

# A Review on Carbon Credit And Clean Development Mechanism

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**Abstract-** We know that as days are passed the standard of living of people are rises thereby consumption of goods and services are also arises and for fulfilling that demand there is rapid industrial growth which demanding increased in energy consumption.

Here we are using number of sources which overfill this energy requirement mainly we use coal, fossil fuel, crude oil, etc. These sources are major producer of carbon dioxide and other GHG as we see our energy consumption is increases this GHG are also increases in a considerable manner which Ultimately lead to global warming and climate change which is not a good thing for our mother earth and all living beings. It causes rapid changes in our climatic condition which can have very dangerous effects with time. Thus, after considering all this aspect the united nations framework convention of climate change launched kyot protocol is an international agreement which is used to reduce Co2 and other GHG. Emission industries. By providing Carbon credit. It can help to start the development of clean technologies and leads to expand new market of carbon trading. This report gives idea about estimation of carbon credit by calculating total amount of carbon credit with the example

**Keywords-** Greenhouse gases(GHG), Clean development mechanism (CDM), Environmental protection agency(EPA), Carbon Dioxide Equivalent (CO<sub>2e</sub>), Solid waste, Carbon credit, Cap and trade.

## I. INTRODUCTION

Carbon credit is a term which permit the right to emit one tonne of CO<sub>2</sub> or the equivalent amount of different Greenhouse gases. The main aim of carbon credit is to reduce the emission of different greenhouse gases from the environment. Companies or countries are allotted to specified number of credits and this credit is tradable credit for balancing overall global emission. The main goal is to reduce the number of credits over the course of time that promotes the entities to identify various ways to cut down the greenhouse gas emission.

As of February 2009, 183 states have signed and agree to the Kyoto Protocol to the United Nations Framework Convention on Climate Change, aimed at combating global warming. The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC or FCCC), an international environmental treaty having the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere." The Kyoto Protocol establishes legally binding commitment for the reduction of four greenhouse gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride), and two groups of gases (hydro fluorocarbons and per fluorocarbons) produced by "annex I" (industrialized) nations, as well as general commitments for all member countries. As of January 2009, 183 parties have ratified the protocol, which was initially adopted for use on 11 December 1997 in Kyoto, Japan and which entered into force on 16 February 2005.

## II. LITERATURE REVIEWS

**Dr. Sonal G. Chonde-**Global Warming is the crest opic in the political agendo across the globe. Every country seems to be spending let eftine energy, and money to find slations to of the major international problems of climatic change Carbon credits are issued to companies that seduce their greenhouse gas coeds are then sold to companies wheStil the prosocol norms, it helps the developing start with clean technologies: since these machines are expensive therefore finds are provided for countries in the form of carbon credes 60-70% of emissies through del combustion in industries such as cement, steel, textile. Sese gases are eased as by-products of industrial processes which affect the one layer Carbon Trading is in in ascent stage in terms of development, which requires tree and effort to be groomed as one of the matured markets. The camedmarket value of the Carbon Trading was approximately \$30 billion US dolars in the your 2006. Carbon code has been given the recognition of an intangible commodity and can be traded on the commodities market.

**N. Sarkar and Satyanarayana Dash-**Global climate change intricably linked with the enhanced bold-op of greenhouse gases Ensions trading in the form of carbon credit or CER ir

opening up a new vista of trade opportunities with prospect for gradual reduction of emissions particularly by the developed nations under Annexure-I categories. Various national and international programmes undertaken by the government and voluntarily by the nongovernment agencies have positively impacted on progressive reduction of emissions in many parts of the world. This paper highlights the emerging issues linked to the modalities of emission-trading, together with scope for developing sound accounting procedures for trading carbon credit.

**Rahul Pandey**-The climate in these days is medically changing due to the massive amounts of carbon dioxide being thrown into the atmosphere. The lasting effects can be witnessed with the darkening of the sky in the last few years. The term Global warming is coined to explain the accumulation of carbon dioxide into the air, and the rapid changing of our climate as a result. The burning of fossil fuel, planned and unplanned clearing of forests to make space for the factories and other human structures is one among the several reasons for the rising of carbon dioxide.

