

# Carbon Credits: A Paradigm Shift Towards Money Making Opportunity

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## Abstract

*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. Carbon Credit has drastically transformed the international trade in a creative way by taking care of sustainable development of developing countries as well as to help developed countries to comply with their commitment under Kyoto protocol. Further, article discussed the potential of India to generate wealth in carbon market. Finally, study suggests that India has a great opportunity under Clean Development Mechanism (CDM) of the Kyoto Protocol to create Certified Emission Reductions by way of limiting its carbon footprints. This will make Indian economy to reach up to new heights.*

**Keywords:** Carbon Credits, Kyoto Protocol, India and Trade.

## 1. Introduction

Global warming is the biggest challenge that human race is facing today. The root cause of global warming is heavy industrial emissions. So Emission reduction through its trading has emerged as important dimension of environmental practices. There are lots of factors which affect the environment and emission of GHGs is one of them. On the global level, 72 percent of greenhouse gas emissions are from household usage covers emissions through cooking, heating, personal transport, electricity generation, etc., 10 percent of government consumption covers emission through defence research, power consumption, etc., and 18 percent of investments cover infrastructure development, building construction, machine installation, other capital goods etc. respectively.

In order to fight against all environmental problems a new commercial commodity came into existence say carbon credit. It aimed to fulfil twin objective, first achieve sustainable development through emissions reduction and secondly give a financing strengths to developing countries by providing a platform

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to sale their emission quotas. So this leads to transformation of environmental threats into money making opportunity. This paper tried to examine the potential of India to strengthen its financial position by way of providing carbon credits to Annex-1 countries.

## 2. Review of Literature

### Carbon Emissions – A Global Scenario

There has been an increase in awareness about the need to mitigate the climate change. Over the years' climate change has emerged as a global phenomenon entailing serious and long-term strategic implications. The European Union Emission Trading Scheme (EU-ETS) and Kyoto Protocol are the two major initiative which target reduction of carbon emission. Since the implementation of the Kyoto Protocol, environmental pollution has been considered as one of the thrust area for creating money by developing nations like India. India is 4<sup>th</sup> largest emitter in the world with 1.7 tonne emission per capita.

### History of Carbon Emission Conventions

1. In 1972, United nation conference on human environment in Stockholm
2. In 1992 Rio convention 'earth summit'
3. In 1995-1996 Berlin and Geneva summit was held
4. In 1997 Kyoto protocol was made
5. In 2007 Bali summit
6. In 2009 Copenhagen accord
7. In 2010 Cancun conference
8. In 2012 Durban conference
9. In 2014 Lima conference
10. In 2015 Paris conference

### Kyoto Protocol

The Kyoto Protocol is a protocol to the UNFCCC, which aimed at fighting global

warming. "Kyoto Protocol is an international treaty which focused on reduces CO<sub>2</sub> in order to stabilized Green House Gases GHG concentration into the atmosphere. The treaty has adopted in 1997 at the summit in Kyoto, Japan and comes into existence on 16th February 2005. The laws and regulations for execution of the Kyoto Protocol were further elaborated in the Marrakesh Accords. Its main objective is to move carbon economy to low carbon economy through investment in low carbon technology to achieve stabilized pollution into atmosphere. India signed and ratified the Protocol in August, 2002 and has potential to become world's pacemaker in reduction of greenhouse gases by adopting CDMs in the past few years".

Carbon Credit as defined by Kyoto Protocol are "A carbon credit is a generic term for any tradable certificate or permit representing the right to emit one tone of carbon dioxide or the mass of another greenhouse gas with a carbon dioxide equivalent tCO<sub>2e</sub> to one tone of carbon dioxide by burning fossil fuels."

The Collins English Dictionary defines a carbon credit as "a certificate showing that a government or company has paid to have a certain amount of carbon dioxide removed from the environment".

The Kyoto Protocol broadly divides countries into two categories: Annex-1: parties are basically developed countries, which were committed to reduce their collective greenhouse gas emissions by 5.2 percent from the 1990 level. Non-Annex: parties are mostly developing and least developing countries, like India, China, Pakistan, Kuwait, Saudi Arabia etc., which are not obliged to reduce their emission targets.

