

# **MCN-201 :**

# **SUSTAINABLE ENGINEERING**

## **MODULE 2**

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# MODULE 2

- ❑ Environmental Pollution: Air Pollution and its effects
- ❑ Water pollution and its sources,
- ❑ Zero waste concept and 3 R concepts in solid waste management
- ❑ Greenhouse effect
- ❑ Global warming
- ❑ Climate change
- ❑ Ozone layer depletion
- ❑ Carbon credits
- ❑ carbon trading and carbon footprint
- ❑ legal provisions for environmental protection.

## 8. Carbon credits, carbon trading and carbon footprint

### CARBON CREDITS

Carbon credits, also known as carbon offsets, are permits that allow the owner to emit a certain amount of carbon dioxide or other greenhouse gases. One credit permits the emission of one ton of carbon dioxide or the equivalent in other greenhouse gases.

#### KEY TAKEAWAYS

- Carbon credits were devised as a mechanism to reduce greenhouse gas emissions.
- Companies get a set number of credits, which decline over time, and they can sell any excess to another company.
- Carbon credits create a monetary incentive for companies to reduce their carbon emissions. Those that cannot easily reduce emissions can still operate, at a higher financial cost.

## How Do Carbon Credits Work?

- ❖ The ultimate goal of carbon credits is to reduce the emission of greenhouse gases into the atmosphere.
- ❖ As noted, a carbon credit represents the right to emit greenhouse gases equivalent to one ton of carbon dioxide.
- ❖ According to the Environmental Defense Fund, that is the equivalent of a 2,400-mile drive in terms of carbon dioxide emissions.
- ❖ Companies or nations are allotted a certain number of credits and may trade them to help balance total worldwide emissions.
- ❖ “Since carbon dioxide is the principal greenhouse gas,” the United Nations notes, “people speak simply of trading in carbon.”

## **CARBON TRADING**

Carbon trade is the buying and selling of credits that permit a company or other entity to emit a certain amount of carbon dioxide or other greenhouse gases. The carbon credits and the carbon trade are authorized by governments with the goal of gradually reducing overall carbon emissions and mitigating their contribution to climate change.

### **KEY TAKEAWAYS**

- Carbon trade agreements allow for the sale of carbon credits in order to reduce total emissions.
- Several countries and territories have started carbon trading programs.
- Carbon trading is adapted from cap and trade, a regulatory approach that successfully reduced sulfur pollution in the 1990s.
- These measures are aimed at reducing the effects of global warming but their effectiveness remains a matter of debate.

## **Where - Trade Carbon Emissions?**

- There are many regional exchanges that can be used for carbon trading. Some of the largest include Xpansiv CBL, based in New York, and Air Carbon Exchange, based in Singapore. The largest is the Shanghai Environment and Energy Exchange, which opened in 2021.

## **Current Price of Carbon?**

- There is no fixed price of carbon worldwide—prices fluctuate by jurisdiction and by market supply and demand—but the benchmark EUA Futures price ranged between €80 and €100 euros for the first four months of 2022.

# carbon footprint

- ❖ carbon footprint, amount of carbon dioxide (CO<sub>2</sub>) emissions associated with all the activities of a person or other entity (e.g., building, corporation, country, etc.).
- ❖ It includes direct emissions, such as those that result from fossil-fuel combustion in manufacturing, heating, and transportation, as well as emissions required to produce the electricity associated with goods and services consumed.
- ❖ In addition, the carbon footprint concept also often includes the emissions of other greenhouse gases, such as methane, nitrous oxide, or chlorofluorocarbons (CFCs).

## Carbon footprint reduction

- ❖ Individuals and corporations can take a number of steps to reduce their carbon footprints and thus contribute to global climate mitigation.
- ❖ They can purchase carbon offsets (broadly stated, an investment in a carbon-reducing activity or technology) to compensate for part or all of their carbon footprint.
- ❖ Carbon footprints can be reduced through **improving energy efficiency and changing lifestyles** and purchasing habits.
- ❖ Switching **one's energy and transportation use can have an impact on primary carbon footprints.**
- ❖ For example, using public transportation, such as buses and trains, reduces an individual's carbon footprint when compared with driving.
- ❖ Individuals and corporations can reduce their respective carbon footprints **by installing energy-efficient lighting, adding insulation in buildings, or using renewable energy sources to generate the electricity** they require.
- ❖ For example, electricity generation from wind power produces no direct carbon emissions.



## 9. legal provisions for environmental protection

### PROVISION IN INDIAN CONSTITUTION

#### ❖ ARTICLE 21

Protection of life and personal Liberty.

#### ❖ ARTICLE 48A

Protection and Improvement of environment and safeguarding of forest and wildlife.

## ❖ ARTICLE 51A

Fundamental duties of every citizen of India  
To Protect and improve natural environment  
including forest, rivers, lakes and wildlife.

# MAJOR ENVIRONMENTAL LEGISLATIONS OF INDIA

- Water (Prevention & Control of Pollution) - **Act 1974**
- Air (Prevention & Control of Pollution) - **Act 1981**
- Environmental Protection - **Act 1986** (May 1986)