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Commentary

Emissions and Trends of Greenhouse Gases

Mudasar Hassan *

Department of Environment Management, Chh. Shahu Institute of Business Education and Research (Siber), Kolhapur, Maharashtra, India

DESCRIPTION

Greenhouse gases are gases that trap heat in the atmosphere. The amount of a certain gas in the air is known as concentration or abundance. Increased greenhouse gas emissions result in higher concentrations in the atmosphere. Greenhouse gas concentrations are measured in parts per million, billions, and trillions. One part per million is equivalent to one drop of water diluted in roughly 13 gallons of liquid. Each of these gases has a varied life in the atmosphere, ranging from a few years to thousands of years. Because all of these gases stay in the atmosphere long enough to get thoroughly mixed, the amount measured in the atmosphere is nearly the same across the world, independent of the source of emissions. The primary greenhouse gas emitted by human activity is carbon dioxide. CO_2 accounted for nearly 79 percent of all human-caused greenhouse gas emissions in the United States in 2020. Carbon dioxide is naturally present in the atmosphere as part of the Earth's carbon cycle.

Human activities are affecting the carbon cycle, both by releasing more CO_2 into the atmosphere and by affecting natural sink's ability to take and store CO_2 from the atmosphere, such as forests and soils. CO_2 emissions occur from a variety of natural sources, but since the industrial revolution, human-caused emissions are to blame for the rise in the atmosphere. The burning of fossil fuels (coal, natural gas, and oil) for energy and transportation is the primary source of CO_2.

CO_2 is also produced by industrial operations and some land-use changes. Transportation of people and goods using fossil fuels like gasoline and diesel was the largest source of CO_2 emissions in 2020, accounting for over 33% of all US CO_2 emissions and 26% of total US greenhouse gas emissions. This category includes highway and passenger automobiles, air travel, sea transportation, and rail transportation inside the United States. In the United States, electricity is a major source of energy, used to power homes, businesses, and industries.

In the United States in 2020, fossil fuel combustion for electricity production was the second-largest source of CO_2 emissions, accounting for roughly 31% of total CO_2 emissions and 24% of total greenhouse gas emissions. CO_2 emissions are affected by the kind of fossil fuel used to generate electricity. To generate the same amount of power, coal creates more CO_2 than natural gas or oil. Due to the use of fossil fuels many industrial processes emit CO_2. Several activities, including the production of mineral commodities such as cement, metals such as iron and steel, and chemicals, also produce CO_2 through chemical processes that do not need burning. Many industrial operations consume energy, which results in CO_2 emissions from power generation indirectly.

Because fossil fuel combustion is the primary source of greenhouse gas emissions in the United States, changes in fossil fuel combustion emissions have traditionally influenced overall U.S. emission patterns. CO_2 emissions from fossil fuel combustion are influenced by a variety of long- and short-term factors, including population increase, economic growth, changing energy prices, new technologies, changing behavior, and seasonal temperatures. In 2020, the reduction in CO_2 emissions from fossil fuel combustion was accompanied by a decrease in energy use. As a result of this decreased economic, manufacturing, and travel activity in response to the coronavirus pandemic, as well as a continued shift in the electric power sector from coal to less carbon-intensive natural gas and renewables.

CONCLUSION

Using less fossil fuel is the most effective approach to minimize CO_2 emissions. Many CO_2 reduction solutions are multi-faceted and may be used in households, enterprises, industries, and transportation. Insulating buildings, driving more fuel-efficient cars, and using more energy-efficient electrical equipment are all ways to reduce energy use and CO_2 emissions. Individual energy consumption can be reduced by switching off lights and electrical gadgets when they are not in use. Carbon dioxide Capture and Sequestration (CCS) is a collection of technologies that have the potential to drastically reduce CO_2 emissions from new and current coal and gas-fired power plants, industrial processes, and other stationary CO_2 sources. Because atmospheric CO_2 is part of the global carbon cycle, it is affected by a range of geochemical and biological processes. Some of the excess carbon dioxides will be absorbed quickly (for example, by the ocean surface), while others may remain in the atmosphere for thousands of years due to the slow process by which carbon is transferred to ocean sediments.

Correspondence to: Dr. Mudasar Hassan, Department of Environment Management, Chh. Shahu Institute of Business Education and Research (siber), Kolhapur, Maharashtra, India, E-mail: mudasar_hassan@hotmail.com

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