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Carbon Footprint: Effects & Remedies

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Abstract: *It is the fundamental right of an individual to have a decent and clean environment but due to rapidly increasing industrialization, urbanization and excessive consumption of various products there is release of innumerable toxic effluents in the environment causing Greenhouse effects which in turn increases our carbon footprint. Present paper is an attempt to find out the various ways by which we can reduce our carbon footprints.*

Key Words: Carbon Footprint, Greenhouse Gases, Global Warming, Methane, Troposphere .

The lowest part of the atmosphere is called troposphere which is about 10-15 kilometers thick and the gases present in troposphere are called greenhouse gases. When sunlight comes to earth, some of it is converted to heat. Greenhouse gases absorb some of the heat and trap it near earth's surface, so that the earth is warmed up, process is known as greenhouse effect.

The heat which is trapped in the troposphere determines the temperature on earth. The amount of heat in the troposphere depends on the concentration of atmospheric greenhouse gases. The most important greenhouse gases are CO₂, CFC's (Chlorofluorocarbons), Nitrogen oxide and methane.

The additional addition of gases to the greenhouse effect is known as Global Warming. It is believed that global warming may cause increase in storm activity, melting of ice caps on the poles, will cause flooding of the inhabited continents and other environmental problems.

There are various human activities that contribute to the emission of CO₂. Out of these activities, fossil fuel combustion for energy generation causes about 70-75% of CO₂ emission, being the main source of CO₂ emission. The remaining 20-25% of the emissions are caused by deforestation and by emission from motor vehicle exhausts.

Origin of Concept: The concept and name of carbon footprint was derived from ecological footprint concept which was developed by William E Rees and Mathis Wackernagel in 1990's

* Carbon footprint is one of the important members of footprint family which include ecological footprint, water footprint and land footprint.

* Ecological footprint contains carbon footprint as one major component. Carbon footprints are more focused since they measure emission of gases that cause climate change into atmosphere.

* A carbon footprint is the total amount of greenhouse gas emission that comes from the lifecycle of a product or service. A carbon footprint represents the complete bundle of greenhouse gases (GHG's) produced by human beings directly or indirectly.

Carbon footprints are usually measured in equivalent tons of CO₂ during a year and they can be associated with an individual, an organization, a product or an event usually the major part of an individual's carbon footprint will come from transportation, housing and food. Due to production and consumption of fossil fuels, manufactured goods, materials, road and transportation, the greenhouse gases are increasing whose sum result in a carbon footprint.

Although the most prevalent gas, is CO₂ it is not the most damaging. CO₂ is essential to life as it is being consumed by plants for photosynthesis and animals release it during cellular respiration when they breathe. CO₂ is released naturally by decomposition, ocean release and respiration.

Human contribute an increase of CO₂ emission by burning fossil fuels, deforestation and cement production.

CH₄ methane is largely released by coal, oil and natural gas industries. Methane is more harmful than CO₂



because it traps heat better than CO₂. In natural gas Methane is the main component. Recently industries as well as consumers have been using natural gas because they believe that is better for the environment sine it contains less CO₂ But this is not true because methane is actually more harmful to the environment.

Nitrous Oxide (N₂O) is released by fuel combustion, which comes mostly from coal fired power plants, agricultural and industrial activities.

Fluorinated gases include hydroflucarbons (HFCs), perflurocarbon (PCFs) sulphurhexafluoride (SF₆) and nitrogen trifluoride (NF₃) These gases have no natural source and mainly produced due to human activities. The biggest impact of these sources is the usage of ozone depleting substances such as refrigerants, aerosol, propellants, and foam blowing agents, solvents and fire retardants.

The production of all of these gases contribute to the one's GHG foot print. The more these gases are produced, the higher the GHG foot print. Example: the complete carbon footprint of a bottle of water includes, the CO₂ or CO₂ equivalent emitted during the manufacture of the bottle itself and also the amount emitted during bottle transportation to the consumer.

Effects of Carbon Footprint- Climate change is altering our planet, causing extreme weather events like tropical storms, wildfires, severe drought and heat waves, negatively affecting crop production, causing disruption to animal's natural habitats and more. Because the emission of greenhouse gases is the main perpetrator that causes global warming (and therefore climate change) it's important to understand how carbon and other GHG's emission affect the environment.

Climate change is caused majorly caused by carbon emissions. As the average global temperature warms, our climate changes, it becomes warms. This extreme warming cause's weather changes like tropical storms, wildfires, severe droughts and heat waves. This increase in carbon in the air can, affects plants and crops. Due to climatic changes droughts and other weather events effect crop growth. The same problem hold for animals as well, as climate change alters our environment and natural habitat, different indigenous species take a hit. Some may disappear altogether, while other might thrive.

Carbon emission directly affect humans too, causing more respiratory disease due to an increase of smog and air pollution. Carbon emissions are dangerous as they threaten the livelihood of our planet, animals, humans and ultimately life. Global warming which causes climate change, is due to the amount of carbon emissions trapped in our atmosphere, which causes symptoms like melting of the polar ice caps, the rising of sea levels, the disturbance of animals natural habitats, extreme weather events and so many more negative side effects that are dangerous to the planet, to human and animal life and to our future.