**Kyle Peterdy**-Carbon credits, often referred to as carbon allowances, can be thought of as a unit of measurement; however, they have a “tradeable” component. Carbon credits are not the same as carbon offsets. Carbon credits only exist in jurisdictions that are governed by what’s called a “cap and trade” system (such as the California Cap-and-Trade Program, which is overseen by the California Air Resources Board). Carbon credits are created by the governing organization and allocated to individual companies within that jurisdiction. A single credit represents one tonne of CO<sub>2</sub>e (or carbon dioxide equivalent) that the company is allowed to emit.

**Subrahmanyam**-Environmental imbalances are the biggest challenges that the world is currently subjected to. There is an immense need for the creation of Eco-friendly zones for the better cause of the mankind and wellbeing of one and all on our "One Earth". The need of the hour is to throw light on the social awareness concept with regard to the prevention of the environment degradation. The "Carbon Credit" is the new currency and each carbon credit represents one ton of Carbon dioxide either removed from the atmosphere or saved from being emitted. Carbon credits have been a topic in the high society and industrial community these but applicable to a common man who can get credits due to his altered life styles and his practices.

**Praveen Kumar**-There has been an increase in awareness about the need to mitigate the climate change. So in order to solve the environmental problems the concept of carbon trading was discussed and formalized in the Kyoto Protocol.

This paper tried to examine how Carbon Credit emerged as a global phenomenon entailing serious and long-term strategic implications. This study argued that carbon credit becomes an international tradable commodity and an important investment avenue. It can be exchanged among the businesses or can be purchased in the international markets at prevailing market rate. This new security is treated as a money making opportunity for developing countries like India.

**Ajay K. Garg (PH.D.)\*; Satyendra Arya**

The concept of Carbon Credit Trading is generated from Kyoto Protocol and is basically used to control the greenhouse gas emissions. This concept is used to earn carbon credit earnings and trading between the various companies and government. This concept is basically known for the reduction of carbon emissions in order to mitigate future climate changes; mainly the target is greenhouse gases specially carbon dioxide. It is important to take stock of global scenario of the carbon credit business. India signed and ratified the Kyoto Protocol in 2002. Since then, India is exempted from the framework of the treaty; it is expected to gain from the protocol in terms of foreign investment.

**Susmita Mukherjee' and P.B. Ghosh**-Presently, India is almost dependent on coal-based energy, which leads to the generation of a considerable amount of CO<sub>2</sub>. In the context of climate change, solar energy is accepted as an important alternative source of energy as it is green energy. But the single crystal silicon cells, which are the starting material for solar energy, are produced in exchange of greenhouse gas, the carbon dioxide. Present article highlights an estimation of solar energy production and carbon credit (CC) earning by the photovoltaic cells of mono-crystalline silicon in a definite module, largely used in West Bengal, India.

**Anuj Kumar**-In today's scenario, we all are living in an industrial era. Industrialization leads to climate change and climate change is the greatest challenge threatening humanity at present. Global warming is the main reason for the changing in an environment. Global warming is the result of industrialization because an industry produces many harmful and toxic gases in the form of pollution. As we all know, carbon dioxide, the most important greenhouse gas produced by combustion of fuels and the temperature of an earth has been increasing. This is also the reason of depletion of ozone layer. This has created an opportunity for the establishment of "CARBON MARKET" where we can trade of carbon credit.

