



# Effect of Global Warming

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## 1. Introduction

Warming, the general increase in the earth's near-surface air and ocean temperatures remains a pressing issue in a society that has expanded its industrial use since the mid-twentieth century.

Greenhouse gases, atmospheric gases that exist to keep our planet warm and prevent warmer air from leaving our planet, are enhanced by industrial processes. As human activity such as the burning of fossil fuels and deforestation increases, greenhouse gases such as Carbon Dioxide are released into the air. Normally, when heat enters the atmosphere, it is through short-wave radiation; a type of radiation that passes smoothly through our atmosphere. As this radiation heats the earth's surface, it escapes the earth in the form of long-wave radiation; a type of radiation that is much more difficult to pass through the atmosphere. Greenhouse gases released into the atmosphere cause this long-wave radiation to increase. Thus, heat is trapped inside of our planet and creates a general warming effect.

Scientific organizations around the world, including The Intergovernmental Panel on Climate Change, the InterAcademy Council, and over thirty others, have projected a significant change and future increase in these atmospheric temperatures. But what are the real causes and effects of global warming? What does this scientific evidence conclude in regards to our future?

## 2. What is Global Warming?

Global Warming is the increase of Earth's average surface temperature due to effect of greenhouse gases, such as carbon dioxide emissions from burning fossil fuels or from deforestation, which trap heat that would otherwise escape from Earth. This is a type of greenhouse effect. Is global warming, caused by human activity, even remotely plausible?



Earth's climate is mostly influenced by the first 6 miles or so of the atmosphere which contains most of the matter making up the atmosphere. This is really a very thin layer if you think about it. In the book *The End of Nature*, author Bill McKibbin tells of walking three miles to from his cabin in the Adirondack's to buy food. Afterwards, he realized that on this short journey he had traveled a distance equal to that of the

layer of the atmosphere where almost all the action of our climate is contained. In fact, if you were to view Earth from space, the principle part of the atmosphere would only be about as thick as the skin on an onion! Realizing this makes it more plausible to suppose that human beings can change the climate. A look at the amount of greenhouse gases we are spewing into the atmosphere (see below), makes it even more plausible.

## 3. Causes of Global Warming

The crucial component that causes greenhouse gases such as CO<sub>2</sub>, Methane, Chlorofluorocarbons (CFC's), and Nitrous Oxide to be released into the atmosphere is human activity. The burning of fossil fuels (i.e., non-renewable resources such as oil, coal, and natural gas) has a significant effect on the warming of the atmosphere. The heavy use of power plants, cars, airplanes, buildings, and other man-made structures release CO<sub>2</sub> into the atmosphere and contribute to global warming.

Nylon and nitric acid production, the use of fertilizers in agriculture, and the burning of organic matter also release the greenhouse gas Nitrous Oxide. These are processes that have been expanded since the mid-twentieth century.

Another effect of global warming is changes in wildlife adaptations and cycles, an alteration of the natural balance of the earth. In Alaska alone, forests are continually destroyed due to a bug known as the spruce bark beetle. These beetles usually appear in the warmer months but since the temperatures have increased, they have been appearing year-round. These beetles chew on spruce trees at an alarming rate, and with their season being stretched for a longer period of time, they have left vast boreal forests dead and gray.

Another example of changing wildlife adaptations involves the polar bear. The polar bear is now listed as a threatened species under the Endangered Species Act. Global warming has significantly reduced its sea ice habitat; as the ice melts, polar bears are stranded and often drown. With the continuous melting of ice, there will be less habitat opportunities and a risk in extinction of the species.

#### **4. Ocean Acidification/Coral Bleaching**

As Carbon Dioxide emissions increase, the ocean becomes more acidic. This acidification affects everything from an organism's ability to absorb nutrients to changes in chemical equilibrium and therefore natural marine habitats.

Since coral is very sensitive to increased water temperature over a long period of time, they lose their symbiotic algae, a type of algae that gives them coral color and nutrients. Losing these algae results in a white or bleached appearance, and is eventually fatal to the coral reef. Since hundreds of thousands of species thrive on coral as a natural habitat and means of food, coral bleaching is also fatal to the living organisms of the sea.

#### **Reference**

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