Carbon Footprints and Carbon Credit

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INTRODUCTION

Climate change is increasingly recognised as a major challenge.

Greenhouse gas emissions are the driving force behind climate change.

Greenhouse Gases

Greenhouse gases are those which contribute to the greenhouse effect . The six regulated gases are:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF_6)

The most influential greenhouse gas for climate change is carbon dioxide (CO_2).

Where does all the Carbon dioxide come from?

Carbon dioxide (CO_2) is released when we burn carbon based fuels.

Almost all fuels are carbon-based, including:

- **Petrol and diesel in our cars, vans and generators.**
- **Electricity generated from fossil fuel power stations.**
- **Coal, oil and gas in our power stations (and businesses).**
- **Jet fuel in aero planes.**

Virtually all human activities cause CO_2 emissions that lead to climate change.

Hence every person is responsible for CO_2 emissions.
So in actual its 'carbon dioxide footprint'.

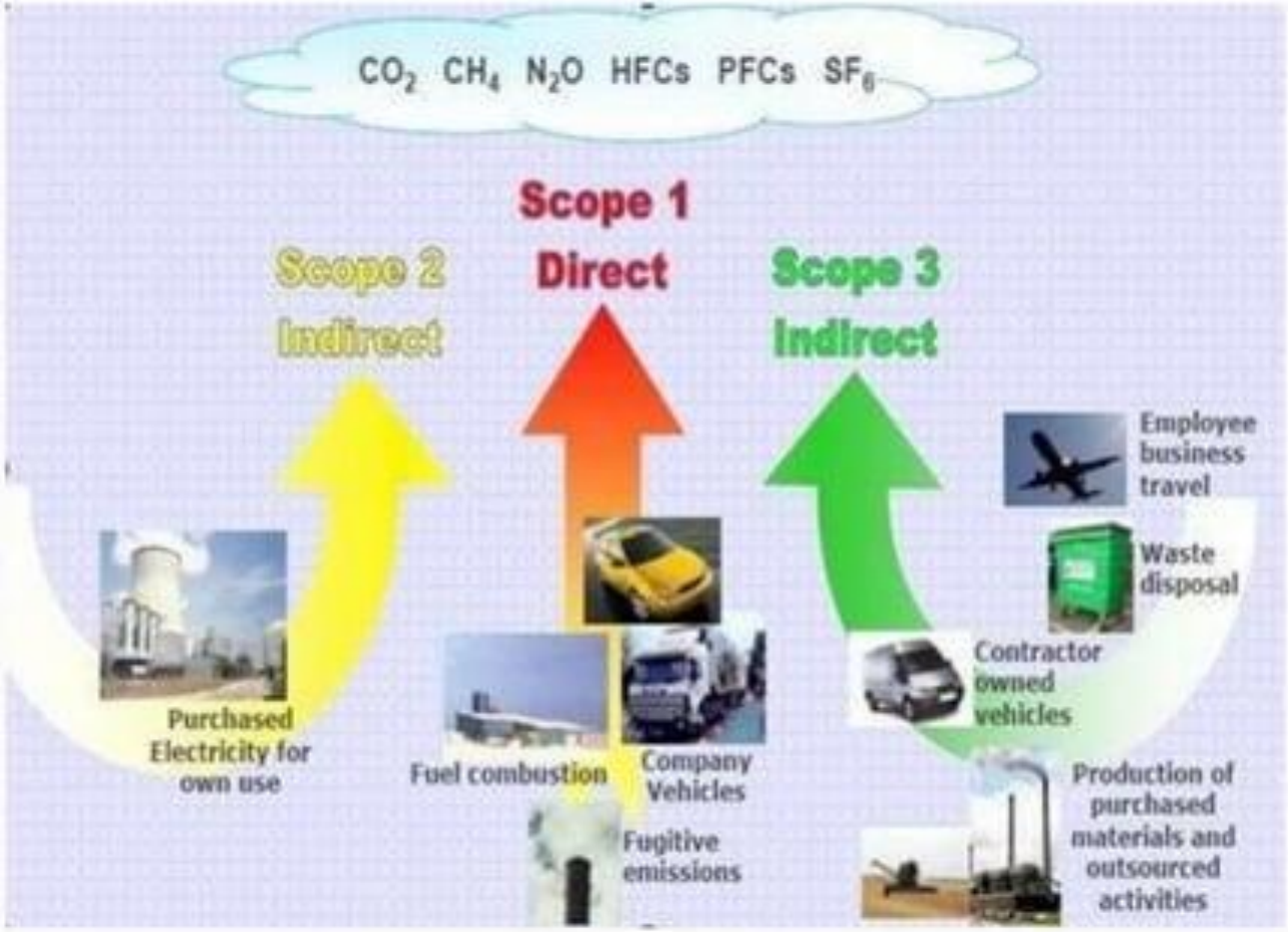
Effect of greenhouse gases on environment

