



Carbon Trading: A Sustainable Way to Mitigate Climate Change

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Abstract

A significant heat-trapping gas called carbon dioxide (CO₂), which is sometimes referred to as a greenhouse gas, is produced during the exploitation and burning of fossil fuels like coal, oil, and natural gas as well as during wildfires and other natural events like volcanic eruptions. Human activities have increased atmospheric CO₂ by 50% since the start of the industrial era in the 18th century, making it 150% higher than it was in 1750. This increase brought on by humans is bigger than the rise that occurred naturally at the conclusion of the last ice age 20,000 years ago. According to the Global Monitoring Lab's yearly report, the average amount of carbon dioxide in the atmosphere around the world reached a new record high in 2022 of 417.06 ppm. The increase in atmospheric carbon dioxide between 2021 and 2022 was 2.13 ppm, marking the 11th year in a row where the increase was greater than 2 ppm. Therefore, an innovative system offers a unique way for governments and businesses to work together to limit their carbon footprint while fostering economic growth and innovation. Carbon trading, also known as emissions trading or cap-and-trade, is a market-based approach aimed at reducing greenhouse gas emissions. It has gained significant prominence in recent years as the world grapples with the urgent need to combat climate change. Carbon trading has emerged as a powerful tool in the fight against climate change. It offers a practical and market-driven approach to reducing greenhouse gas emissions while encouraging innovation and economic growth. As governments and businesses around the world seek ways to meet their emissions reduction targets, carbon trading is likely to play an increasingly important role in shaping a greener and more sustainable future.

Key Words: Carbon trading, CO₂, greenhouse, climate.

Introduction

It is now widely acknowledged that the earth is warming to the point that vast swaths of the global population's livelihoods are threatened. Storms that are violent and frequent devastate people's habitats; unpredictable weather radically alters agricultural conditions; and new health risks are likely to develop. Rapid industrialization is unquestionably required for socioeconomic progress, but not at the expense of the environment. Although industrialization adds value to society, it is also true that the pursuit of bigger profits has recently resulted in frequent environmental threats and global warming. Therefore, appropriate measures are required at the global as well as the national level for mitigating these risks. Despite worldwide agreements to minimize carbon dioxide emissions, the major cause of global warming is fast growing carbon dioxide emissions, which are predominantly the result of burning fossil fuels. The difficulty is that, despite being aware of the grave situation, few decision-makers are willing to address the issue at its roots. In response to the oncoming climate crisis, the international community of states passed the Kyoto Protocol in

1997, which has been steadily adopted by 156 nations but has been infamously rejected by the world's largest polluter — the United States. The Protocol's heart is a commitment to cut greenhouse gas emissions by an average of 5.2 percent below 1990 levels by the year 2012(Kyoto Protocol, 2012).

