

■ Carbon Footprint Information

Overview

A carbon footprint measures the total greenhouse gases (GHGs) emitted directly or indirectly by human activities, usually expressed in terms of carbon dioxide equivalents (CO₂e). These emissions contribute to global warming and climate change, affecting ecosystems, weather patterns, and sea levels worldwide.

Importance of Tracking Carbon Footprint

Monitoring and reducing carbon footprints is essential to achieving sustainability goals. By understanding emission sources, individuals, organizations, and governments can implement targeted actions that minimize their environmental impact.

■ Major Sources of Carbon Emissions

Carbon emissions originate from various human activities. The most common sources include:

- Transportation – Cars, airplanes, ships, and trains burning fossil fuels.
- Electricity and Heat – Coal, oil, and natural gas used for power generation.
- Industry – Manufacturing, cement production, and industrial processes.
- Agriculture – Livestock, fertilizer use, and land clearing.
- Waste – Decomposition of organic waste in landfills releasing methane (CH₄).

■ Calculation Methods

Carbon footprint calculations are typically based on the amount of energy consumed and the emission factor associated with that energy source. Common methods include:

- Activity-Based: Multiplying activity data (e.g., liters of fuel used) by emission factors.
- Input-Output Models: Using economic data to estimate emissions from goods and services.
- Lifecycle Assessment (LCA): Evaluating emissions from production to disposal stages of a product.

■ Strategies to Reduce Carbon Footprint

Implementing sustainable actions can significantly lower emissions. Key strategies include:

- Switch to renewable energy sources such as solar and wind.
- Use public transportation, bicycles, or electric vehicles.
- Adopt energy-efficient appliances and lighting.
- Reduce, reuse, and recycle materials to minimize waste.
- Plant trees and support afforestation projects.
- Adopt sustainable agricultural and dietary practices.

■ Example Carbon Footprint Data

On average, global carbon emissions per person are approximately 4.7 tons of CO₂e annually. However, this varies widely — from over 15 tons per capita in developed nations to less than 1 ton in low-income countries.

■ References & Resources

- United Nations Climate Change (UNFCCC) – <https://unfccc.int>
- Carbon Footprint Calculator – <https://www.carbonfootprint.com>
- Our World in Data – <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>
- Intergovernmental Panel on Climate Change (IPCC) – <https://www.ipcc.ch>

■ Author & Project Info

Created by **Om Gedam** for educational and environmental awareness purposes. This document can be uploaded to GitHub as part of a sustainability or data science project.