FAQ on Carbon Footprint and Carbon Neutrality
(How to Achieve Carbon-neutrality: Some Basics)

1. What is carbon footprint?

Before explaining what is "carbon footprint," it's important to understand the concept of a "footprint" in general. A footprint refers to the impact or mark left behind by a particular activity, product, or individual. It represents the amount of resources consumed, waste produced, or environmental damage caused by that activity, product, or individual.

In essence, a footprint is a measure of the environmental impact associated with a specific action or entity. It can encompass various aspects such as energy consumption, water usage, land use, waste generation, and pollution emissions.

2. So, it is about the impact of human activities on the planet?

Yes. By quantifying the footprint of different activities or products, one can make more informed decisions and adopt practices that minimize negative environmental consequences.

3. Now, what is Carbon Footprint?

Let's break down the concept of 'carbon footprint' using the analogy of respiration.

Imagine our Earth is like a big, cozy home, and just like in our bodies when we breathe, the Earth also breathes in and out. When we breathe in, our body takes in oxygen, and when we breathe out, we release carbon dioxide – a kind of gas that we don't need.

Now, think about when we use energy in our home. When we turn on the lights, ride a bike, run a motor to pump water, or use the computer, we're using something called electricity. It's like the energy that helps our bodies move and play. But, just like when we breathe out, using electricity also creates a kind of gas – it's not exactly like the one we breathe out, but it's similar. This gas is called carbon dioxide, and it goes into the air around us.

So, when we use electricity, when we ride in cars or buses, and even when we throw away our garbage, we're adding more of this carbon dioxide gas to the air, just like when we breathe out. All these things together make up our "carbon footprint."

4. That means 'Carbon Footprint' is a metaphor, like some of us say: *Life is a Journey. The world is a stage. My dad is my ATM* **etc', right?**

Exactly, the term "carbon footprint" is a metaphorical way of describing the total amount of greenhouse gases, specifically carbon dioxide, that an individual, organization, event, or product is responsible for emitting into the atmosphere. The use of the word "footprint" in this context draws an analogy to the imprint or mark left by a person's foot when walking on the ground.

The idea behind "carbon footprint" is to convey the impact or "mark" that our activities make on the environment in terms of contributing to climate change. It suggests that just as our footsteps leave an impression on the ground; our actions leave an imprint on the environment i.e. on the planet in the form of 'increased carbon dioxide' and 'other green house gas (GHG) emissions'.

5. Stop. Stop. Stop. 'Increased carbon dioxide' is understandable. All that we burn such as petrol, diesel, coal etc. turn into carbon dioxide. What are Green House Gases?

Imagine the Earth is like a big, clear bubble, and this bubble lets sunlight in to keep everything warm. Now, when we do certain things like using cars, factories, and even when cows burp (yes, really!), we release tiny, invisible gases into the air. These gases are called "greenhouse gases."

Think of these gases like a cozy blanket around the Earth. They're supposed to be there in the right amount to keep our planet warm, like a snug blanket on a chilly night. But, when we use too much energy or do things that create lots of these gases, it's like putting too many blankets on. The Earth gets too warm, and you feel uncomfortable.

6. So, greenhouse gases are like invisible blankets around our Earth?

Yes. We need some to stay warm, but we have to be careful not to use too much and make the Earth too hot. That's why it's important for us to do things that are kind to the Earth, like using less energy and taking care of our environment, so we don't put too many blankets on our planet.

7. You say Green House 'Gases'. That means, it is not only carbon dioxide. I guess Green House Gases is composed of many different gases, isn't it?

You are right. Greenhouse gases include several different gases, and while some of them are indeed essential for keeping our planet warm enough to support life, too much of these gases can lead to problems. Carbon dioxide (CO_2) is one of the key greenhouse gases, but others include methane, water vapor, nitrous oxide, and ozone.

8. How it is problematic?

Imagine you're in a small room with a fireplace. When you light a fire, some smoke is normal, right? It's like the natural gases that our Earth produces as part of its cycle. Now, picture adding more wood to the fire than the room can handle. Suddenly, the room fills up with too much smoke, making it hard to breathe and see clearly. That's similar to what happens with greenhouse gases in our atmosphere. Too much of this gas in the air can be a problem for our Earth. It's like when we breathe too hard in a small room – it can get stuffy and uncomfortable. So, we want to be careful about how much of this gas we release into the air.

9. So, Green House Gases are necessary. But too much of it is bad. Isn't it?

You are right. While greenhouse gases are necessary for life as we know it, it's essential to strike a balance. Too much of these gases can cause the Earth to become warmer than it should be, leading to various environmental issues and climate-related challenges. That's why it's important for us to be mindful of our activities and strive to reduce our impact on the environment to maintain a healthy balance.

10. I understand that the crux of the matter is about 'Global Warming' caused by human activities. But, how does it relate to 'climate change' is still unclear to me.

There is a wealth of evidence supporting the idea that global warming, largely caused by human activities like burning fossil fuels and deforestation, is a primary driver of climate change. Here are some key pieces of evidence:

1. Temperature Records: Over the past century, global temperatures have been rising steadily. This warming trend is supported by data collected from weather stations, satellites, and other instruments all around the world.

2. Melting Ice: Ice caps, glaciers, and ice sheets are melting at accelerated rates. This is particularly evident in the Arctic, where sea ice is shrinking rapidly, and in Greenland and Antarctica, where ice sheets are losing mass.

3. Rising Sea Levels: As ice melts and ocean waters warm, sea levels are rising. This is due to both the expansion of seawater as it warms and the addition of water from melting ice. Rising sea levels pose threats to coastal communities and ecosystems.

