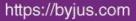# Carbon Footprint & Carbon Watch

Carbon Footprint of an individual can be assessed through a mobile app, Carbon Watch.
Carbon Footprint and Carbon Watch have been in news recently hence hold relevance for the current affairs section of various examinations.

What is Carbon Footprint ?

A carbon footprint is the total amount of Greenhouse Gases - GHGs (especially carbon dioxide and methane) released into the atmosphere by different human activity.

1. Carbon footprints can be associated with an individual, an organization, a product or an event, among others.
2. According to the World Health Organization (WHO), a carbon footprint is a measure of the impact people's activities have on the amount of carbon dioxide (CO_2) produced through the burning of fossil fuels and is expressed as a weight of CO_2 emissions produced in tonnes.
3. The carbon footprint is seen as a subset of the ecological footprint, where carbon footprint deals with resource usage but focuses strictly on the greenhouse gases released due to burning of fossil fuels, while the latter compares the total resources people consume with the land and water area that is needed to replace those resources.
4. The release of Six Greenhouse gases as recognized by the Kyoto Protocol will be counted in the carbon footprint. The Six GHGs are -
    ○ Carbon dioxide (CO_2)
    ○ Methane (CH_4)
    ○ Nitrous Oxide (N_2O)
    ○ Hydrofluorocarbons (HFCs)
    ○ Perfluorocarbon (PFCs)
    ○ Sulphur hexafluoride (SF_6)
5. Carbon footprints are usually measured in equivalent tons of carbon dioxide - CO_2e, during the period of a year.
6. CO_2e is calculated by multiplying the emissions of each of the six greenhouse gases by its 100 year global warming potential (GWP).
7. On comparing various forms of energy generation Coal has the largest Carbon footprint among others followed by Oil, Natural Gas and Geothermal Energy.
8. Carbon footprints are of Two types -
    ○ Organizational - Emissions from all the activities across the organisation such as energy use, industrial processes and company vehicles.
    ○ Product - Emissions from the extraction of raw materials and manufacturing right through to its use and final reuse, recycling or disposal i.e. over the whole life of a product or service.

Carbon Watch

1. The Carbon Watch App focuses on individuals' actions and calculates carbon footprint on the basis of Transport, Energy, Waste and Water consumption.
2. It the app can be accessed by anybody
3. The App Carbon Watch will provide information about the individual's level of emission generation as well as the national and world average of the emission.
4. It will sensitize people about their lifestyle emissions, their impact and possible countermeasures to mitigate the same.
5. The purpose behind the Carbon Watch application is to make the people Climate-Smart Citizens who are capable of accessing their carbon footprint, along with providing them with steps to reduce the emission.
6. The Carbon Watch app will suggest ways to reduce carbon footprints as per the information furnished by the individuals.

Effects of Increased Carbon Footprints

1. Large Scale resources are depleted with increased carbon emissions, from deforestation activity in a country to an increased use of air conditioners in our homes.
2. Carbon footprints have paramount effects on climate change. Emission of Greenhouse Gasses in the atmosphere leads to warming of the planet.
   - According to World Meteorological Organization (WMO) records, 2011-2020 was the warmest decade on record, in a persistent long-term climate change trend.
   - From 1990 to 2005, the emissions of carbon dioxide increased by 31%. By 2008, the emissions had contributed to a 35% increase in radiative warming, or a shift in Earth's energy balance toward warming, over 1990 levels.

Steps to Lessen Carbon Footprints

The average carbon footprint globally is closer to 4 tons. It needs to drop under 2 tons by 2050 in order to avoid the chance of 2 degree celsius rise in the Global Temperature.
The actions by which we can help reduce the carbon footprints are -

1. It can be reduced through improving energy efficiency and changing lifestyles and purchasing habits, such as-
   - Avoiding the products with lots of packaging
   - Adopt 4 R's - refuse, reduce, recycle, reuse
2. Switching one's energy and transportation use can have an impact on primary carbon footprints.
   - Replacing regular light bulbs with compact fluorescent lamp - CFL
3. A ton of carbon dioxide is released when we for example travel 5000 miles in an airplane or drive 2,500 miles in a medium - sized car, hence
   - Avoid taking connecting flights
   - Take public transport or drive a more efficient vehicle.
   - Walk or use bicycles instead of using bikes, cars, etc.
4. Switching from coal to a less carbon-intensive energy source.

5. Planting more trees.

Initiatives/ Concepts to Keep Check on GHGs Emission

1. **Carbon Pricing** - A carbon price is a cost put on carbon pollution to nudge polluters to lower the amount of greenhouse gas they release into the atmosphere.
2. **Carbon Tax** - It is a form of Pollution Tax. It levies a fee on the production, distribution or use of fossil fuels based on how much carbon their combustion emits. It is a cost-effective tool to reduce greenhouse gas emissions in the atmosphere.
3. **Carbon Sequestration** - the process of capturing waste carbon dioxide (CO_2) from large point sources, such as fossil fuel power plants, etc. and depositing it where it will not enter the atmosphere.
4. **Paris Agreement COP 21** - According to the Paris Climate Accord, the members who ratified the deal have to work towards the goal of achieving net-zero emissions, which is crucial to limit global warming. This scenario, calls for rapid scale-up of carbon capture, use and storage (CCUS). The process involves capturing CO_2 emissions from coal and gas power plants, and from heavy industry, for deep underground storage or re-use.
5. **Montreal Protocol** - The protocol gives provisions to reduce the production and consumption of Ozone Depleting Substances - ODSs to protect the ozone layer.
6. **Bharat Stage (BS) VI norms**: These are emission control standards put in place by the government to keep a check on air pollution.
7. **National Wind-Solar Hybrid Policy 2018**: The main objective of the policy is to provide a framework for the promotion of large grid-connected wind-solar photovoltaic (PV) hybrid systems for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land.
8. **National Solar Mission**: It is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge.
9. **National Mission for Enhanced Energy Efficiency (NMEEE)** - launched in 2011 NMEEE is a mission to strengthen the market for energy efficiency by creating favourable policies and regulations.
10. **National Action Plan on Climate Change (NAPCC)** - launched in June 2008 aimed to have a combined policy for tackling climate change.