### Flexibility Mechanism of Kyoto Protocol

1. **Clean Development Mechanism:** CDM is defined under Article 12 of Kyoto Protocol, which focused on the concept of sustainable development through investment in those projects which emit less CO<sub>2</sub> into developing

countries by developed countries. While creating GHGs statements a country committed under Kyoto Protocol, which has its surplus emission quota, may transfer to developed economies which might be unable to meet their emission targets under Kyoto Protocol and units created under CDM called as Certified Emission Reduction CER units.

**2. Joint Implementation:** JI is comes under article 6 of Kyoto Protocol, which is somehow similar to CDM that allows industrialized countries, in order to meet their emission targets committed under Kyoto Protocol, to invest in low carbon technologies/projects, in other industrialized countries. JI produce Emission Reduction Unit ERU.

**3. Emission Trading:** ET is explained in article 17 of the Kyoto Protocol. This is like an open market system under which any of the country can sell and buy emissions to achieve their respective targets to reduce their pollution committed under the Protocol. The Protocol builds a cap-and-trade system that sets caps on the GHG emissions of developed countries. As per the emission targets of the country, it is assigned the corresponding number of allowances called Assigned Amount Units AAUs. If in case countries emit less CO<sub>2</sub> then it's cap assigned, then countries can sell their cap to those countries, which are unable to meet their emission targets.

### Carbon Credit and it's Trading

The concept of carbon trading was discussed and formalized in the Kyoto Protocol. The Protocol agreed quotas on the emission of maximum amount of GHG for various developed and developing countries and the countries that were registered have set their own quotas on the emission from their local businesses, entities and organization which is known as operators. Each operator who has carbon credits gives the right to emit carbon dioxide or other green house gases equal to one metric tonne. If the operators do not use these carbon credits then they can sell them in the open market. The demand for energy normally grows with the time, and the total

emission should be within the set quotas and these carbon credits allow the operators or the industries some kind of flexibility and predictability in their planning. By permitting the trading of allowance, an operator can seek out this method as the most cost effective way of reducing the emissions, either by investing more in cleaner technology or by purchasing emissions from other operators who have excess capacity of emission.

The one of the important component of national and international trading scheme of emissions is carbon credits that have been implemented to mitigate the global warming. They provide a method to reduce green house effect emissions by limiting the total amount of annual emissions on an industrial scale and letting the market to give or assign a monetary value through trading to any shortfall. Carbon credits can be exchanged among the businesses or can be purchased in the international markets at prevailing market rate.

There are many organizations who are normally interested in lowering their emissions or we can say that carbon footprints as per the regulations of their country environment .These commercial or individual customers can purchase the carbon credits voluntarily. These off setters of carbons purchase the credits from a carbon Development Company or from investment fund that has aggregated all the credits from their projects

### 3. Theoretical Background

World Bank Report (2008) explained that Indian carbon markets are largely forced by small and medium enterprises SMEs, why is not surprising, as India has nearly three million SMEs which constitute more than 80 percent of total number of industrial enterprises in the country. Out of the 333 projects registered at the CDM Executive Board from India, only sixteen originated from public sector Units PSUs. Further study reveals in that third by share of signed emission reduction purchase agreements since market inception, when HFC23 assets are excluded from the analysis,

as under- China 40 percent, Brazil 15 percent and India 8 percent as of September 2007. In India among total numbers of project register 21 percent is from HFCs, 11 percent is from cement industry, 11 percent is from fossil fuels switch, 16 percent is from EE own generation, 5 percent from household, 6 percent is from biomass energy and 17 percent is from hydro etc.

Sandeep (2013) found that CDM and climate finance assist to convert an environmental threat into money making opportunity and lowering down the overall cost of meeting carbon reduction. In case of Delhi Metro Rail Corporation (DMRC), there exist two CDM projects. DMRC was the first registered Railway project in the world by United Nations under the CDM which enabled it to claim carbon credits, wherein DMRC earns Certified Emission Reductions for the use of regenerative braking system in its rolling stock. The project was financed by Japan and the carbon credits earned by DMRC also purchased by Japan at a rate of 1.2 Crores p.a.

