

Your Carbon Footprint and Global Warming: Are You Warming the World?

AIM

To increase students' understanding of global warming and to support them in reflecting and taking action to reduce their own carbon footprint.

OBJECTIVES

At the end of this session, students will be able to:

- Identify four major ways that carbon dioxide escapes into the environment.
- Measure their carbon footprint.
- Take action to decrease their carbon footprint.

TARGET GROUP

High beginning - to intermediate-level ESL in a family literacy context (levels 3-6).

(For the purpose of this lesson, the target group levels range from 1 through 8, with the following guidelines: 1 = beginning, 5 = intermediate, 8 = advanced.)

LENGTH

Two 2- to 3-hour lessons

OVERVIEW

According to The Teacher's Guide website, created by Susan Joy Hassol (cited in the Materials list), global warming is caused primarily by carbon dioxide that is released from power plants, cars and factories and, to a lesser extent, when forests are cleared. In this lesson, students will explore the ways carbon dioxide escapes into the environment and leads to global warming. Students will then determine their own carbon footprint through an interactive website from the film *An Inconvenient Truth*. And finally, they will reflect on ways to reduce their carbon footprint.

DAY ONE

Activity 1

Conceptualizing Carbon Dioxide and Its Effect on Global Warming

1. Begin by eliciting a definition/explanation of global warming, its danger and its primary causes. Write questions on the board and list ideas under each question. Students may work in pairs first to discuss the questions.
 - What is global warming?
 - Why is it dangerous?
 - What causes global warming?
2. Have students break into small groups and ask them to analyze the following images and answer the questions. Beforehand, review the questions and write the following language structures on the board to support students in answering the questions.

EXAMPLES:

_____ cause(s) global warming.
_____ doesn't/don't cause global warming.

- What is in the picture?
- Does it produce carbon dioxide?
- Does it cause global warming?

The images can be found at the websites in the Materials list under "Selection of images." They can be projected onto a screen in the classroom or downloaded and printed out as handouts.

MATERIALS

- <http://www.kqed.org/quest/blog/tag/carbon-footprint/>
 This KQED **QUEST** blog page links to <http://www.climatecrisis.net/calculate-your-impact.php>, an interactive website from the film An Inconvenient Truth that allows users to calculate their carbon footprint. It's ideal for beginning-level ESL students and/or those with limited computer skills because of its reduced content and user-friendly interface. This lesson plan is primarily designed around this carbon footprint calculator.
- <http://www.coolcalifornia.org/article/carbon-calculator>
 This is an extensive interactive website that calculates a more precise carbon footprint, but requires more user input and a higher level of language skills and computer skills. This website may be appropriate for intermediate and advanced ESL students.
- <http://hdgc.epp.cmu.edu/teachersguide/teachersguide.htm#topten>
 This site offers a teachers' guide to high-quality educational materials on climate change and global warming, created by Susan Joy Hassol.
- Selection of images at http://news.bbc.co.uk/olmedia/295000/images/_295067_car_exhaust300.jpg

<http://www.touramazon.com/images/amazon-rainforest6.jpg>

http://imgs.sfgate.com/c/pictures/2008/11/17/mn-warmingchina__0496914382.jpg

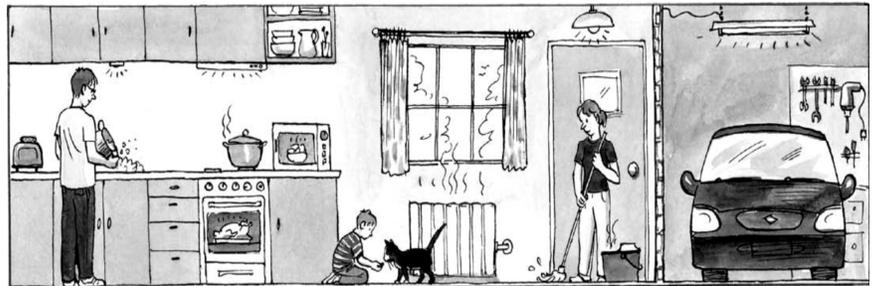
<http://www.freefoto.com/preview/2050-27-14?ffid=2050-27-14&k=Flybe+Airplane>

