household's greenhouse gas emissions and a 'green' household's greenhouse gas emissions.

Complete both calculators and enter the information below.

Q1: What is your personal ecofootprint?

In global hectares: _____

In Earths: _____

Q2: What is your household's overall production of greenhouse gas emissions?

In tonnes of CO₂ per annum (per year) _____

tonnes CO₂ p.a. _____

Compare your ecofootprint

For your personal ecofootprint (EPA)

Q3a: What are the three main areas (e.g. consumption of meat) of your lifestyle that contribute most to your ecological footprint?

Area 1: _____

Area 2: _____

Area 3: _____

Q3b: Choose ONE of the three areas listed in part a. above to complete the following table.

| | |
|---|----------------------------------|
| Area of choice: | |
| What specific action will I take to <i>actively</i> reduce my ecofootprint in this area? | I will ... |
| When will I start to make this change? | I will start ... |
| How often does this action occur? (e.g. daily, weekly, etc.) | I will do this every ... |
| How regularly will I check that this change is occurring? | I will monitor this every ... |
| How will I know that I have succeeded in making this change? | I know I have succeeded when ... |
| What specific action will I take if, at first, I am not able to successfully make this change? | I will ... |

Q3b: The table below shows the average ecological footprints for a number of different populations.

Table: The ecological footprints per capita of various countries and regions

| Geographical location | Average number of global hectares required to sustain a person in their current lifestyle |
|---------------------------------------|---|
| Victoria | 6.8 ¹ |
| Australia | 7.8 ¹ |
| Timor Leste | 0.4 ² |
| South-east Asia (excluding Australia) | <0.8 ³ |
| U.S.A. | 8.00 ² |
| United Arab Emirates | 10.7 ² |
| U.K. | 4.9 ² |
| New Zealand | 4.9 ² |
| The world | 2.71 |

Sources:

¹EPA Victoria 2013, *Australia's and Victoria's Ecological Footprint*, viewed 19 Dec 2013, <<http://www.epa.vic.gov.au/ecologicalfootprint/ausfootprint/default.asp>>.

²Global Footprint network 2010, *Ecological footprint Atlas 2010*, viewed 19 Dec 2013, <http://www.footprintnetwork.org/en/index.php/GFN/page/ecological_footprint_atlas_2010>.

³Global Footprint Network 2011, *World Map: Global Distribution of the Ecological Footprint*, viewed 19 Dec 2013, <<http://www.bfs.admin.ch/bfs/portal/en/index/themen/21/03/01.html>>.

Q4a: In terms of the number of global hectares required, is your ecofootprint **higher, lower** or **the same** as the average person in ...

Victoria?

Australia?

South-east Asia?

The world?

Q4b: For comparisons where you have a LARGER ecofootprint than other populations, suggest some reasons for this.

Q4c: For comparisons where you have a SMALLER ecofootprint than other populations, suggest some reasons for this.

How does climate change affect people in other less affluent countries in our region?

Watch the following video that provides a glimpse into the impacts of climate change on the lives of the East Timorese.