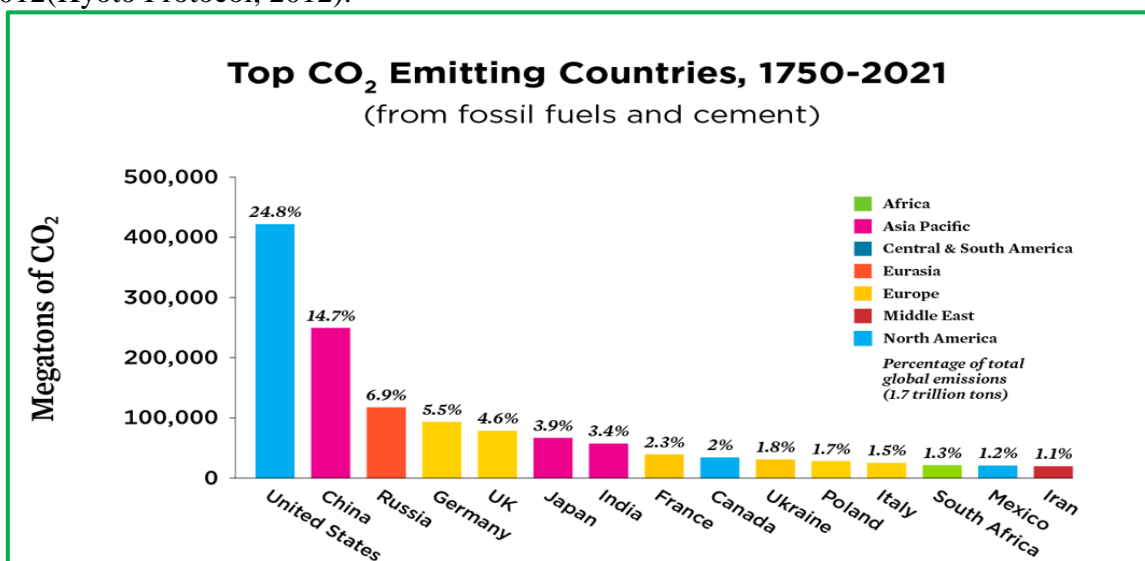


Fig1. Each Country's Share of CO₂ Emissions (By Union of Concerned Scientists)

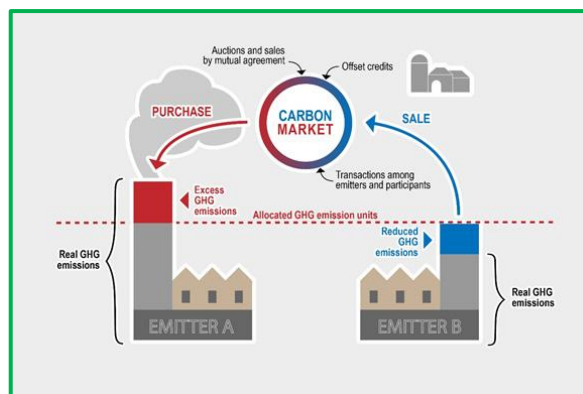
India's scenario: India has been in the forefront of a fierce campaign to reduce its carbon footprint and safeguard the environment. To achieve this goal, it has made significant investments in low-carbon technology, effectively transitioned to renewable energy, and increased its efforts to safeguard forests. Hundreds of millions of carbon credits, or emission reduction certificates, or CERs, were gained in the process. Carbon credits are utilized in a market-based system of carbon trading under the current Kyoto Protocol climate pact. Carbon trading allows nations and corporations to sell their carbon credits for cash. The United Nations Climate Change Conference, often known as COP 25, was held in Madrid in December. Under the Paris Agreement, COP 25 was supposed to finalize regulations for a new global carbon market. One of India's main objectives during the Madrid summit was to secure the ability to sell its hard-won carbon credits. However, the meetings in Madrid on the 15th of December ended without an agreement on the parameters for future carbon trading.

Carbon Trading: The practice of buying and selling permits and credits that allow the permit holder to emit carbon dioxide is known as carbon trading. Carbon trading is a market-based instrument intended at reducing climate change. It refers to the trading of emissions of six primary greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆) (Environmental Audit Committee, 2008). The European Union Emissions Trading Scheme is the world's largest carbon trading system (EU ETS). Despite the fact that it is plagued by issues and corruption, nations such as Brazil and China continue to explore carbon trading as a means of reducing growing emissions.



Fig 2. Carbon Credit Market Forecast 2023-2027 (By 6W research)

Working of Carbon Trading: In essence, each country is restricted in the amount of carbon it may emit. Carbon emissions trading permits nations with greater carbon emissions to buy the right to emit additional CO₂ into the atmosphere from those with lower carbon emissions. The system operates by imposing an overall limit or cap on the quantity of carbon emissions permitted from major sources of carbon, such as the power sector, automobiles, and air travel. Individual enterprises' capacity to exchange polluting rights under a regulatory system known as cap and trade is also referred to as carbon trading (Purswani, 2008). Pollution rights can be sold by corporations that pollute less to those that pollute more. The purpose is to guarantee that firms do not exceed a baseline level of pollution in the aggregate, as well as to offer a financial incentive for them to pollute less.



