



CARBON FOOTPRINT

1. What is a carbon footprint?

A carbon footprint is defined as the total amount of greenhouse gases (including carbon dioxide, methane, nitrous oxide, ozone) released into the atmosphere (usually expressed as tons of carbon dioxide or CO₂ emitted per year) that directly and indirectly support human activities. A carbon footprint can be a broad measure applied to the actions of an individual, a household, an event, an organization, a business, a nation, or the entire planet. Carbon footprints, water footprints and land footprints are concepts developed in the 1990s that compared how much people demand of the planet compared to what it can renew and is a powerful tool to help understand the impact of personal behavior on global warming.

There are free on-line carbon footprint calculators. These websites ask you to answer questions about your diet, transportation choices, home size, electricity use, heating/cooling systems, shopping and recreational activities, heavy appliances such as clothes dryers and refrigerators in your home, and so on. From your answers to these questions, a rough estimate of your carbon footprint in tons of carbon emissions per year can be estimated. Most people are shocked when they see the amount of carbon (expressed as CO₂ equivalents) their individual activities create.

The global average carbon footprint per capita in 2021 was about 5.0 metric tonnes (1 metric tonne = 1.102 U.S. tons expressed as CO₂ equivalent) per year. During this period, the average per capita carbon emissions per year in the United States was much higher at 14.9 metric tonnes, although our footprint is decreasing from a high of 23.1 tonnes per capita per year in 1973. China's carbon footprint in 2021 was only 8.0 tonnes per year, although their population is much higher than ours. In terms of total carbon dioxide emissions per year, China has the highest emission rate at 11.5 billion tonnes per year in 2021. By comparison, the U.S. emitted 6.3 billion tonnes in 2021.

For more information, check these links:

[What is a Carbon Footprint? | Good Energy](#)

[Carbon footprint - Wikipedia](#)

[Carbon Footprint Calculator | Climate Change | US EPA](#)

[What is a carbon footprint - definition of carbon footprint \(timeforchange.org\)](#)

[Carbon Footprint Of Best Conserving Americans Is Still Double Global Average -- ScienceDaily](#)
[Per capita CO₂ emissions, 2021 \(ourworldindata.org\)](#)

2. How can we reduce our carbon footprints?

In the U.S., the average person's carbon dioxide (CO₂)-equivalent emissions come from transportation (28%), stuff we buy (26%), home heating and cooling (17%), other home energy usage (15%), and food we eat (14%). So, we can all reduce our carbon footprints by:

- Driving more fuel-efficient and low emissions vehicles,
- Driving fewer miles, taking public transportation, carpooling, walking, and biking,
- Using energy efficiency appliances and light bulbs,
- Insulating your home and adding weather stripping to plug leaks,
- Installing a programmable thermostat,
- Minimizing purchases of new products that are resource intensive to manufacture or heavily-packaged,
- Embracing a minimalist life style,
- Having fewer children,
- Buying local-sourced foods that don't require much transportation,
- Eating less meat, and/or eating chicken and pork instead of beef,
- Recycling, reducing, and reusing,
- Composting food wastes,
- Reducing air travel and purchasing carbon offsets,
- Installing solar panels on your home,
- Choosing low energy-use recreational activities (e.g., kayaks vs. power boats),
- Choosing green hotels,
- Promoting a carbon fee and dividend policy to provide incentives for companies and individuals to reduce use of fossil fuels and carbon emissions,
- Planting more trees and other vegetation that will sequester CO₂, and
- Encouraging and supporting greenhouse gas-reducing practices in your community.

For more information, check this link: [20 Ways to Reduce Your Carbon Footprint](#)

3. *What is a carbon fee or tax?*

A carbon fee puts a price on carbon emissions by imposing a cost on the burning of carbon-based fuels (coal, oil, gas) to encourage people, businesses, and governments to produce and use less of them and/or switch to cleaner, alternative and renewable energy sources all across the economy. Many experts are convinced that the transformation of our fossil fuels-based energy system to increased energy efficiency and more reliance on renewable and sustainable energy sources won't happen fast enough to slow global warming without a carbon fee.

The carbon content of all fossil fuels has been determined which indicates that a carbon fee would be highest on coal followed by petroleum products and natural gas. Estimates of the societal costs of carbon emissions vary widely. In 2016, the Interagency Working Group on Social Costs of Greenhouse Gases estimated that CO₂ emissions impose a social cost of about \$40 per metric tonne.

Carbon fees have been enacted or are proposed in several countries, including Australia, New Zealand, Chile, Sweden, Finland, United Kingdom, Ireland, and others. The most notable carbon fee in the Western Hemisphere was started in 2008 in British Columbia, Canada. The first and so far only carbon tax in the United States (as of January 2019) is in Boulder, Colorado, and only on electricity. No state has imposed a carbon tax as of 2023.

For more information, check these links:

[FAQs \(carbontax.org\)](#)
[Where Carbon Is Taxed \(carbontax.org\)](#)
[What is a carbon tax? | Tax Policy Center](#)
[What's a carbon tax?](#)

4. *What is carbon sequestration?*

Carbon sequestration is the natural or artificial process by which carbon dioxide (CO₂) is removed from the atmosphere and held (sequestered) in solid or liquid form. Sequestration is one method of reducing the amount of CO₂ (a greenhouse or heat-trapping gas) emissions, with the goals of slowing global warming and associated climate change. Geological carbon sequestration involves capturing and storing CO₂ in underground rock formations. CO₂ is captured, pressurized until it becomes a liquid, and then injected into underground porous rock formations or into gas and oil wells that are at or nearing the end of their productive lives.

Biological carbon sequestration refers to the storage of atmospheric carbon in vegetation, soils, woody products, and aquatic environments. Demonstrated CO₂ removal processes in the biological realm include land management practices that aim to increase the amount of carbon in soil and also actions aimed at reforestation and afforestation.

Other CO₂ removal processes are still in the research stages. Ocean fertilization, for example, might be a viable CO₂ removal process that involves the addition of specific nutrients into ocean waters. These nutrients are supposed to stimulate the growth of marine organisms which will in turn remove CO₂ from the atmosphere via the process of photosynthesis.

For more information, check these links:

[What is carbon sequestration? \(usgs.gov\)](#)
[Carbon Dioxide Removal Options \(umich.edu\)](#)
[Carbon sequestration - Wikipedia](#)

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