

RESEARCH ARTICLE

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Carbon Credits and Carbon Trading: Impact on Climate Change

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ABSTRACT

The temperature of earth has seen a phenomenal jump in last decade or so. Most of this change is attributed to the rise in level of carbon dioxide due to burning of fossil fuel. The developed nations of the world are major contributors to this global warming effect. In order to offset their responsibility towards environment, these developed nations proposed the concept of carbon credit and carbon trading. A significant landmark in the development of framework for carbon credits and carbon trading is Kyoto protocol. This paper is an attempt to review the mechanism behind carbon credits and carbon trading.

Keywords: Carbon credits, carbon offset, Kyoto Protocol

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I. INTRODUCTION

A **carbon credit** represents a generic term for any tradable certificate or permit representing the right to emit one ton of carbon dioxide or the mass of any other green house gas with a carbon dioxide (tCO₂e) equivalent to one ton of carbon dioxide. The developed nations of the world have high density of industries which is responsible for increased green house gases emission. This emission level cannot be brought down because of economy of scale. In order to address the threat posed by increased emissions, the nations of the world got together to work out the mechanism for carbon credits.

Carbon credits and carbon markets are a component of national and international attempts to mitigate the growth in concentrations of green house gas (GHGs). One carbon credit is equal to one ton of carbon dioxide. Carbon trading is an application of an emissions trading approach. An allowable emission level of green house gases mainly carbon dioxide based on status (developed or developing) and population of the country is fixed. The markets are then used to allocate the emissions among the group of regulated sources. The theory behind this fixation process is to allow market mechanisms to drive industrial and commercial processes in direction of lower emissions. All projects which lead to reduction in emission of carbon dioxide into atmosphere qualify to earn carbon credits. These carbon credits can be traded in pen market and are sought by those countries/individuals that cannot lower their emission levels on their own.

These [carbon offsetters](#) purchase the credits from an investment fund or a carbon development

company that has aggregated the credits from individual projects. Buyers and sellers can also use an exchange platform to trade, which is like a stock exchange for carbon credits. The quality of the credits is based in part on the validation process and sophistication of the fund or development company that acted as the sponsor to the [carbon project](#).

For carbon credits, it can be summarized as:

- **Permission** – Permission is granted to a country, company or organization to produce a certain number of emissions which can be traded in, if not used.
- **License to trade** – Another explanation says that a certificate is issued giving the prospective emitter the right to produce up to one ton of CO₂ or its equivalent.
- **Another common term** – Another widely used term refers to a carbon offset as a financial tool to reduce (not increase) carbon emissions by storing carbons for future or later use.

Features of Carbon Credits

During the phase of their introduction, carbon credit scheme was envisaged to lower the carbon dioxide emissions in the air either voluntarily or by rule of law. But the process has been circumvented. The major features of carbon credits are:

- **Individual benefits** – Domestic users can also gain by trading in carbon credits while helping them adopt a more concerted and disciplined approach to [reducing their carbon footprints](#).

- **Buying greenhouse gasses** – According to most sources, the purchase of carbon credits remains a lucrative enterprise. Each carbon credit that is purchased is channeled to a company which is specifically tasked to bring down emissions or provide more sustainable and [environmentally-friendly](#) alternatives to these emitters.
- **Business and job opportunities** – Trading in carbon credits using the capitalist principle, if applied fairly, allows private investors to generate profits from their purchases and diversify them towards the creation of environmentally-sustainable businesses which either emit very low or no carbons. And as new businesses are started up, more employment opportunities arise.

The Kyoto Protocol

The Kyoto Protocol forms the basis of the carbon trading mechanism. It divides the nations of the world into two groups. The countries in group one can purchase carbon credits from countries listed under group two. The group two countries are supposed to invest in measures which would lead to reduction in carbon dioxide emissions. The main features of Kyoto Protocol are:

- **UNFCCC** – The Kyoto Protocol saw the formation of the United Nations Framework Convention on Climate Change.
- **Cap-and-trade** – At this gathering a system was devised to impose national caps on greenhouses of developed nations that ratified the Kyoto Protocol. They were aligned as Annex B countries.
- **AAU's** – Each of these countries were given an allotment and corresponding number of emissions allowances known as Assigned Amount Units.
- **Trading targets** – Participating countries were required to reduce their emissions to well below nineteen-ninety levels and below five percent by 2012. They could also reduce their emissions by trading in emissions allowances with countries that already had surplus allowances. They could meet their targets by buying carbon credits.
- **Two flexible mechanisms** – Overall costs of reducing emissions were kept minimal. Increasing cost-effectiveness, the Kyoto Protocol also founded two 'flexible mechanisms' known as the Clean Development Mechanism and the Joint Implementation.

