

## “Carbon Credit: Trading With Nature”

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### Abstract

*Climate change stem from increasing greenhouse gases such as carbon dioxide are the result of emissions from fossil fuel combustion, tropical land clearing and natural process. To offset those gases, CO<sub>2</sub> emissions are being limited through engineering controls or storing carbon through biological controls. The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling emission and formed under the “Kyoto Protocol” is an international agreement linked to the UNFCCC. To make the “Kyoto Protocol” more effective, the concept of Carbon Credits was introduced.*

*Carbon Credit is like a Permit that allows an entity to emit a specified amount of greenhouse gases. One credit is equal to 1 tonne of CO<sub>2</sub> reduced. It introduces a new form of commerce: the carbon trade is a new economic activity involves the buying and selling of “environmental services” including the removal of greenhouse gases from the atmosphere.*

*Carbon credits are currently trading for \$9.5 to \$10 per metric ton. There are six exchanges trading in carbon allowances. JI and CDM are the two project-based mechanisms which feed the carbon market. Currently there are about 227 upcoming manufacturing/public utility projects in India whereas the global requirement is 350-500 million tons of additional carbon credits. Countries not only invest in new technologies & heavy machinery in order to reduce their emissions but they can just pay a minimal amount & get a carbon emission certificate for their emissions.*

**Keywords:** Climate change, Kyoto Protocol, Carbon Credit, Carbon Trading, Carbon Market.

### Introduction

The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling emissions. Over a decade ago, The need for a reduction in carbon emissions was debated at the United Nations Conference on Environment & Development (The Earth Summit) in Rio de Janeiro in 1992, resulting the adoption of an international treaty called ‘the United Nations Framework Convention on Climate Change’ (UNFCCC) -- to begin to consider what can be done to reduce global warming and to cope with whatever temperature increases are inevitable. The Convention joined by most of the countries in the world, entered into force on 21 March 1994.

More recently, a number of nations approved an addition to the treaty: ‘the Kyoto Protocol’, which has more powerful (and legally binding) measures. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European

community for reducing greenhouse gas (GHG) emissions. These amounts to an average of five per cent against 1990 levels over the five-year period 2008-2012. The Kyoto Protocol was adopted by the parties to the UNFCCC with the objective of achieving quantified emission limitations through specific policies and measures to minimizing the adverse effects of climate change. The protocol provides for various mechanisms like joint implementation, a clean development mechanism (CDM) and international emission trading to boost the cost effectiveness of climate change mitigation. The Kyoto Protocol was adopted in Kyoto, Japan, on 11 Dec. 1997 & entered into force on 16 Feb. 2005. 182 parties of the Convention have ratified the treaty to date. The detailed rules for the implementation of the Protocol were adopted at Conference of Parties (COP) - 7 at Marrakesh in 2001, and are called the “Marrakesh Accords.” The major difference between the Protocol & the Convention is that where the Convention encouraged industrialized countries to stabilize and reduce Green House Gas (GHG) emissions, the Protocol commits them to do so.

### **Climate Change**

Public awareness of the threat of climate change has risen sharply in the last couple of years and an increasing number of businesses, organizations and individuals are looking to minimize their impact on the climate.

Scientists believe that global warming will cause the average World temperature rise by one Degree Celsius by the year 2020 and four Degree Celsius by the end of 21st century. The Earth has warmed about 1°F in the last 100 years. The eight warmest years on record since 1850) have all occurred since 1998. Periods of increased heat from the sun may have helped make the Earth warmer. But many of the world's leading climatologists think that the greenhouse gases people produce are making the Earth warmer, too.

### **The United Nations Framework Convention On Climate Change (UNFCCC)**

The United Nations Framework Convention on Climate Change (UNFCCC) is one of a series of international agreements and treaties on global environmental issues that were adopted at The 1992 Earth Summit at Rio. It provides the overall policy framework for addressing the climate change issue and so forms the foundation of global efforts to combat global warming.

The ultimate goal of the UNFCCC is: Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic human induced interference with the climate system. (UNFCCC, 1992).