4. Extreme Weather Events: There has been an increase in the frequency and intensity of extreme weather events such as heat-waves, hurricanes, droughts, and heavy rainfall events. While individual events cannot be directly attributed to climate change, the overall trend aligns with what scientists expect in a warming world.

5. Ocean Acidification: The oceans absorb much of the excess carbon dioxide in the atmosphere, which leads to ocean acidification. This has serious consequences for marine life, especially organisms with shells or skeletons made of calcium carbonate, such as coral reefs and shellfish.

6. Shifts in Ecosystems: Many plant and animal species are shifting their ranges, behaviors, and life cycle events in response to changing temperatures and other climate-related factors. This can disrupt ecosystems and lead to loss of biodiversity.

7. Consistent Models: Computer models that simulate Earth's climate have consistently shown that the observed warming cannot be explained by natural factors alone, but closely matches the expected outcomes when human-induced greenhouse gas emissions are included.

These pieces of evidence, among others, paint a clear picture that global warming, driven primarily by human activities, is causing significant changes to the Earth's climate system.

11.What is Carbon Neutrality?

Carbon neutrality is indeed about offsetting the damage caused by activities that release carbon dioxide and other greenhouse gases into the atmosphere. When we burn fossil fuels like coal, oil, and gas for energy, drive cars, or even cut down trees, we release carbon dioxide into the air. This extra carbon dioxide traps heat from the sun, causing global warming and climate change.

To balance out these emissions, we can take actions to remove an equivalent amount of carbon dioxide from the atmosphere or prevent it from being released in the first place. This is often done through activities like planting trees, which absorb carbon dioxide during photosynthesis, or investing in projects that capture and store carbon emissions, such as carbon capture and storage technologies.

By achieving carbon neutrality, we aim to ensure that the total amount of carbon dioxide emitted into the atmosphere is balanced by the amount removed or prevented, thus minimizing our impact on the Earth's climate. It's like trying to fix the damage we've done by taking positive actions to restore the balance in nature.

12. Can you list out some activities and practices related to carbon neutrality and responsible living?

1. Reducing Energy Consumption: Turn off lights and electronics when not in use, use energy-efficient appliances, and insulate homes to reduce the amount of energy needed for heating and cooling.

2. Switching to Renewable Energy: Use renewable energy sources like solar, wind, or hydroelectric power for electricity generation to reduce reliance on fossil fuels.

3. Conserving Water: Practice water-saving habits such as fixing leaks, taking shorter showers, and using water-efficient appliances to reduce energy consumption associated with water treatment and distribution.

4. Using Sustainable Transportation: Walk, bike, carpool, or use public transportation instead of driving alone to reduce carbon emissions from vehicles.

5. Reducing, Reusing, and Recycling: Minimize waste by reducing consumption, reusing items whenever possible, and recycling materials like paper, glass, plastic, and metal.

6. Eating Sustainably: Choose locally sourced, organic, and seasonal foods to reduce carbon emissions associated with transportation and agricultural practices. Consider reducing meat consumption and opting for plant-based meals more often.

7. Planting Trees and Supporting Reforestation: Trees absorb carbon dioxide from the atmosphere, so planting trees or supporting reforestation efforts can help offset carbon emissions.

8. Supporting Carbon Offset Projects: Invest in projects that remove or prevent carbon emissions, such as renewable energy initiatives, forest conservation, or carbon capture and storage technologies.

9. Advocating for Climate Action: Raise awareness about climate change and advocate for policies and initiatives that promote sustainability, renewable energy, and carbon reduction at local, national, and global levels.

By incorporating these activities and practices into everyday life, individuals can contribute to carbon neutrality and responsible living, helping to mitigate climate change and protect the environment for future generations.

13. What is Government of India doing about it?

- National Solar Mission (NSM):
- National Mission for Enhanced Energy Efficiency (NMEEE):
- National Water Mission (NWM)
- Swachh Bharat Mission (SBM-G / SBM-U)
- Clean Ganga Mission
- National Mission for Sustainable Agriculture (NMSA)
- National Mission on Sustainable Himalayan Ecosystem (NMSHE)
- Green India Mission (GIM):
- National Mission on Strategic Knowledge for Climate Change (NMSKCC):

14. What are the Corporates doing about it?

- Renewable Energy Investments (by private sector)
- Energy Efficiency Measures
- CSR and EPR (Extended Producer Responsibility) Initiatives
- Green Buildings
- Sustainable Supply Chains
- Carbon Neutrality Commitments
- Electric Vehicles (EVs) Adoption
- Waste Management and Circular Economy Practices
- Climate Reporting and Disclosures
- Research and Development (R&D)
- Adhering to Environmental Compliances

15. What you and I – as citizens – can do about it?

- Reduce Energy Consumption
- Promote Sustainable Transportation
- Conserve Water
- Adopt Sustainable Diet Choices

- Waste Reduction and Recycling
- Plant Trees and Support Afforestation
- Conserve Resources (minimal packaging / use sustainable materials)
- Educate and Advocate
- Reduce Carbon Footprint in Your Home
- Participate in Climate-Friendly Activities
- Promote Climate Awareness
- Support Sustainable Practices at Work
- Be Mindful of Travel

By quantifying and understanding our carbon footprint, individuals and communities can become more aware of their environmental impact and take steps to reduce it. The goal is to minimize the negative effects of human activities on the Earth's climate and promote more sustainable and eco-friendly practices.

We can do small things to help, like turning off lights when we're not using them, using less plastic, and maybe even walking or biking instead of always using a car. Just like how we try not to breathe too hard in a small room, we want to be mindful of our carbon footprint so that we can keep our big, cozy Earth home happy and healthy!