- Easily trap the sun's heat.
- Keep the earth warm.
- Too much gases in the air leads to climate change, what we call Global warming.
- Methane and nitrous oxide have high heat-trapping capacity to carbon dioxide.
- But major role is played by carbon dioxide.

Classification of greenhouse gases

- Direct emissions that result from activities of the organisation controls.
- Indirect emissions from the use of electricity.
- Indirect emissions from products and services.

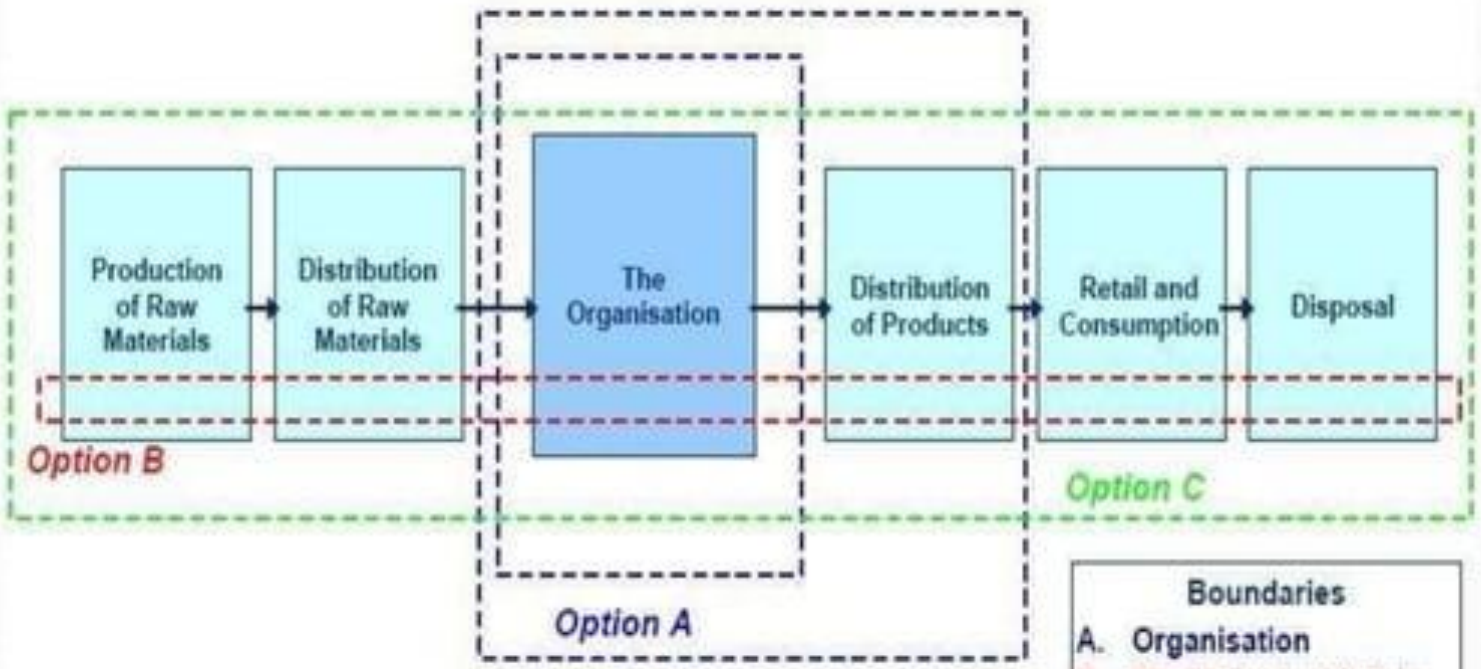
Classification of Greenhouse gases



CARBON FOOTPRINT

- The total amount of CO_2 and other greenhouse gas (GHG) emissions for which an individual or organization is responsible.
- Usually expressed in equivalent tons of carbon dioxide (CO_2).
- Calculated for events or products also.
- An organization's footprint includes
  - a. Direct emissions sources (e.g. direct use of fuels)
  - b. Indirect impacts (e.g. from the extended supply chain)
- When calculating an organization's footprint it is important to include the full range of emissions.

TYPE OF FOOTPRINTS



WHY CALCULATE A CARBON FOOTPRINT?

Two reasons for an organisation to calculate its carbon footprint:

- To manage the footprint and reduce emissions over time.
- To report the footprint accurately to a third party.

1. To manage the footprint and reduce emissions over time

- Opportunities for reduction can be identified and prioritized.
- This approach is relatively quick and straightforward.
- More focusing on the areas of greatest savings potential.

2.To report the footprint accurately to a third party.

Organizations increasingly want to calculate their carbon footprint. The reasons are

- For Marketing and/or Corporate Social Responsibility purposes.
- To fulfill requests from business or retail customers, or from investors.
