

## Climate Change

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## Sources of Greenhouse Gas Emissions

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## Overview

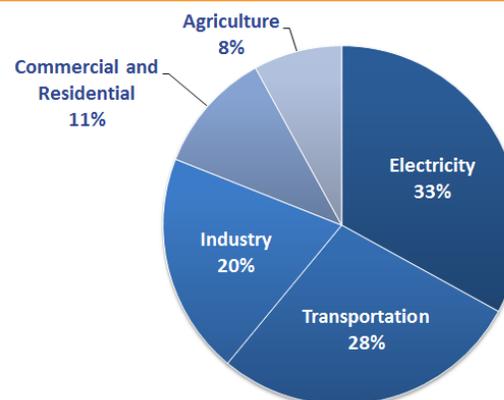
Greenhouse gases trap heat and make the planet warmer. Human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years.<sup>[1]</sup> The largest source of greenhouse gas emissions from human activities in the United States is from burning fossil fuels for electricity, heat, and transportation.

EPA tracks total U.S. emissions by publishing the *Inventories of U.S. Greenhouse Gases and Sinks*. This annual report estimates the total national greenhouse gas emissions and removals associated with human activities across the United States.

The primary sources of greenhouse gas emissions in the United States are:

- **Electricity production** (33% of 2011 greenhouse gas emissions) – Electricity production generates the largest share of greenhouse gas emissions. Over 70% of our electricity comes from burning fossil fuels, mostly coal and natural gas.<sup>[2]</sup>
- **Transportation** (28% of 2011 greenhouse gas emissions) – Greenhouse gas emissions from transportation primarily come from burning fossil fuel for our cars, trucks, ships, trains, and planes. Over 90% of the fuel used for transportation is petroleum based, which includes gasoline and diesel.<sup>[3]</sup>
- **Industry** (20% of 2011 greenhouse gas emissions) – Greenhouse gas emissions from industry primarily come from burning fossil fuels for energy as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.
- **Commercial and Residential** (11% of 2011 greenhouse gas emissions) – Greenhouse gas emissions from businesses and homes arise primarily from fossil fuels burned for heat, the use of certain products that

## Total U.S. Greenhouse Gas Emissions by Economic Sector in 2011



Total Emissions in 2011 = 6,702 Million Metric Tons of CO<sub>2</sub> equivalent

\* Land Use, Land-Use Change, and Forestry in the United States is a net sink and offsets approximately 14% of these greenhouse gas emissions.

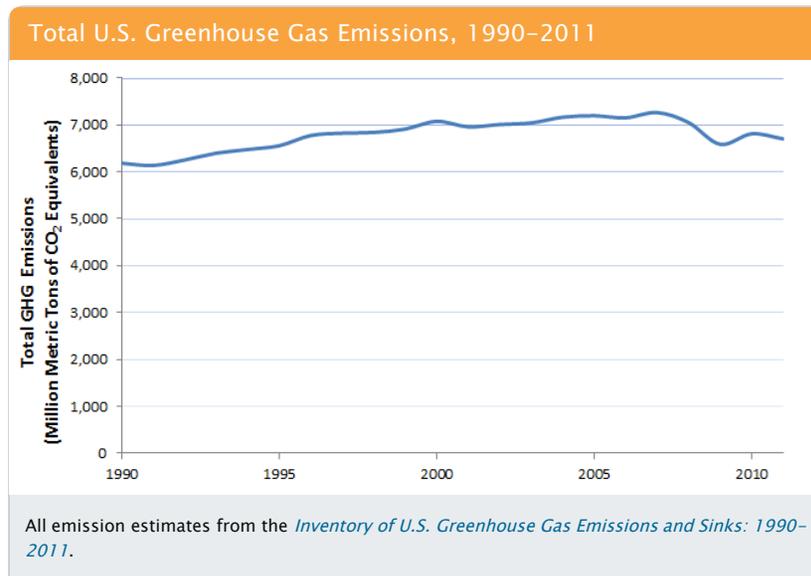
All emission estimates from the *Inventories of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011*

contain greenhouse gases, and the handling of waste.

- **Agriculture** (8% of 2011 greenhouse gas emissions) – Greenhouse gas emissions from agriculture come from livestock such as cows, agricultural soils, and rice production.
- **Land Use and Forestry** (offset of 14% of 2011 greenhouse gas emissions) – Land areas can act as a sink (absorbing CO<sub>2</sub> from the atmosphere) or a source of greenhouse gas emissions. In the United States, since 1990, managed forests and other lands have absorbed more CO<sub>2</sub> from the atmosphere than they emit.

## Emissions and Trends

Since 1990, U.S. greenhouse gas emissions have increased by about 8%. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. In 2011, U.S. greenhouse gas emissions decreased compared to 2010 levels. This decrease was primarily due to a decrease in the carbon intensity of fuels consumed to generate electricity due to a decrease in coal consumption, with increased natural gas consumption and a significant increase in hydropower used. Additionally, relatively mild winter conditions, especially in the South Atlantic Region of the United States where electricity is an important heating fuel, resulted in an overall decrease in electricity demand in most sectors.



To learn about projected greenhouse gas emissions to 2020, visit the [U.S. Climate Action Report 2010 \(PDF\)](#) (193 pp., 3.11 MB).

## References

1. IPCC (2007). *Summary for Policymakers*. In: *Climate Change 2007: The Physical Science Basis*. [EXIT Disclaimer](#) *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
2. U.S. Energy Information Administration (2011). *Electricity Explained – Basics*.
3. Kahn Ribeiro, S., S. Kobayashi, M. Beuthe, J. Gasca, D. Greene, D. S. Lee, Y. Muromachi, P. J. Newton, S. Plotkin, D. Sperling, R. Wit, P. J. Zhou (2007). *Transport and its infrastructure*. In *Climate Change 2007: Mitigation*. [EXIT Disclaimer](#) *Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds.)], Cambridge University

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