Jayaramiah (2009) described that in a first-of-its-kind, a few electric two-wheeler manufacturers are likely to benefit through carbon credits for reducing CO<sub>2</sub> emissions through sales of green vehicles. Four major electric two-wheeler makers in the country, Hero Electric, a 100% subsidiary of Hero Group, Delhi-based Lohia Automobiles, Ahmadabad-based electrotherm and Bangalore-based Eko Vehicles are in the process of registering themselves with United Nation Framework Convention on Climate Change (UNFCCC).

Chotaliya (2013) discussed the carbon emissions trends of six countries from 2014-2015. The study was carried out by using secondary data from articles, journals and books. The paper explained that the percentage trend in India has grown by 8.33% in 2014-09 and it was showing the increasing trends in carbon emissions in the next five years as compared to its previous years. Further study found that the carbon market was fully developed but the financial accounting standards for carbon market must be established. There is lack of

uniformity in financial accounting which make it difficult to compare the financial statements of between the carbon offset projects whether they are in public sector or private sector. There were lack of transparency persist in the carbon market despite of the directions provided by international policies.

Bhalla (2008) examined that the Power Trading Company (PTC) India Ltd said it is in talks with European countries to sell carbon credits generated in the country. However, did not elaborate on the time frame by when the talks could fructify. The clean development mechanism (CDM) benefits are playing a major role mainly in renewable energy projects. Western countries are in obligation to reduce emission and thus, there has been a huge demand from them for carbon credits to meet their obligations. There should be policy encouragement for the third party sale of renewable energy and tradable certificates of renewable, which will help better price realization. At present, renewable generated in a state remains within it. Power companies and captive power producers, who are under obligation to produce green power as a percentage of total power generated in certain states, can meet their obligation by buying tradable green energy certificates.

### **Carbon Credit: As a Money Making Opportunity for India**

As per Kyoto Protocol India comes under non-annex countries which are not obliged to reduce their CO<sub>2</sub> emission into atmosphere. India is amongst one of the largest emitter of CO<sub>2</sub> and has huge chance to convert this into wealth creation. Being a part of Kyoto Protocol India can be able to fulfill the target to reduce CO<sub>2</sub> of developed countries. This will make Indian economy to reach up to new heights.

The estimated GDP growth rate of India will be around 8 to 9 percent in the next upcoming years. It will lead to more production, energy and consumption activities, which further will lead to more emission of GHGs into the atmosphere. Aggregation of GHGs emissions

from all sectors reveals that emissions of major cities in India range from 38,633.20 Gg in Delhi, 22783.08 in Greater Mumbai, 22,090.55

in Chennai, 19,796.60 in Greater Bangalore, 13,734.59 in Hyderabad and 14,812.10 in Kolkata.

**Table 1: List of Carbon Traders in India**

S.No.	Name of the Company
1.	Adani Power
2.	Ashok Leyland Ltd
3.	CESC's
4.	Essar Oil Ltd.
5.	GMR Infrastructure Ltd.
6.	Grasim Industries Ltd.
7.	Hindustan zinc
8.	JSW Steel Ltd.
9.	Lanco
10.	Maruti Suzuki India Limited
11.	NTPC Ltd.
12.	Oil & Natural Gas Corporation Ltd.
13.	Oil India Ltd.
14.	Rain Industries Ltd
15.	Reliance Industries Ltd.
16.	Suzlon Energy Ltd.
17.	Tata Motors Ltd.
18.	Tata Power Ltd.
19.	Tata Steel Ltd.
20.	Torrent Power Ltd.

