

Reduction of Carbon Foot Prints

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ABSTRACT

A 'carbon footprint' is a measure of the greenhouse gas (GHG) emissions that are relevant to climate change and associated with activities of individuals, populations, governments, companies, organisations, processes or industry sectors. The main reason for calculating a carbon footprint is to formulate and implement policies on how to reduce the climate change impact of a company, service or product. By embracing certain lifestyle modifications on individual level and adopting environment friendly maneuvers and strategies on industrial as well as global levels, we will be able to decrease the size of carbon footprint to an acceptable limit.

Keywords: Carbon footprint reduction, Green House Gases, carbon emission.

INTRODUCTION

In 21st century 'Human induced climate change' is recognized by the global community as the greatest environmental threat. 'Global warming' observed with increases in temperature, decreases in snow & ice extent and increase in sea level is alarming. The main factor causing climate change and global warming is the increase of global carbon emissions.

According to the Forth Assessment Report of the Intergovernmental Panel on Climate Change of United States (IPCC AR4)¹, the largest growth in carbon emissions between 1970 and 2004 come from energy supply, transport and industry, while residential and commercial buildings, forestry/deforestation and agriculture sectors also contributed substantial quantities of carbon dioxide and methane.

Continued increases in carbon dioxide and methane emissions will cause further warming and will induce many changes in the global climate system. It is likely that global warming will exceed 2° this century unless global carbon emissions are cut by at least 50% of the 1990 levels by 2050, and by much more, thereafter. Therefore, it is important that global society dramatically reduces its fossil carbon emissions in order to minimize the severity of climate changes.

DEFINING THE TERM

Carbon footprint has been defined as a measure of the exclusive total amount of carbon dioxide emissions that is directly and indirectly caused by an activity or is accumulated over the life stages of a product.²

A more practicable definition was suggested by Wright, Kemp, and Williams: "A measure of the total amount of carbon dioxide (CO₂) and methane (CH₄) emissions of a defined population, system or activity, considering all relevant sources, sinks and storage within the spatial and temporal boundary of the population, system or activity of interest."

ELABORATING CARBON FOOTPRINT

A carbon footprint is made up of the sum of two parts, the primary footprint and the secondary footprint. The **primary footprint** is a measure of our direct emissions of CO₂ from the burning of fossil fuels including domestic energy consumption and transportation (e.g. car and plane). The **secondary footprint** is a measure of the indirect CO₂ emissions from the whole lifecycle of products we use - those associated with their manufacture and eventual breakdown.

Thus all direct and indirect emissions are to be taken into account. Direct emissions occur through heating and car use. Indirect emissions are the emissions that occur during the generation of electricity and the production of goods and services. They make up 70 per cent of CO₂ emissions per household.⁴ Transport accounts for 28% of total emissions.⁴ Electricity use in the home and use of fuels for space and water heating in the home account for almost one third of the emissions.

▪ Organisational carbon footprints refer to the measurement of emissions from all the activities across an organisation,

▪ Value chain carbon footprints refer to the measurement of emissions occurring inside and outside an organisation's own operations, meaning emissions from both suppliers and consumers.

▪ Product carbon footprints refer to the measurement of the emissions arising over the whole life of a product or service.

According to the Intergovernmental Panel on Climate Change (IPCC), there are a total of 18 greenhouse gases, but under the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto protocol⁵, only the following gases are considered for the purposes of carbon accounting: Carbon dioxide, CO₂

Methane, CH₄

Nitrous oxide, N₂O

Hydrofluorocarbons, HFCs

Perfluorocarbons, PFCs

Sulphur dioxide, SO₂.

Carbon footprint methodologies range from simple online calculators to complex life-cycle analysis. Automated web-based calculators tend to only cover carbon dioxide emissions while some other methods include all Kyoto greenhouse gases and measure emissions in terms of 'carbon dioxide equivalents'.

RELEVANT STATISTICS

Global experts call for a target limit of approximately 2 tonnes of CO₂ emissions per person per year. Currently, the global average is 4 tonnes per person, with wide variation between countries. Approximate national average for years 2009-2013 for the United States of America is 17.6, United Kingdom 7.9, China 6.2, and 1.7 for India.⁶

According to the Carbon Footprint Report 2012 of Indian Aviation Sector all Indian scheduled passenger airlines operating on domestic and international destinations slashed their carbon footprint by 6.6 per cent in 2012 compared with the previous year. The report of the Directorate General of Civil Aviation revealed that the total emission of 15,389,000 tonnes of carbon dioxide (CO₂) in 2012, which represents less than one per cent of India's anthropogenic emissions, was significantly lower than the global average of 2-3 per cent.⁷ There has been a significant overall decline in emission due to the introduction of a series of measures and new procedures for airlines, airports and air traffic control.⁷

REDUCING CARBON FOOTPRINT

The need to reduce carbon emissions should promote increasing use of renewable energy sources such as photovoltaic, wind power, small-scale hydro, geo-thermal and biofuels.

The ways that can contribute to reduction of carbon footprint are:

1. **Planting native trees:** Trees absorb carbon dioxide from the air and use it as their energy source, producing oxygen for us to breathe. A tree in the temperate zone found between the tropics and the polar circles can remove and store 700 to 7,000 pounds of carbon over its lifetime.
2. **Transportation control measures:** Change from ownership of goods towards services through shared ownership of cars and promotion of carpools. The other tactics that may be implemented include higher parking fees at the workplace, employer subsidies to employees who use mass transit or vanpools.
3. **Recycling and use of recycled products:** Products made from recycled paper, glass, metal and plastic reduce carbon emissions because they use less energy to manufacture.
4. **Recycling organic waste and Reduction of food waste:** When discarded food

is landfilled, it biodegrades in the absence of oxygen and produces methane, a greenhouse gas 20 times as potent as CO₂. Reductions in household waste and composting and/or treatment of food waste via anaerobic digestion should be encouraged.

5. **Material substitution and improvement in building construction:** In new residential and commercial buildings tighter windows and improved construction methods can be employed to lower heating and cooling needs, by adding insulation to the walls and attic of one's home. This can reduce total emissions of carbon.

6. **Local production and consumption of food and wood products:** Reduction of energy consumed in transporting goods contributes significantly to a smaller community carbon footprint.

7. **Speeding should be avoided as it uses more petrol and emits more CO₂.** Cars with fully inflated tires give better gas mileage, burn less gas and emit less carbon.

8. Compact fluorescent light bulbs (CFLs) save more than 2/3rds of the energy of a regular incandescent.

9. When buying new appliances appliances with high energy efficiency ratings should be chosen .

10. **Appliances and mobile chargers should not be kept on standby mode instead they should be unplugged to save energy losses.**

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