

“Climate touches all of us. On a longer time scale, probably the most important determinant of human civilization has been climate.”  
 —Dr. William Patzert, NASA/JPL Oceanographer

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## Understanding the Effects of Climate Change

The White Witch holds Narnia in her evil spell by keeping it frozen. On Earth, humans are coming to realize that by their actions they're harming the Earth—by changing its climate. Learn about the serious problem of global warming and what you can do to ensure that all of Earth's creatures flourish.

The evil hold that Jadis the White Witch has over Narnia is represented by her ability to keep Narnia's weather in her icy grip. On Earth, many experts believe that the most serious consequence of human carelessness must be stopped now. And, just as in Narnia, it involves understanding the importance of climate and temperature to the well-being of everything living on Earth.

### WHAT IS GLOBAL WARMING?

Global warming is something that is happening to the climate of the Earth. The average temperature is rising around the world. Why? It's because of the greenhouse effect. How does the greenhouse effect increase the temperature?

Have you ever been in a greenhouse? Even on a cold day, it's warm inside. That's because the glass lets in heat from the sun but doesn't let it out again. The Earth is a bit like a greenhouse. It is surrounded by a layer of gases—our **atmosphere**. Some of these gases are called **greenhouse gases**, because they do what the glass in a greenhouse does. First, they let in the sun's rays. When the rays get to the ground, some are absorbed as heat. More heat bounces off the land and water and heads back toward outer space. But if it runs into a greenhouse gas along the way, the heat is trapped. It can't escape into space, so it stays in the atmosphere and warms up the planet.

The greenhouse effect is natural for the Earth, and it's a very good thing for us. Greenhouse gases are like a blanket that keeps the planet warm. Without the greenhouse effect, the Earth would be much colder than it is now—so cold that the oceans would freeze and we couldn't live here.

You can kick the blankets off if you get too hot. The Earth can't—and that's the problem.

But greenhouse gases—especially carbon dioxide—are increasing in the atmosphere because of pollution caused by people. Our "blanket" is getting thicker. The planet is heating up, just like you would if you piled a thick layer of blankets on your bed. You can kick the blankets off if you get too hot. The Earth can't—and that's the problem.

### WHERE IS THE CARBON DIOXIDE COMING FROM?

From people. We burn coal, oil, and gas—also known as fossil fuels—for energy. Power plants use coal to make electricity. Cars, trucks, planes, and other vehicles run on fuel made from oil. When we burn these fossil fuels, they send carbon dioxide and other greenhouse gases into the air.

### IS GLOBAL WARMING THE SAME AS CLIMATE CHANGE?

Not quite. They're related, but different. **Global warming** is the increase in the Earth's average temperature caused by extra greenhouse gases in the atmosphere. **Climate change** is a broader term. It includes rising temperatures due to global warming, as well as other changes in our climate that may come with it. These could be changes in the amount of rain, snow, or clouds; different wind patterns; stronger storms; and maybe even colder temperatures.



### RISE TO THE CHALLENGE!

Here are some steps you can take that can have some really positive impacts on global warming pollution!

- Turn off your computer and TV when you're not using them. This can save up to 140 pounds of carbon dioxide (CO<sup>2</sup>) each year.
- Turn off the lights when you leave a room or when you don't need them on. This can save 380 pounds of CO<sup>2</sup> each year.
- Heating water takes a lot of energy. By taking shorter showers, you can save 350 pounds of CO<sup>2</sup> each year.
- Switch to compact fluorescent light bulbs. One bulb can reduce CO<sup>2</sup> by 100 pounds per year.
- By closing the blinds or drapes on a hot day, you can keep your house from heating up as much, reducing the need for your air-conditioning unit to work so hard! Ceiling fans help too.

### SHOW WHAT YOU KNOW!

In order to change something, you have to make sure that you understand it first. Complete this crossword puzzle to help you understand some key words and ideas from the selection you have just read. You may need a dictionary to help you. The words you will need are listed below.

ATMOSPHERE POLLUTION	GREENHOUSE ELECTRICITY	FOSSIL RISING	PEOPLE ENERGY	COMPUTER PLANET	OFF
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### ACROSS

- Turn \_\_\_\_\_ the lights when you leave a room!
- Where the carbon dioxide is coming from.
- If you turn this off you could save up to 140 pounds of CO<sup>2</sup> each year!
- The average temperature of the world is \_\_\_\_\_.
- Another word for an increase in greenhouse gases, especially carbon dioxide in the atmosphere.

### DOWN

- A layer of gases that surround the Earth.
- The average temperature is affected around the world because of this.
- Heat that can't escape into space stays around and, as a result, warms this up.
- Coal is used in power plants to make this.
- Another name for coal, oil, and gas is \_\_\_\_\_ fuel.
- Heating water takes a lot of this.