http://www.sevenarrowsfarm.com/images/Sust_Garden_1.jpg

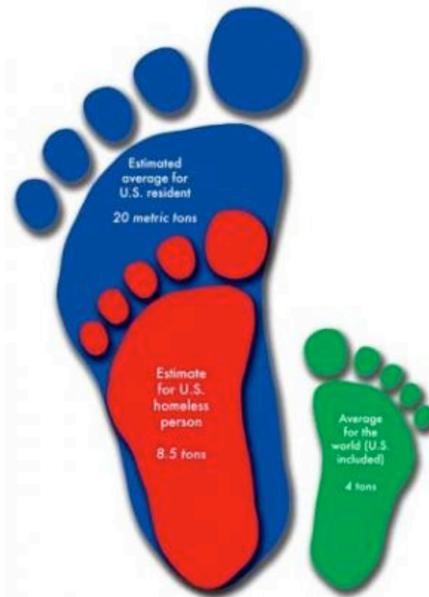
<http://cache.eb.com/eb/image?id=99543&rendTypeld=4>

3. Alternatively or in addition, ask students to analyze the following image of a family at home. As in step 2 above, review the questions and write language structures on the board to help them frame their answers.

- What is in the picture?
- What objects or activities in the picture use energy?
- What objects or activities in the picture cause global warming?



4. Explain the term “carbon footprint” by reproducing the image below of three carbon footprints. Ask students to suggest reasons for the different averages between U.S. residents, U.S. homeless and world residents. Ask students to predict what their carbon footprint will be.



<http://www.sciencedaily.com/releases/2008/04/080428120658.htm>

Activity 2

Interviewing Classmates on Their Carbon Impact

1. Make copies of and distribute the chart below. Ask students to write their own name in the first row and to answer the questions. Assemble students in groups of three or four and have them take turns interviewing each other. (The questions in the chart are adapted from *An Inconvenient Truth*'s carbon footprint calculator.)

Name of student	How many people live in your house?	Does your family drive a car?	How many flights does your family take every year?
For each question, which student has the smallest carbon footprint?			
Which student has the smallest carbon footprint overall? Why?			

2. Ask students to compare their answers and make predictions as a group. Then invite them to share their results with the class.

Homework (Optional)

Preparing for the Carbon Footprint Calculator

- Provide the students with the precise questions from the *Inconvenient Truth* website for calculating your carbon footprint (<http://www.climatecrisis.net/calculate-your-impact.php>). They can ask their family for help in answering these questions.
- If they have computers, they can visit the *Inconvenient Truth* carbon footprint calculator with other family members to preview and/or answer the questions.

DAY TWO

Activity 1

Review terms and ideas from the first day and review homework.

Activity 2

Calculating Your Carbon Footprint

1. Review the questions and model how to interact with the *Inconvenient Truth* carbon footprint calculator website through any of the following ways:
 - Project the website onto a screen.
 - Make a copy or an overhead projector transparency of a screen shot of the calculator.
 - Write the questions from the website on the board.
2. Organize students in pairs and have them visit the website to calculate their own carbon footprint. Tell them to write down their footprint in terms of metric tons.

Activity 3

Reflection and Suggestions for Action

1. Have students gather in their groups and ask them to identify three to five ways in which they can reduce their carbon footprint. Write relevant language structures and vocabulary on the board to support them in generating ideas.

EXAMPLES:

I can _____ less/more.

2. As a class activity, work with students to generate a list on the board of the ways in which they can take action to reduce their carbon footprint.
 - Have there been any new jobs in the *green economy* recently?
 - Is the American government going to pay for people to learn new skills for these new jobs?
 - Give two examples of green collar jobs that might exist in the future.