- To ascertain what level of emissions they need to offset in order to become 'carbon neutral'.

CALCULATING A CARBON FOOTPRINT

A basic approach to carbon footprinting

- Calculation of a basic carbon footprint is a fairly quick exercise.
- There are many simple calculators available on the web.
- Cover direct emissions, but exclude some of the indirect emissions.
- There are usually a handful of major emissions sources that must be quantified, including:

    1. Onsite fuel usage
    2. Onsite electricity usage
    3. Use of transport which you own.

Key information to calculate carbon footprint

- Collect data from all utility meters.
- Record the distances travelled by the organization's vehicles.
- Convert the fuel, electricity and transport consumption figures to CO_2 by using the standard emissions factors.

Once the basic carbon footprint has been established, it is then possible to take steps to manage the emissions:

- Set and agree efficiency or emissions reduction targets.
- Identify likely opportunities for efficiency or emissions reduction.
- Prioritize the opportunities, based on environmental or financial criteria.
- Take action to implement the opportunities.
- Monitor the performance of the actions taken and improve as necessary.

Producing a full carbon footprint

Accurate calculation of carbon footprint requires

- **More detailed approach**
- **Specialist advice**

The steps below show a systematic approach for producing an accurate carbon footprint:

1. **Methodology**
2. **Boundary and scope of coverage**
3. **Collect emissions data and calculate the footprint**
4. **Verify results (optional)**
5. **Disclose the footprint (optional).**

METHODOLOGY

Methodology of a company must be clearly defined.

Importance

For a footprint to be repeatable and accurate there must be a consistency.

In a large industry it is important, as many individuals help collectively.

