Carbon Credit

By
Dr. Ganesh D. Kale, Asso. Professor, Department of Civil Engineering, SV NIT, Surat

Reference: Chonde, S. G. (2016), Use of Carbon Credits / Trading for Environmental Protection: A Review. Environmental Science, Vol.2, No. 9, pp. 19-21

Carbon Credit Concept

- A carbon credit is general term for any tradable certificate or permit representing the right to emit one tonne of carbon dioxide or the mass of another greenhouse gas with a carbon dioxide equivalent to one tons of carbon dioxide. The concept of carbon credits came into existence as a result of increasing awareness and the need for pollution control.

- Carbon credits were one of the outcomes of Kyoto protocol, an international agreement between 169 countries. The Kyoto protocol created legally binding emission targets for developing nations. To meet these targets, the nation must limit carbon dioxide emission; it was enforced from February 2005.

- The Kyoto Protocol that aims to reduce greenhouse gas emission by 5.2%. The US, one-third of the total greenhouse gas emission, has not signed the treaty. The penalty for that first phase and second phase was design as per tonne of CO'2.

- There are two types of Carbon Credits: Carbon Offset Credits (wind, solar, hydro and bio-fuels) and Carbon Reduction Credits.

- Developed countries have to spend nearly $300-500 for every tonne reduction in carbon. Greenhouse gas emission is much below the target fixed by the Kyoto Protocol therefore reduction norms of emission.

- Carbon credit units are currently trading at $15-20 per unit. Most scientists agree our climate is in a state of flux. In the past century the global temperature has risen by about 1.26 degrees Fahrenheit (0.7 degree Celsius).

- The UN's Intergovernmental Panel on Climate Change has said there's a 90% increase is due to greenhouse gas emission produced by human activities and the combustion used to produce energy.

- Emission of carbon, or gases which result in warming of the globe. So with the reduce the emission of harmful gases that contributes to the greenhouse effect. So, countries came together and signed an agreement named the Protocol.

SIGNIFICANCE OF KYOTO PROTOCOL

- In response to the global warming crisis, in Rio deo Janeiro of Brazil, the 1992 UN Conference on the Environmental and Development clearly raised the concept of “sustainable development”. Through this conference more than 150 countries had established “United Nations Framework Convention on Climate Change”, which was called UNFCCC for short.

- UNFCCC is the first convention to take full control of greenhouse gas emissions including Carbon dioxide discharge, and is an international convention to fight global warming which causing a lot of and adverse effect on the development of society and economy.

- After that, in December 1997, the third Conference of the Parties (COP) under the UNFCCC held in Kyoto of Japan, which aimed at limiting carbon emissions in developed countries. In this way, we can curb global warming. The conference ended with an agreement of "Kyoto Protocol".

- The Kyoto Protocol 1997 is an emissions target agreement established on 11 December at Kyoto, Japan and entered into force on 16 February' 2005.

- Though US is not a member, which is responsible for 36.1% of lay emission levels. The international agreement asked 37 countries to reduce their greenhouse gases emission by 2012. This will help in clean development mechanisms.

- Carbon credits are turning carbon emissions into a tradable commodity. Each country is given an annual emissions quota. The goal of the program is to reduce emissions by 5.2 percent of the 1990 levels by 2012.

- The objective is the "stabilization and reconstruction of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

- Under Kyoto Protocol the countries that have been emitting more carbon and other gases (greenhouse gases include ozone, carbon dioxide, methane, nitrous oxide and even water vapors) have voluntarily decided that they will bring down the level of carbon they are mining to the levels of early 1990.

- Developed countries, mostly European, had said that they will bring down the GHG emission level in the period from 2008 to 2012. In 2008, these developed countries have decided on different norms to bring down the level of emission fixed for their companies and factories.

- A company has two ways to reduce emissions. One, it can reduce the GHG (greenhouse gases) by adopting new technology or improving upon the existing technology to attain the new norms for emission of gases. Or it can tie up with developing nations and help them set up new technology that is eco-friendly, thereby helping developing country or its companies to earn credits.

What is Carbon Credit?

- Each carbon credit equals a tonne of carbon. Carbon credit, as defined by Kyoto protocol, is one Metric tonne of carbon emitted by burning of fossil fuels Companies are allocated a certain number of credits that they may use over a period of time.

- Suppose if a company is allocated 20 credits and is using only 10 credits then it can sell those credits in the market. The two types of Carbon Credits: Carbon Offset Credits (COC's) and Carbon Reduction Credits.

Carbon Reduction Credits (CRC's).

- Carbon Offset Credits consist of clean forms of energy production, wind, solar, hydro and bio-fuels.

- Carbon Reduction Credits consists of the collection and storage of Carbon from our atmosphere through bio-sequestration (reforestation, forestation), ocean and soil collection and storage efforts.

- Both approaches are recognized as effective ways to reduce the Global Carbon Emissions "crises". Those companies exceeding their limit have to purchase credits from the market. This method of and buying/selling is called carbon trading. This causes market forces to reduce overall emissions.

- The idea of emissions trading with carbon credits relies heavily on the ability of polluters to reduce slowly but surely their emissions each year.

Need of Carbon Trading:

- Carbon credit trading is one of the ways to control greenhouse gases emissions. Carbon dioxide, the most important greenhouse gas produced by combustion of fuels, has become a cause of concern. Major sources of greenhouse gases are industrial emissions.

- Gases include carbon dioxide, nitrous oxide, methane and hydro fluorocarbons. When these gases enter the atmosphere, they hold in reflected energy from the sun and emit that radiation back down to Earth. This greenhouse effect can create climatic changes.

- Today Global warming, climate change, ozone depletion, sea level rise, biodiversity are all affected, one way or another, directly or directly, by harmful 'greenhouse' gases.

- A number of human activities are responsible for it like: fuel combustion, energy industries, manufacturing industries and construction, transport, fugitive emissions from fuels, Oil and natural gas, chemical industry, metal production, production of halocarbons and sulphur hexafluoride and consumption of halocarbons and sulphur hexafluoride

Green House Gases and their GWP

- Co_2 emissions from fuel burning, responsible for about 87 percent of global warming.
- Nitrous oxide is used as fertilizer in agriculture and its GWP is 170 to 190 times greater than that of Co_2.
- Methane is emitted from landfills, livestock digestive processes and waste. GWP is 24 times higher than that of the Co_2.
- Hydrofluorocarbon gases are used in refrigerators as agents used to blow foams or insulation; solvents or cleaning agents, especially in semi-conductor manufacturing. GWP is 4,000 to 10,000 times that of Co_2.

- Perfluorocarbons (RFC), or Perfluoro compounds are used as a purging agent for semi-conductor manufacturing and small amounts are produced during uranium enrichment processes. GWP is 6,000 to 10,000 that of Co_2.

- Sulphur Hexafluoride (Sf6) is used as insulating material for high-voltage equipment like circuit breakers at utilities. Also used in water leak detection for cable cooling systems. SF6 is a man-made gas. GWP is 25,000 times to that of Co_2.