The world's resources and ecosystem is continuously being exhausted by human activities so it is our primary duty that we all should behave in such a manner so that less emission of greenhousegases takes place. The responsible consumption if often about buying foods that follow ecological production methods, were transported from short distances, ensuring those producing it get a fair earning from it.

It is also about thinking in ways that releases less CO₂ emission such as walking, cycling, using public transports or sharing car rides with another 3 people. It is to do with how people spend their holidays (travel far away by plane) the clothes they choose to buy (low quality, plastic ones are more harmful), the good use of our electronic devices, the sport we choose to practice, the number of online videos people watch, all of it contribute to a sustainable life style and to a lower carbon foot print.

Process by which we can calculate our carbon footprint, we need to know the following -

- * The energy usage in our home
- * How much we spend on shopping
- * The composition of our diet



How to reduce Carbon footprint- We can reduce carbon foot print by reduce, reuse and refuse. This can be achieved by using reusable items rather than disposable items, such as thermoses for daily coffee or plastic containers for water and other cold beverages. If that is not possible, recycle the disposable items after use.

Carbon footprint from energy consumption can be reduced through the development of nuclear power (a zero carbon emission energy source) and alternative energy projects such as solar & wind energy which are renewable source.

Reforestation, the restocking of existing forests or woodlands that have previously been depleted, is an example of carbon off selling i.e. the counteracting of CO₂ emission with an equivalent reduction of CO₂ in the atmosphere.

Here are some more tips for reducing carbon footprint

1. Drive Less: According to 2017 study from researchers at LUND University and University of British Columbia, going careless for a year could save about 2.6 tons of CO₂.

- * Avoid car journey and try walking, cycling or using public transport especially train, bus or ride a bike each liter of fuel burnt in car engine emits approximately 2.5kg of CO₂
- * Service your car/vehicle regularly to keep it more efficient.
- * Check the tire's, keeping tires pumped correctly can reduce emissions.
- * Air conditioning and intensive city driving can make emission creep on
- * Don't weight your car down with extra things that you don't need on your trip
- * Car pool
- * Avoid flying, the world's fastest growing source of CO₂ emission
- * If you can't avoid car journey, share and ride with others and don't speed up as it uses more petrol and therefore produces more CO₂

2. Food: While food systems are complicated, the research is still evolving on what the most environmentally friendly diet is. Experts mostly agree that cutting down on meat and red meat in particular, is better choice for environment. This is because the production of red meat consumes lots of feed, water and land. Cows dung give off methane emission for that reason eating a vegetable diet is likely to be the best for the environment that means filling your plate with vegetable, fruits, grains and beans.

- * Eat local and seasonal food products. If you eat local products means short trips i.e. less pollution from transportation.
- * Recycle or compost organic waste so that methane can't be released. Decomposition of biodegradable waste in landfills accounts for 3% of GHG emission.

3. Waste less food: It is most important that you should not waste your food items. There some simple ways to lower your food waste and it will also save your money

- * Reuse left over food items
- * Organize your fridge regularly. Don't purchase things you don't need
- * Don't purchase extra food items which you can't eat
- * Don't cook more food then you consume.
- * Extend the life of your food items by freezing them properly

4. Water Use:

- * Harvest rainwater
- * Avoid to use washing machine and dish washer
- * Boil the water by covering the pot
- * Raise hand pumps to protect drinking water from flood contamination



- * By cooking the food in pressure cooker you can save energy, water and time also
- * Connect the household kitchen water into your garden
- 5. Energy Use: There are some simple and small changes that you can make at home that will save your energy and money
 - * Replace lights. LED lights use upto 85% less energy
 - * Don't set your fridge and freezer temperature lower than necessary
 - * Replace old fridge
 - * Look for energy star symbol when buying new products
 - * when not in use, switch off lights, fans and other appliances Unplug your cellphone's chargers
 - * Turn down your water heater - 120 degree Fahrenheit is sufficient
 - * Buy a laptop, not a desktop computer. Laptop takes less energy to charge and run
 - * Program your energy devices so that they are on only while you are at home
- 6. Shopping: Whenever you go for shopping like groceries, home goods, toys and whatever also there are ways to take the climate into account. Below are some recommendation that can be followed -
 - * While visiting any store carry a reusable bag
 - * Skip the packaging
 - * Invest in quality product
 - * Buy carbon offsets
- 7. Waste Management:
 - * Reuse and Re-cycle things
 - * Reuse your shopping bags
 - * Choose products with minimum or low packaging this cuts the production cost also.

Conclusion- Thus in order to maintain environmental balance i.e. to reduce carbon footprint, it is necessary that one should change his thinking from human centric to earth centric i.e. to keep nature at the top most position.

If we don't act now, climate change will rapidly alter not only the lands and waters but also the health scenarios all over the world making it a different and difficult world.

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