Commonly used methodologies are

1. GHG Protocol which provides detailed guidance on corporate emissions reporting.

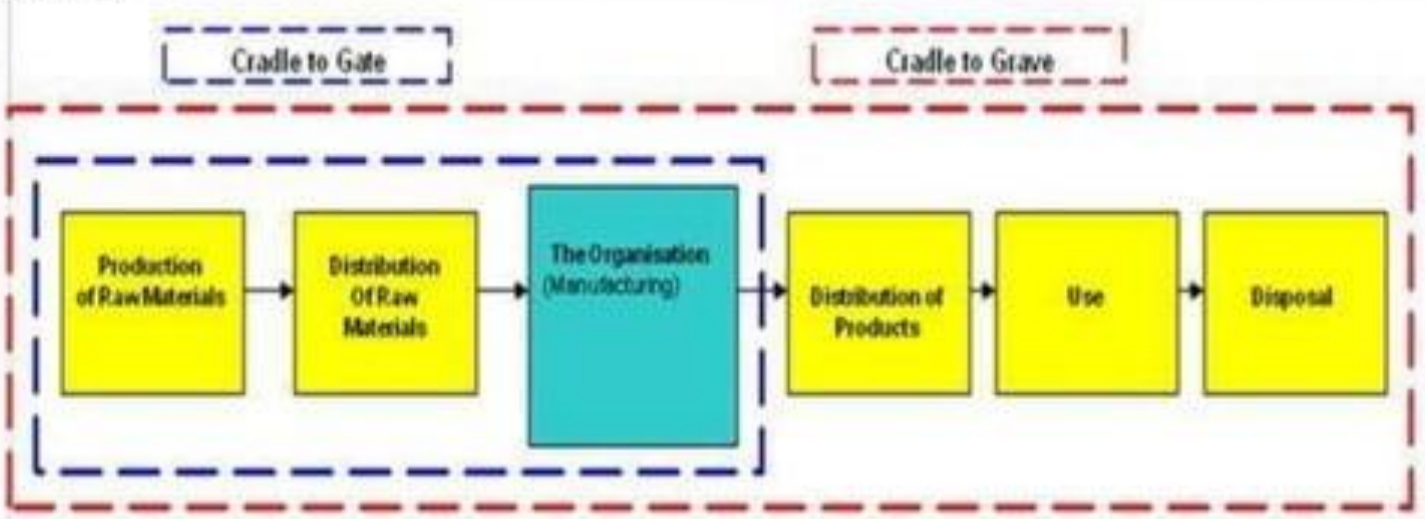
2. International Organization for Standardization, ISO 140645, also provides guidance on corporate footprint calculation and emissions reporting.

BOUNDARY AND SCOPE OF COVERAGE

The parts of the organization included in the process is referred to as 'boundary' of the footprint.

Normally this includes

- **The full range of emissions that the organisation controls directly.**
- **Typically (but not always) includes subsidiaries and leased assets.**



COLLECT EMISSIONS DATA

The next step is to consider what types of emissions will be included. It may include collecting information on

- **Onsite fuel consumption.**
- **Owned transport utilization.**
- **Emissions from chemical reactions in manufacturing processes or from land use or agricultural activities.**
- **Electricity consumption.**
- **Employee travel by air, rail and in vehicles not owned by the organization.**
- **Suppliers' emissions.**

VERIFY RESULTS

Verification is done by an independent third party.

Verification typically involves

- **Analysis of the methodology.**
- **Data collection techniques.**
- **Calculation process.**

Different levels of assurance or verification of results are available.

Greater levels of assurance or verification is more expensive to achieve

DISCLOSE THE FOOTPRINT

If the footprint is to be disclosed in advertising material, the following information is made available:

- **Methodology used to calculate the footprint.**
- **Boundary conditions .**
- **Types of emissions are included and excluded.**
- **The data collection techniques.**
- **Any assumptions or estimates that were used through the process.**
- **The level of verification of the results provided by independent third parties.**

REDUCING CARBON FOOTPRINT

At no cost

Energy

- Promoting energy awareness to all employees and encourage them to turn off lighting when not in use.
- Unplug battery chargers when the tool is charged.
- Maximise the use of daylight, do not turn lights on when daylight is sufficient.
- Remove obstructions from radiators.
- Turn off heating when doors or roller shutter doors are open.