Role of Kyoto Protocol in initiating carbon trading: The Kyoto Protocol is an international agreement connected to the United Nations Framework Convention on Climate Change (UNFCCC) that binds its Parties to reduce emissions by setting globally enforceable objectives. The Kyoto Protocol was signed in December 1997 in Kyoto, Japan, and went into effect in February 2005 (UNFCCC, 1998).

- The Kyoto Protocol permits nations with surplus emission capacity to sell it to countries that are overshooting their targets.
- Parties to the Kyoto Protocol who have made commitments (Annex B Parties) have agreed to set emission reduction targets.
- Over the commitment period of 2008-2012 also known as First commitment period, these objectives are stated as levels of allowable emissions, or allocated amounts (Japan Ministry of the Environment, 2008).
- The permissible emissions are classified into amount units (AAUs).
- In the form of emission reductions or removals, a new commodity is generated.
- The Kyoto Protocol does not impose any mandatory mitigation responsibilities or objectives on developing nations like India.
- As carbon dioxide is the most common greenhouse gas, thus it is known as carbon trading. Carbon is now monitored and sold in the same way that other commodities are. This is called "Carbon Market".

Role of Paris agreement: The Paris Agreement of 2016 is a landmark international agreement that brings almost 200 countries together to set a common goal for reducing global greenhouse emissions in the battle against climate change.

- The agreement aims to keep global temperature rise below 2 degrees Celsius compared to pre-industrial levels, and to limit the temperature increase further to 1.5 degrees Celsius.
- To that purpose, each country has committed to implement specific target action plans to reduce greenhouse gas emissions.
- The agreement requests that wealthy and developed nations offer financial and technological assistance to poor countries in their efforts to combat and adapt to climate change.

Benefits: Emissions trading is the most cost-effective way to accomplish the environmental goal of decreased emissions. Emissions trading encourages innovation and discovers the most cost-effective options for corporations to become more sustainable. Cap and trade has been

shown to be a successful policy option. Other policy measures are less equipped to adapt to economic variations than emissions trading. Allowing the open market to determine carbon prices gives for greater flexibility and prevents price shocks or unnecessary costs. Prices, for example, will fall during a recession as industrial output and hence emissions decline, as witnessed in Europe. A tax that is administered centrally does not have the same flexibility as a tax that is managed locally (Caney and Simon, 2010). Cap and trade has been shown effective in the United States through the acid rain programme, which decreased pollution levels fast and efficiently at a far lower cost than predicted. The EU Emissions Trading System has proved that cap and trade can be extended to carbon, and in doing so establishes a price on carbon that encourages emissions reductions. Emissions trading offers a global solution to a global problem (Bertram and Simon, 2010) Cap and trade allows for rigour in emissions monitoring, reporting, and verification, which is critical for the integrity of any climate programme.

Conclusions and Future prospects: Climate change has been labeled "the greatest market failure" (Stern *et al.*, 2006). One of the most important efforts to counter the climate change was the creation of emissions trading. Carbon neutrality objectives are being set by an increasing number of governments, regions, cities, and businesses. Zero-carbon solutions are becoming more competitive across a variety of economic sectors that account for 25% of total emissions. This trend is especially obvious in the electricity and transportation sectors, and it has opened up a slew of new business opportunities for those who are early movers. By 2030, zero-carbon solutions may be competitive in industries that account for more than 70% of world emissions. Although carbon trading is a sustainable means to reduce carbon emissions but the global economic turmoil and its ramifications for the carbon market, the lack of an international climate change agreement defining the Post-Kyoto commitments, and unfavourable policy shifts in some countries all cast serious doubts on the expansion of emissions trading. The success of carbon trading depends on effective regulation and oversight to ensure that emissions reductions are genuine and that environmental integrity is maintained. With the right policies and safeguards in place, carbon trading can be a valuable part of the solution to the global climate crisis.

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