<http://vimeo.com/34993304>

Oxfam Australia 2012, *Climate Change in Timor Leste*, viewed 03 January 2014

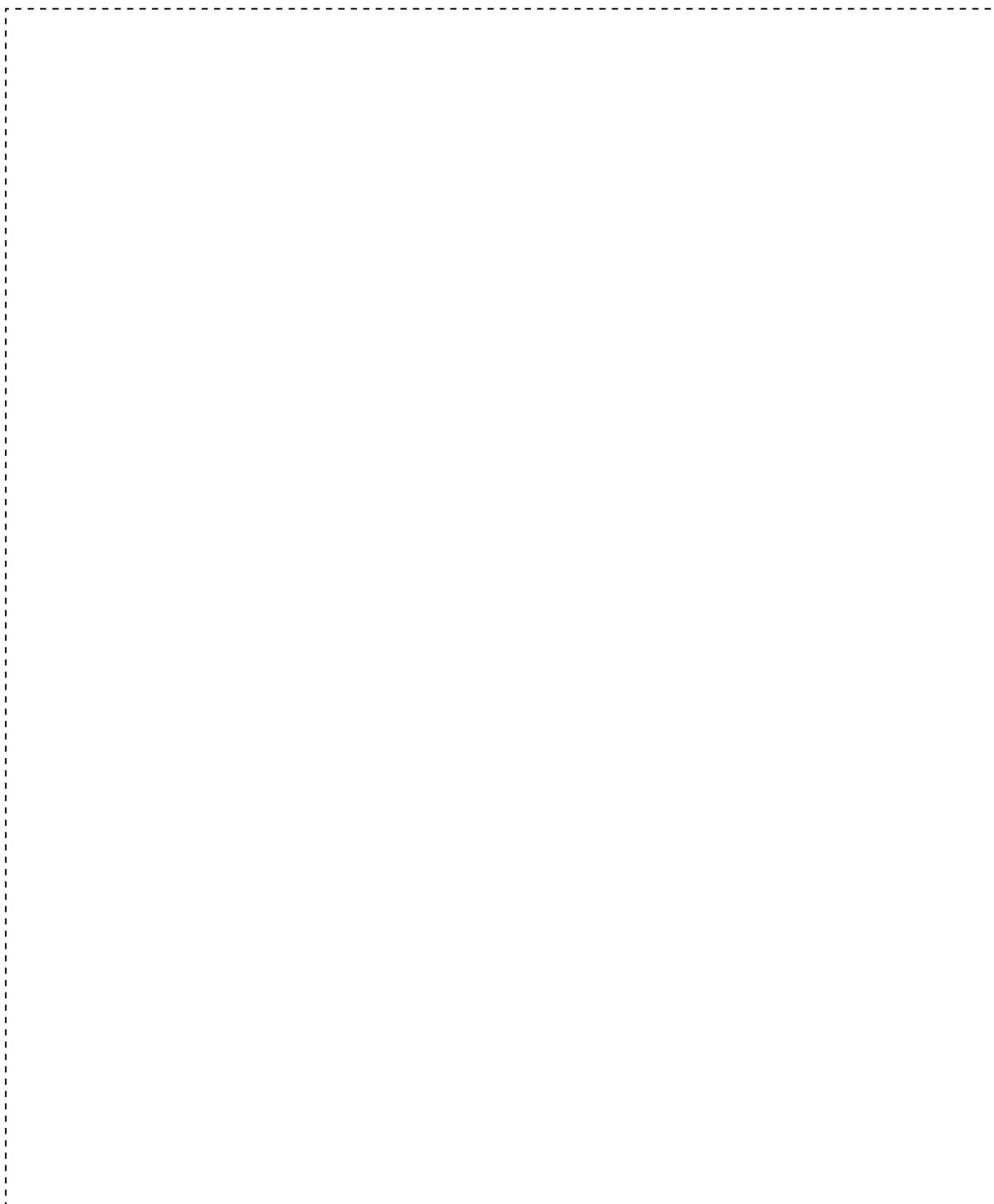


Source:

Oxfam Australia 2012, *Climate Change in Timor Leste*, online video viewed 03 January 2014 <<http://vimeo.com/34993304>>.

For your household's greenhouse gas emissions (Australian Greenhouse Calculator)

Q5a: Into the space below, paste a copy of the bar graph of your household's greenhouse gas emissions, and compare to that of typical and green Australian households by answering the questions that follow.



Q6a: Complete the table below, using the information from the graph.

| Module | My household (tonnes of CO ₂ per annum) | A typical household (less, more or the same as my household) | A green household (less, more or the same as my household) |
|----------------------------|--|--|--|
| Example module | 12.3 | More | More |
| Transport | | | |
| Air travel | | | |
| Heating and cooling | | | |
| Hot water | | | |
| Clothes dryer | | | |
| Lighting | | | |
| Refrigeration | | | |
| Cooking | | | |
| Other appliances | | | |
| Food and shopping | | | |
| Waste | | | |
| TOTAL (Sum of all modules) | | | |

Referring to the information in the table in Q5. b., immediately above, answer the following questions in the spaces provided.

Q7a: In terms of greenhouse gas production, how does your household compare overall to the typical and green households?

Q7b: In what particular module(s)/area(s) would you say that your household is doing well? What are some of the reasons why you think your household is doing well?

Q7c: In what particular module(s)/area(s) would you say that your household could really improve? What are some of the reasons why you think your household is not doing as well in this/these area(s)?

Q7d:

i. In which one particular area would you like your household to focus on improving the MOST?

ii. What specific, realistic suggestion(s) do you have in order to achieve this improvement?

iii. How will you go about communicating your suggestion(s) with the other members of your household?



iv. How will you know if your suggestions are being carried out? How will you know if your household's greenhouse gas emissions are decreasing as a result of your suggestions?



v. What will you do if you find that your suggestions are not working to reduce your household's greenhouse gas emissions?

