

# Energy Transfer in Nature

Real World Energy  
Activity  
Grade Level: 9-12



## Main Objectives

This activity provides two basic learning approaches. The first is based on the learners using the online activities as a backgrounder and answering the questions that follow it. The second part is applying this knowledge to an online activity on global climate change.

## Learning Outcomes

By the end of this activity, learners will:

- Demonstrate an understanding of the Earth's energy budget
- Understand the movement of water and air around the Earth
- Understand the carbon cycle and the role of carbon sinks
- Understand food chains and webs
- Understand the potential impacts of global climate change

## Length of Activity

3 hours

## Materials List

Energy Transfer in Nature Backgrounder  
Energy Transfer in Nature Learner Activity  
Instructions  
Energy Transfer in Nature Learner Worksheet  
Online Component:

<http://science24.greenlearning.ca/b5popup.php>

## Background

Learners will examine different components of energy transfer in nature and see how these are affected by global climate change. Climate change is a continuing topic of debate but scientific research has shown trends of a changing climate. Climate change is more than global warming. Climate change has the potential to affect our health, harm our environment and damage our economy. It is about the impacts on the earth's energy budget, the carbon cycle, air, water, food chains, disease and much more.

## Procedure

1. Prepare the learners by going over the instructions in the learner activity instructions.
2. Have learners review the background material.
3. Review with the learners how to access the online component so that they can complete the questions in the learner worksheet.

## Tips and Extensions

Simulate the greenhouse effect using a 2L soft-drink bottle, thermometers and heat lamp. Have learners graph the temperature changes over time.

Create a biosphere bottle using a large water jug, soil and plants.

Have your class plant trees as a contribution to the fight against climate change.

Demonstrate convection by using an aquarium with a lid, an incense stick and a candle. Place the candle and incense stick at different ends of the aquarium and light them both. Observe what happens with the smoke.

Have learners map the movement of air or water pollution using the map of air and water currents.

Have learners play the Web of Life game to see how food chains are connected and how bioaccumulation works.

Have learners prepare a debate on climate change.