### III. CLEAN DEVELOPMENT MECHANISM

The Kyoto Protocol's Clean Development Mechanism was supposedly created to help finance sustainable development projects in the world's poorest countries. Many of its supporters argued that it would make it possible for these countries to 'leapfrog' or skip the process of industrialization to a more sustainable economic model. But most of the money is going to the largest and most industrialized emerging economies

#### Cap And Trade

Emissions trading (also known as cap and trade) are a market-based approach to controlling pollution by providing economic incentives for reducing the emissions of pollutants. A central authority (usually a governmental body) allocates or sells a limited number of permits to discharge specific quantities of a specific pollutant per time period. Polluters are required to hold permits in amount equal to their emissions

### IV. OBJECTIVES

- The ultimate objective of the Carbon credit is to stabilize greenhouse gas concentrations in the atmosphere with the help of Kyoto Protocol in 1997.
- Give an idea about estimation of the Carbon credit by gathering all the data like identifying activities that release GHGs And from that calculate the quantity of resource utilisation by using bills, receipts or invoice to calculate amount of electricity, fuel and good used.

#### Kyoto protocol

The five principle objectives of the Kyoto Protocol are:

1. Commitments to reduce greenhouse gases that are legally binding for annex I countries, as well as general commitments for all member countries.
2. Implementation to meet the Protocol objectives, to prepare policies and measures which reduce greenhouse gases; increasing absorption of these gases (for example through geo sequestration and bio sequestration) and use all mechanisms available, such as joint implementation, clean development mechanism and emissions trading; being rewarded with credits which allow more greenhouse gas emissions at home.
3. Minimizing impacts on developing countries by establishing an adaptation fund for climate change.
4. Accounting, reporting and review to ensure the integrity of the Protocol.

5. Compliance by establishing a compliance committee to enforce commitment to the Protocol.

#### Major green house gases

**Carbon Dioxide (CO<sub>2</sub>):** Carbon dioxide is a major pollutants green house gas and it enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions. Carbon dioxide is removed from the atmosphere when it is absorbed by plants thus planting more and more trees is major towards reduction of carbon dioxide.

- **Nitrous Oxide (N<sub>2</sub>O):** Nitrous oxide is emitted during various agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Methane (CH<sub>4</sub>):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane is also emitted when organic waste decomposes, whether in landfills or in connection with livestock farming.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from various industrial processes. Fluorinated gases are the main reason for causing ozone-depleting substances and due to this fluorescent gases playing important role in creating global warming condition.

### V. A SAMPLE CALCULATION

To show how the process works, each step of measuring and pricing carbon are shown by step by step procedure.

#### Step 1: Identify Polluting Activities

There are various polluting activities which cause pollution that's way identifying those activities are the one of the primary step in calculation.

#### Step 2: Calculate Quantity of Resource Use

After finding activities the next step is to find out the quantities of resource used.

Use bills, receipts or invoices to calculate amount of electricity, fuels, goods or services purchased. Activity data can be collected in weights (for example of wood, or food) or

volume (of gasoline or diesel consumed) this will help in quantity of resource used.

### Step 3a: Calculate Emissions from Six Pollutants

There are many steps involved to get the total emissions from a family or business. The first step is to calculate emissions from all six pollutants. Business Dictionary explains that emission factor (EF) is the amount of emission of any greenhouse gases (GHGs) into the atmosphere due a particular activity

### Step 3b: Convert to Carbon Dioxide Equivalent (CO<sub>2</sub>e)

The six pollutants are not equal in the damage they cause to the environment. Their intensity of effect is called global warming potential (GWP). So one unit (e.g. one pound) of nitrous oxide harms the environment 298 times more than the same amount (e.g. one pound) of carbon dioxide.

### Step 3c: Total Emissions

Total emissions are calculated by adding all emissions in carbon dioxide equivalent (CO<sub>2</sub>e) for a year. The Nature Conservancy has a ready carbon calculator powered by Cool Climate Network at the University of California at Berkeley where one can calculate and compare individual emissions.

### Step 4: Pricing Carbon Credits

Pricing fluctuates based on region, market conditions, and the certification program.

## VI. CONCLUSIONS

Carbon credit is playing a key role in reducing carbon emission and as we see that carbon credit is the tradable permit for the pollutant emitting industries hence there is a wide scope of carbon trading which can promote new business to grow in this field. Cap and trade is a simple but very important and necessary initiative in kyoto protocol.

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