4.11 CARBON FOOTPRINT

Definition

It is the total amount of green house gases (including CO2 and CH4) that are generated (emitted) by our direct and indirect activities.

Individual carbon footprint

It is the sum total of their direct and indirect carbon emissions over the course of a year. i.e.. Smaller your carbon footprint : better for the future

Bigger your carbon footprint : Have bigger negative impact in environment

The average carbon footprint for a person in united state is 16 tons. Globally, the average is closer to 4 tones. To avoid 2°C rise in global temperatures, the average global carbon footprint per year needs to drop under 2 tons by 2050.

4.11.1 Sources of carbon footprint

1. Climate change.
2. Natural process like volcanos.
3. Green house gases emitted from human activities.
4. Pollution released by human beings doing human things.
5. Transportation accounted for about 28% of total country.
6. Electricity generation accounted for about 28%.
7. Industrial activities 22%.
8. Heating and cooling in homes and businesses contribute 11%.

4.11.2 Causes of a carbon footprint

The major contributors to carbon footprints are

(i) food: (especially meat (beef))

(ii) consumption

(iii) transportation

(iv) house hold energy

4.11.3 How to lower (control) carbon footprint (or) 15 ways to reduce your carbon footprint

Lowering individual carbon footprint from 16 tons to 2 does not happen over night. But, by making small changes in our action we can reduce carbon footprint.

Once you understand where your emission comes from, you can take steps to reduce your impact.

1. Calculate your carbon footprint.
2. Drive less.
3. Switch to an electric (or) hybrid car.
4. Travel smart.
5. Switch to renewable energy.
6. Consider solar panels.
7. Make your home more efficient.
8. Turn your thermostat just 2 degrees cooler in winter and 2 degrees warmer in summer.
9. Get energy efficient appliances.
10. Unplug electrical devices when not in use.
11. Buy locally sourced food.
12. Start a home garden.

13. Eat less meat.

14. Don't waste water.

15. Reduce, reuse and recycle.

4.12 ENVIRONMENTAL MANAGEMENT

Environmental management is a set of practices and processes that enable any organization, whether private (or) public, to reduce its environmental impacts and increasing its operating efficiency.

4.12.1 Objective (or) Aim of EM

1. To mitigate environmental adverse impacts on various components, which have been identified during the rapid environmental impact assessment study.
2. To protect environmental resources.
3. To enhance the value of environmental components where possible.
4. To monitoring plan to enable evaluation of the success (or) failure of environmental management measures.
5. To carry out reorientation of the plan if found necessary.
6. To implement the protective and enhancement measures by adopting suitable planning and design criteria for construction of the project.
7. To improve the quality of human life.
8. To prevent and solve environmental problems.
9. To establish limits and standards.
10. To warn against threats and identify opportunities.
11. To develop strategy for improving quality of life.
12. To identify new eco-friendly technologies for sustainable development.
13. To protect the environment from the effects of manufacturing byproducts. 14. To protect your business from non compliance fines and penalties.

4.12.2 Principles of environmental management

There are 7 basic principles, which are some guiding principles of environmental management. These principles are helpful in environmental decision making.

1. **Polluter pays principle (PPP)** : It states that firms discharge polluting effluent to the environment. If measures are adopted to reduce pollution, the cost should be paid by the polluters (firms).

2. **The user pays principle (UPP)**: It states that all resource users should pay the cost of the use of a resource and related services.

3. **The precautionary principle (PP)** : It states that a substance (or) activity, posing a threat to the environment, is prevented from adversely affecting the environment.

4. **Principle of effectiveness and efficiency**: The efficiency of resource use may be accomplished by the use of policy instruments that create incentive to minimize wasteful use.

5. **The principle of responsibility**: It is the responsibility of all persons, to use the environmental resources in an ecological sustainable, economically efficient and socially fair manner.

6. **The principle of participation**: It is the duty of all the persons to participate in collectively environmental decision making activities.

7. **The principle of proportionality** : It is based on the concept of balance. A balance is to maintain between the economic development on the one hand and environmental protection on the other hand.

4.12.3 Steps involved in environmental management

The following 5 steps are involved in environmental management.

Step 1: Environmental policy

It is the mission of an organization, which starts with establishing an environmental policy.

Step 2: Planning

It involves identifying the resources, processes, significant impacts and pollution prevention opportunities. It also includes objectives and targets for improvement efforts.

Step 3: Implementation

This step consists of defining the structure, responsibilities and programs. It also develops and implements standard operating procedures and training.

Step 4: Checking and correction

It includes monitoring and measuring problems corrective and preventive action identification and corrective and implementation.

Step 5: Management review : It involves modification of environmental

management system to ensure solutions on compliance. Based on the result of checking and correction, management must take corrective actions.

4.12.4 Characteristics of environmental management

1.Environmental management supports sustainable development.

2.It demands the multidisciplinary approach.

3. It has to integrate different development view points,

4. It seeks to integrate natural and social science.

5. It can extend from short-term to long-term and from local to global level.

6.It deals with a world affected by humans.

4.12.5 Benefits of Environmental Management

1. Improved environmental performance

2. Enhanced compliance

3. Pollution prevention

4.Resource conservation

5. Attracts new customers/markets

6. Increased efficiency/reduced costs

7.Enhanced employee morale

8. Enhanced image with public, regulators, lenders and investors.

4.13 CASE STUDIES

4.13.1 Electronic waste (E-waste)

Recycling, Dell company

Dell company, through its "legacy of good programme, the technology giant has plan to cut waste, create more eco-friendly products. It plans to use 50 m pounds of recycled plastic and other sustainable materials, create 100% recyclable (or) compostable packaging and recover 2 bn pounds of electronic waste. Dell sourced 4.5 m kilos of recycled plastic to make monitors and desktops.

Dell eliminated 20 m pounds of packaging waste and generating more than 18 m in cost savings. Its intention to reduce packaging waste, replacing non-biodegradable, oil-base material with organic alternatives such as bamboo and mushrooms.

As a part of its effort to encourage others to see waste as a valuable resource. Finally, the most appropriate environmental to control environmental pollution is cleaner production. So, according to environmental management principles, cleaner production is a proactive approach where companies take preventive measure to reduce waste production at source.

4.13.2 Biomedical waste management in Nepal

Due to improper environment management techniques, Nepal has many problems with medical waste. which impact adversely the environment including human health. Nepal Health Resource council in collaboration with world health organization (WHO) has developed national health care waste management guidelines and training manuals for medical professionals, but it has not been functioning well. As a result, many hospitals use small scale incinerators (or) open burn (or) dump the waste in their premises until the garbage pickers comes and dispose in the landfill.

Incinerator facilities, if properly implemented, not only reduce final disposal of waste, but also produce electricity/heat, saving (energy) resources. This situation in Nepal is much worsen because it was not properly built and there are residents who could directly be affected by emissions resulted from the smoke around the burning equipment.

4.13.3 Municipal solid waste management in solapur city, Maharashtra, India

Total waste generated in solapur corporation area is 420 MT/day, of which 50% is biodegradable, 25% is recyclable, 15.3% is green and 9.9% is debris and slit. About 51% of the total solid waste, collected from entire city, is biodegradable.

The waste is disposed daily to the landfill site located on Tuljapur road and Bhogaon. The disposal site is open and gives rise to contamination and the treatment process is not followed. The landfill sites are not well maintained, which create the threat of groundwater contamination due to leachate percolation. Most of the waste remains lying down in open causing pollution with the odour and smell unless degrades naturally.

A treatment plant of anaerobic digestion is in progress to extract energy from organic waste generating the biogas