Working for Carbon Credits

Carbon credits are measured in tons of CO₂-equivalents (or CO₂e) and are bought and sold through number of international brokers, online retailers and trading platforms. Countries or businesses that find it hard to comply with the carbon

emissions, purchase carbon credits to offset their emissions by making finance readily available to renewable energy projects, forest protection and reforestation projects around the world. These renewable energy and [energy efficiency projects replace fossil fuel](#) and industrial processes. This all helps businesses in mitigating their emissions and ensures compliance with the global standards. Offsetting one ton of carbon means there will be one less ton of carbon dioxide in the atmosphere than there would otherwise have been. For e.g.: when solar energy companies sell carbon offsets, this helps them as these projects become more viable. Many types of activities can generate carbon offsets. Projects which sell carbon credits include wind, solar, geothermal, biomass projects which replace fossil fuel powered plants, low cost household device projects that can eliminate need for extra energy, methane capture from landfill gas and agriculture, different afforestation projects, forest protection from illegal logging, destruction of [heat trapping greenhouse gases](#) from the atmosphere and many more.

Carbon Offsets

Carbon offset is similar to the principle of applying carbon credits but is primarily designed to help reverse damage already done. The features and functions of using carbon offsets are:

- **Investments** – Those who can, invest in projects which are specifically designed to reduce or prevent carbon dioxide or greenhouse gasses.
- **Damage control** – One description given to carbon offsets was that it is a form of damage control in which guilty parties can make reparations for previously excessive emissions and basically through the purchase of carbon offsets, turn a blind eye while harmful gasses are controlled or reduced elsewhere.
- **The vintage year** – This peculiar analogy synonymous with the harvesting of grapes basically highlights the year in which the reduction of carbon emissions actually occurs.
- **The source project** – It remains a precarious form of technology because there is always the chance that it may fail. What happens is this; the technologies that are devised to offset carbons use biomass and methane. But industrial energy efficiencies are encouraged during this 'source' process and renewal energy is used.
- **Certification** – Checks and balances are put into place via certifications to ensure that carbon offsetting procedures and methodologies are properly authenticated and registered.

Carbon Credit Method– Mandatory or Voluntary?

Carbon credits can be either mandatory or voluntary. These methods are discussed below:

Mandatory Carbon Credits

The Kyoto Protocol was the initiator for mandatory carbon credits. It was expected that the nations would behave responsibly and would on their own take measures to reduce the carbon emissions. But it has not happened as expected. The industrialized nations are shirking away from their responsibility putting the onus on developing nations leading to a crack in the agreement.

Voluntary Carbon Credits

VERS or Voluntary Emission Reductions consist of bartering of carbon offset traded voluntarily for carbon credits. Reductions, when they take place, are monitored, in turn, by a voluntary certification process. Voluntary carbon credit enables companies and businesses to purchase carbon credits on a voluntary basis to satisfy Corporate Social Responsibility objectives

II. CONCLUSION

The responsibility of maintaining the earth's atmosphere lies with everyone. Whether voluntarily or through law enforced, every country/industry

needs to contribute to preserve the environment for future generations. It is imperative to follow the limits of carbon emissions agreed and revised by consensus so that we may leave this earth a better place for generations to come.

REFERENCES:

- [1]. "Making Kyoto work: data, policies, infrastructures". UNFCCC press briefing. 2007-11-20.
- [2]. "Climate Change 2007: Mitigation of Climate Change, Summary for Policymakers from IPCC Fourth Assessment Report" (PDF). *Working Group III, IPCC. 2007-05-04. pp. Item 25 and Table SPM.7, pages 29–31*
- [3]. United Nations Framework Convention on Climate Change (2014) Doha Amendment.
- [4]. World Wildlife Foundation (2008) Making sense of the voluntary carbon market A comparison of carbon offset standards. Germany
- [5]. Castro, F., Gago, J., Hartillo, I., Puerto, J., Ucha, J.M.: An algebraic approach to integer portfolio problems. *European Journal of Operational Research* **210**, 647–659 (2011).

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