

Carbon foot print and impact on biodiversity

Carbon foot print

The changing scenario of today due to industrial revolution has increase the greenhouse gas (GHG) emission which results into climate change as a whole impact over the globe. The climate change is now major issue and created a need to measure and mitigate those greenhouse gas emissions which adequately responsible for the global warming. Majorly, the carbon emission during the life cycle of a product play important role and hence need to quantify the carbon emission in term of equivalent to CO₂ emission. This carbon emission expressed as CO₂ equivalents is termed as Carbon Foot print which focus of single impact category of climate change. The carbon footprint can be used as an indicator are that it is easily explicable, universally remarkable, largely relevant and easy to implement for different policies. The carbon footprint of products standard provides principles, requirements and guidelines for the quantification and communication of the carbon footprint of products, including both goods and services.

Emission sources of green house gases (GHG)

Different types of emission sources from industries are listed below:

- CO₂ emission from manpower
- Carbon emission from stationary source (stack, etc.) due to combustion of fuel.
- Carbon emission from mobile sources (Car, trucks, etc.)
- Carbon emission from paper consumption relate to the emissions released in the production of office paper etc.
- Carbon emission from usage of water in different area within industrial unit relate to the emissions of both the supply of water, as well as emissions associated with the treatment of waste water.
- Carbon emission from all types of waste (mixed, organic, paper, glass, plastic, metals, woods, etc.) generation, treatment, transportation and disposal activities.

Water foot print

The availability and scarcity of fresh water is global concern of today. Various industries are now on the verge of closing due to non-availability of fresh water. The water related impacts have been increased in today's scenario e.g. ground water table, ground water contamination etc. In the treatment system, operating cost is high due to organic content in the waste water and then the disposal of hazardous water. At industrial level, it is not only important to ensure a supply of water, control the emissions to water and maintain the local environment, but also to understand the indirect water and the risk factors that occur when operating in different regions. For this purpose, the water footprint methodology has been developed. Water footprint is a tool that assesses the magnitude of potential, water-specific environmental impacts of water use associated with a product, process or society. Water footprint aims at re-counting the impact of

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water use on hominids and environments due to changes in water quality and quantity, making it possible to reveal mitigation points along the supply chain. Compared to the product carbon footprint, which describes the global warming potential of a product with a global impact, the water footprint is a local indicator.

Handprints

The idea of handprint has been acquainting to measure and connects the positive changes of actions and the positive impacts, while the footprint measures the negative impacts in terms of emissions and resource consumption. Functioning an industry always creates some type of footprint, but it can also bring positive changes and benefits to the surrounding world. The estimate of those impacts of positive change is called a handprint. The handprint concept can be applied to products, processes, companies, organizations or individuals, and it can consider the impacts on environment or society. Handprint constructs on the perception of environmental footprint and the idea is regarded as by limitless prospective and a self-reinforcing positive feedback loop. Hence, the handprint can sustain itself once it is established as industry.

Environmental impact consideration

Determine types of pollution

- Air: Air pollution has been controlled by installing MDC and bag filters,
- Water: The total waste water is being treated in ETP and then sent to CETP.
- Soil: There are no changes in soil fertility under controlled condition.
- Noise: The noise will be controlled by providing the acoustic enclosure and green belt around periphery.

Determine sizes of pollution

- Environmental Cost Indicator (ECI) in INR
- Global Warming Potential (CO₂-equivalent in kg)

- Depletion potential of the stratospheric ozone layer (CFC-11-equivalent in kg)
- Acidification potential of land and water (SO₂-equivalent in kg)
- Eutrophication potential (PO₄⁻³-equivalent in kg)
- Formation potential of tropospheric ozone photochemical oxidants (ethene-equivalent in kg)
- Abiotic depletion potential for non-fossil resources (Sb-equivalent in kg)
- Human toxicity potential (1,4-DB-equivalent in kg)
- Freshwater aquatic ecotoxicity potential (1,4-DB-equivalent in kg)
- Marine aquatic ecotoxicity potential (1,4-DB-equivalent in kg)
- Terrestrial ecotoxicity potential (1,4-DB-equivalent in kg)

Impact on biodiversity

The air emission and waste water discharge from industry cause the direct impact over existing biodiversity of that area. The wildlife and forest of the nearby area of industrial estate or industrial unit is

decreasing day by day due to air pollution and noise. The ambient noise level is increased due to 24 hrs running industries, hence wildlife tends to migrate to another place while on the other side, the waste water is disposing with or without treatment but it is deteriorating the water quality, and hence avifauna of that area is also moving to other places. It is observed at some places that the number of some migratory birds is also decreased in last three years and it will decrease more in coming year. Hence we need to take appropriate actions.

Conclusion

We are in the era of industrial revolution and currently we are facing outbreak of Covid-19. The corona virus is come from zoometric family of viruses which may cause illness in animals or humans. The outbreak caused a huge loss to the world's economy in last 3 months. The carbon foot print is necessary to assess the carbon emission from the factory as major issue of today is emission from the industry. We have to think for zero waste policy in terms of solid/liquid or gas.

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Conflicts of interest

The author declares there are no conflicts of interest.