**Sources:** National CDM authority of India, Ministry of Environment, Forest and Climate Change, Government of India.

As per statistics of Ministry of Environment and Forests, the total carbon emissions of India expected to be 3000 MtCO<sub>2e</sub> in 2020. While the Institute of Economic Growth estimates that the population will be around 1.3 billion by the same time, resultant 2.3tCO<sub>2e</sub> per capita of carbon emission. India, with its vast population and fast growing gap between energy demand and supply, is striving to curb its energy shortage to sustain its economic and social growth in the coming decades. With the second-fastest growing economy and a middle class projected to grow from 50 million to 500 million in the next few decades, GHG emissions are likely to further increase.

India is a serious and emerging player in the global carbon credits market. This has induced

and prompted the originator, trader and developer of carbon credits, to set up their offices in India. Now a day's carbon credit is emerging domain especially in India but there are very few corporate who are aware of this emerging segment of credits. Presently it is very essential to create awareness about this emerging business segment. India is entitled to sell credits to the developed countries because its emission is lower than its target.

India is considered to claim almost 31% of the world's total carbon trade, which can give \$97bn by 2015 The India's Delhi Metro Rail Corporation (DMRC) is the first rail project in the world to earn Certified Emission Reductions and get benefited from it because of using the system of regenerative braking in its rolling

stock. The Certified Emission Reductions that has reduced 30% of the electricity consumption. Many of leading market capitalized companies in India trading in carbon credit like Reliance Industries Ltd., Tata Motors Ltd., JSW Steel Ltd. Etc (Table: 1).

It is normally believed that it is not a penalty that is awarded to the earning companies, but

the kind of recognition and rewards given to the green firms is what making this system so much popular and exclusive. Those companies that have limited emissions will work for the formation of further strategies to reduce the quantified emissions so that they can sell more and more carbon credits in the international market and can increase their profits. Thus, the system keeps on de-polluting the environment increasingly.

**Table 2: Approved Projects under CDM (As On Nov 2015)**

S.No	Sector	No. of Projects	No. of CERs (annual)
1	Energy industries (Renewable/Non-renewable sources)	918	71,899,363
2	Energy Demand	77	2,729,642
3	Manufacturing Industries	47	2,186,074
4	Waste handling and disposal	23	2,110,094
5	Afforestation and Reforestation	15	1,072,157
6	Transport	4	964,777
7	Metal Production	3	877,754
8	Chemical Industries	3	320,114
9	Energy Distribution	2	967,681
10	Fugitive emissions from fuel (Solid, Oil and gas)	2	63,911
11	Agriculture	1	59,988
12	Solvent use	1	8,731
13	Construction Industries	0	0
14	Mining/Mineral Production	0	0
15	Fugitive emissions from production and consumption of halocarbons and sulphur	0	0
	Total	1096	83,260,286

**Sources:** National CDM authority of India, Ministry of Environment, Forest and Climate Change, Government

As per Kyoto Protocol India comes under non-annex countries which are not obliged to reduce their CO<sub>2</sub> emission into atmosphere. India is amongst one of the largest emitter of CO<sub>2</sub> in the world with 6.96% of world's total emission. Emission trading is a new concept in Indian scenario so few corporate are aware of this emerging segment. The United Nation Framework Convention on Climate Change has registered numerous projects under CDM from different industrial sectors like Energy, Manufacturing, Transport, Chemical industries etc. (Table: 2)

#### 4. Conclusion

Carbon Trading is a biggest money making opportunity for developing countries like India. It becomes a popular security to mitigate climate change and important investment avenue. Carbon trading has drastically transformed the international trade in creative way by taking care of sustainable development of developing countries and to help develop countries to comply with their commitment under Kyoto protocol. India has a great opportunity under Clean Development

Mechanism (CDM) to create Certified Emission Reductions by way of limiting their carbon footprints of different industries like Energy Efficiency, Transport, Methane recovery, Industrial process changes and Agriculture as well. The estimated GDP growth rate of India will be around 8 to 9 percent in the next upcoming years. It will lead to more production, energy and consumption activities, which further will lead to more emission of GHGs into the atmosphere. India is 4th largest emitter of CO<sub>2</sub> with 6.96% of world's total emission and has huge chance to convert this into wealth creation. Carbon credit can help India to achieve sustainable development activities as well wealth creation weapon. This will make Indian economy to reach up to new heights.

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