

# Sources of Greenhouse Gases and their Impact on Climatic Change and the Global Warming

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## DESCRIPTION

Some greenhouse gases are produced solely by human activity (e.g., synthetic halocarbons). Some also occur naturally but at high levels due to human intervention (e.g., carbon dioxide). Anthropogenic sources include energy-related activities (for example, the fossil fuel combustion in the electric utility and transport sectors), agricultural production, soil change, waste water treatment, and a variety of industrial processes. Carbon dioxide, methane, nitrous oxide, and various synthetic chemicals are major greenhouse gases.

Carbon dioxide is widely regarded as the most significant anthropogenic greenhouse gas, accounting for the majority of the warming caused by human activities. Carbon dioxide naturally occurs, as a part of the global carbon cycle, but anthropogenic activities have increased atmospheric factor loading *via* fossil fuel combustion and other emissions sources. Natural carbon dioxide sinks (e.g., oceans, plants) help to regulate carbon dioxide levels, but human activities can disrupt or enhance these processes (e.g., deforestation).

Methane is produced by a variety of human activities, including coal mining, natural gas production and distribution; landfill waste decomposition, and digestive processes in livestock and agriculture. Wetlands and termite mounds are natural sources of methane. Nitrous oxide is produced as a byproduct of agricultural and industrial processes, as well as the carbonization of solid waste and fossil fuels.

As a result of commercial, industrial, or household use, various synthetic chemicals such as the hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and other synthetic gases are released. Many other gases have been discovered to trap heat in the atmosphere. Water vapour, which occurs naturally as part of the global water cycle, and ozone, which occurs naturally in the stratosphere but is found in the troposphere primarily due to human activity, are the two examples.

Because of difference between the amount as well as type of energy that it absorbs, each greenhouse effect has a distinct ability to absorb heat, as well as a different "lifetime," or time that

it continues to remain in the atmosphere. In terms of heat absorption, it might take thousands of molecules of carbon dioxide to equivalent the warming effect of a single molecule of sulphur hexafluoride, the most potent greenhouse gas, according to the Intergovernmental Panel on Climate Change (IPCC). To make it easier to compare gases with vastly different properties, the IPCC created a set of metrics known as "global warming potentials."

## Impacts on climate change

- Climate change affects civilization and biosphere in a number of ways.
- A warmer climate, for example, is predicted to increase the risk of high - temperature illnesses and deaths as well as different kinds of air pollution.
- In a warmer climate, more intense heat waves, floods, and droughts are expected. Crop yields may be reduced as a result of this.
- Sea level rise has the potential to erode and inundate coastal ecosystems, as well as eliminate wetlands.
- Climate change has the potential to change where species live and how they interact, potentially fundamentally altering current ecosystems.

These and many other factors of climate change are interfering with people's lives and harming certain sectors of the US economy. As a result, many state and local governments are preparing for these effects through adaptation.

## Reason for global warming

Since the greenhouse gases are largely responsible for the greenhouse effect, the hydrocarbons in the environment that accumulate radiation are known as "Green House Gases" (GHG). In turn, the greenhouse effect is one of the primary factors that cause of global warming. According to the Environmental Protection Agency (EPA), the most significant greenhouse gases are water vapour (H<sub>2</sub>O), Carbon Dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and Nitrous Oxide (N<sub>2</sub>O).

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While oxygen ( $O_2$ ) is the second most abundant gas in our atmosphere, it does not absorb thermal infrared radiation. Global warming and the greenhouse gas emissions that cause it occur naturally; without them, the average surface temperature of

the Earth would be a cold zero degrees Fahrenheit (minus  $18^\circ C$ ). However, the amount of greenhouse gases in the atmosphere has recently skyrocketed to dangerous levels.