Low to medium cost

Energy

- Replace all lamps and tubes with low energy versions.
- Consider installing movement and daylight sensors in areas frequently used such as corridors, toilets and storage areas.
- Draught proof windows and doors.
- Increase loft insulation.
- Ensure boilers are maintained and serviced.

Long term investment

Energy

- Consider installing micro-generation at business premises.
- Replace single glazed windows with double glazed alternatives.
- Choose energy efficient equipment and tools.
- Replace old boilers with modern energy efficient alternatives.
- Fit an insulated suspended ceiling in rooms or workshops with high ceilings.

Fuel

Choose fuel efficient vehicles

GLOSSARY

Assurance

The process of an independent third party checking the methodology, data and calculation processes to ensure that they are robust.

Carbon neutral

Terminology for something having net zero emissions (for example, an organisation or product).

Emissions conversion factor

Enables a conversion to be made from the input measure of energy to the amount of carbon dioxide emissions that will result.

The Greenhouse Gas (GHG) Protocol

- A widely used standard for emissions reporting.
- Covers project emissions reporting and corporate emissions reporting.
- The corporate emissions reporting standard provides a methodology for calculation of a carbon footprint.

ISO 140645

- ISO 140645 is an international standard for corporate emissions reporting.
- It builds on the approach outlined in the Greenhouse Gas Protocol.

CARBON CREDITS

- Certificates issued to countries those reduce their emission of greenhouse gases (GHG) which causes global warming.
- Came into existence as a result of increasing awareness of the need for controlling emissions.

Key points

- One Carbon Credit is equal to one ton of Carbon Dioxide
- Methane and nitrous oxide have approximately 21 times and 310 times, respectively, the heat-trapping capacity of carbon dioxide.
- Reducing methane by one ton is equivalent to reducing carbon dioxide by 21 tons.

ROLE OF CARBON CREDITS IN EMISSION REDUCTION

- **Limit for greenhouse gas emission for every organization is fixed.**
- **Anyone who exceeds that limit has to pay heavy fine.**
- **So to reduce the greenhouse gas emission some programs were made**
  1. **To invest in CDM (Clean Development Mechanism) project.**
  2. **To buy carbon credits i.e. carbon trading**

Invest in CDM

- To sell technology to a developed country by a developing country.
- Get the credits obtained by the use of that technology.

Carbon Trading

If the companies fall short of the emission targets, they can buy those from the market, from someone who was successful in meeting those targets and has a surplus of carbon units with them.

At last what obtained is the reduction in the greenhouse gas emission and overall limit in the market remains the same.

CARBON CREDIT IN INDIA

- India had 310 'eco-friendly' projects awaiting approval last counted in 2006.
- Once cleared, these projects can fetch about Rs 29,000 crore in the next seven years.
- India's carbon credit market is growing, as many players (industries) are adopting the Clean Development Mechanism (CDM).
- US accounts for 30 per cent of global emissions, while India makes for three per cent.
- Now, India can transfer part of its allowed emissions to developed countries

Organizations involved in carbon trading are

- Karnataka Power Transmission Corporation Ltd. (KPTCL).
- R&S Carbon Trading Ltd. USA.
- Renesola China.
- Universal Display, USA.
- Tata Chemicals, Mumbai, India.
- ISA Power, India.
- ITC Paperboards & Specialty Papers, India.
- Orient Green Power, India.
- Green Ventures International, India.

CONCLUSION

- It can be concluded that carbon footprints as well as carbon credits carries an importance in our daily life.
- Everyone should realize its effect and should try to protect the nature from its adverse effects.
- The carbon credit business is a rapidly changing business, and people should be aware that market rates, protocols, and registration programs can change quickly.


Reduce
Your
Carbon
Footprint
THANKS