



# INNOVATIVE WAYS TO KEEP THE HOME FIRES BURNING - LESSON

## Teacher Overview

Students will learn about our carbon footprint and its impact on the environment, renewable and non-renewable sources of energy, and the environmental impacts of using renewable versus non renewable energy sources for heating the home.

## Learning Objectives

Students will:

1. Understand what is meant by the terms 'carbon footprint', 'carbon emissions', 'carbon neutral', fossil fuels, renewable and non-renewable energy sources and 'engineered wood products' (such as wood pellets).
2. Understand the importance of reducing our carbon footprint on the environment.
3. Describe the environmental impact of the different sources of energy used for heating and other activities – including both renewable and non renewable energy sources
4. Compare wood pellets as an alternative source of energy to non-renewable sources of energy such as natural gas, coal and oil.

## Background

Our carbon footprint is the amount of carbon produced by what we do – for example, when we go for a drive in a (petrol powered) car, use the computer or travel by plane. When we talk about carbon emissions we are referring to the release of carbon into the atmosphere – otherwise termed greenhouse gas emissions, the main contributors to climate change.

Coal, oil and natural gas are 'fossil fuels' because they have been formed from the fossilised remains of prehistoric plants and animals. Fossil fuels are a non-renewable energy source because they take millions of years to form. Globally, fossil fuels currently provide for over 85% of all the energy we consume. Alternatively, renewable energy sources are those that come from natural sources and can be replenished. Examples of renewable sources of energy are: solar, wind, water, biomass (wood, wood waste, municipal solid waste, landfill gas, ethanol and biodiesel). Engineered wood products, such as wood pellets, are one example of a renewable energy source.

There are four activities to select from in this lesson. You may choose to undertake all them or alternately, choose those relevant to the objectives you wish to achieve.

## Activity 1 – Innovative Ways of Keeping the Home Fires Burning

This activity enables students think about their carbon footprint

1. Students watch the video [https://www.youtube.com/watch?v=8q7\\_aV8eLUE](https://www.youtube.com/watch?v=8q7_aV8eLUE) then complete the table for the activities that they undertake.
2. Students present and compare answers.



## Activity 2 – Wood Pellets

[http://youtu.be/w\\_i1TR8GaG0](http://youtu.be/w_i1TR8GaG0)

This activity explains how and why wood pellets can be used as a renewable energy source.

1. Students watch the video “Going Bush – Innovative ways of keeping the home fires burning’ and answer the questions in the spaces provided.
2. Students present and discuss answers.

## Activity 3 – A Look At the Alternatives

This activity enables students to have a more comprehensive knowledge of types of energy available

1. Working in pairs students undertake online research to find three alternative sources of energy used to heat homes and record in the spaces provided on the worksheet whether the source is renewable or non-renewable.
2. Students present their answers

## Activity 4 – The Pro’s and Con’s

Students will examine the pros and cons of wood pellets as a source of energy

1. Students research both sides of the argument for and against the use of wood pellets as a source of energy and record in the spaces provided on the worksheet.
  2. Students present their research and discuss their thoughts about this energy source.
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1. What do bee keepers do every year in Tasmania for the annual Leatherwood flowering?
  2. What months of the year does the Leatherwood flowering take place?

## Activity 5 - Your Thoughts!

Students demonstrate their understanding of ‘carbon footprint’ by answering the questions in the spaces provided.



## Sources

For Carbon footprint facts/definition:

[https://www.youtube.com/watch?v=8q7\\_aV8eLUE](https://www.youtube.com/watch?v=8q7_aV8eLUE)

<http://www.grinningplanet.com/embed-2/funny-carbon-footprint-video/green-ninja-footprint-renovation.html>

For information about fossil fuels and non renewable and renewable energy sources:

<http://www.conserve-energy-future.com/various-fossil-fuels-facts.php>

<http://www.aps.org/policy/reports/popa-reports/integelec-facts.cfm>

For carbon emission definition:

<http://www.ecolife.com/define/carbon-emission.html>

<https://stats.oecd.org/glossary/detail.asp?ID=6323>

For wood pellet information:

<http://news.nationalgeographic.com/news/energy/2014/12/141208-wood-pellet-energy-boom-driven-by-exports/>

<http://www.pellet.org/environment/environment>

For pros and cons of pellets:

[http://recycling.about.com/od/Wood\\_Recycling/fl/Advantages-and-Disadvantages-of-Using-Wood-Pellet-for-Heating.htm](http://recycling.about.com/od/Wood_Recycling/fl/Advantages-and-Disadvantages-of-Using-Wood-Pellet-for-Heating.htm)

<http://www.eco-home-essentials.co.uk/disadvantages-of-biomass.html>

<https://www2.buildinggreen.com/blogs/heating-wood-pellets>

<http://www.treehugger.com/clean-technology/pellet-stoves-vs-wood-stoves-which-is-greener.html>

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