The UNFCCC entered into force on 21st March 1994 following ratification by 50 of its signatory parties. In 1995 the UNFCCC set out some guiding principles and general commitments for the international response to climate change. This was the first Conference of the Parties (COP).

## UNFCCC Parties

- i) Annex I Parties: Industrialized countries with binding emission targets (West & Eastern Europe, Canada, Japan, New Zealand, Russia etc.)
- ii) Annex II Parties : This consists of the OECD members of Annex I, but not the EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention & help them adapt to adverse effects of climate change.
- iii) Non-Annex I Parties: Developing countries with voluntary participation China, India, Brazil, Philippines etc.)

## The Kyoto Protocol

The Kyoto Protocol is an international and legally binding agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets worldwide. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. As of November 2009, 185 parties of the UNFCCC have signed and ratified the Protocol. The major feature of the Kyoto Protocol is that it assigns mandatory targets for 37 industrialized nations and the European Community to reduce their emission of the specified 6 greenhouse gases (GHGs). These amounts to an average of 5% against 1990 levels over the 5 year period 2008-2012.

The main objective of the Kyoto Protocol 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". The first commitment period under this Protocol starts from calendar year 2008 to calendar year end 2012. Annex I parties of the UNFCCC have agreed to reduce their GHGs emission by 5.2 % below 1990 levels in the Protocol's 1st commitment period.

## Warsaw Outcomes

At the UN Climate Change Conference in Warsaw, governments took further essential decisions to stay on track towards securing a universal climate change agreement in 2015. The objective of the 2015 agreement is twofold:

1. First, to bind nations together into an effective global effort to reduce emissions rapidly enough to chart humanity's longer-term path out of the danger zone of climate change, while building adaptation capacity.
2. Second, to stimulate faster and broader action now.

To these ends, governments agreed to communicate their respective contributions towards the universal agreement well in advance of the meeting in Paris, in 2015. Further, the required monitoring, reporting and verification arrangements for domestic action have been finalized for implementation, thereby providing a solid foundation for the 2015 agreement.

Importantly, further progress was also made in helping countries, especially the poorest, adapt to the impacts of climate change and build their own sustainable, clean energy futures. In a breakthrough outcome, the rulebook for reducing emissions from deforestation and forest degradation was agreed together with measures to bolster forest preservation and a results-based payment system to promote forest protection. The Green Climate Fund, planned to be a major channel of financing for developing world action, will be ready for capitalization in the second half of 2014. Additionally, governments agreed on a mechanism to address loss and damage caused by long term climate change impacts.

The most recent climate science shows that human-generated climate change is beyond doubt but that we have a limited time to keep warming to a maximum of under two degrees. However, global greenhouse gas emissions need to peak this decade, and get to zero net emissions by the second half of this century. To achieve this, it is critical that action is taken and coordinated swiftly at all levels: international, domestic, business and finance. For this reason, COP19, in Warsaw, also provided a showcase for climate action by business, cities, regions and civil society. The solutions to climate change are already clear and the world has the money and technology, the knowledge and models to succeed. The results of effective climate action are also clear: immediate, shared benefits to all economies and citizens and a sustainable future for all.

### **Carbon Credit**

Carbon credits are a key component of national and international emissions trading schemes that have been implemented to mitigate global warming. They provide a way to reduce greenhouse effect emissions on an industrial scale by capping total annual missions and letting the market assign a monetary value to any shortfall through trading. Credits can be exchanged between businesses or bought and sold in international markets at the prevailing market price. Credits can be used to finance carbon reduction schemes between trading partners and around the world.

#### **“One credit = 1 tonne of CO<sub>2</sub> (or CO<sub>2</sub> equivalent) reduced”**

Carbon Credit is like a Permit that allows an entity to emit a specified amount of greenhouse gases. They are certificates issued to Countries that reduce their emission of Greenhouse Gases (GHG) which causes Global Warming.

### **Process of Carbon Credits**

- i) A developed country with relatively high costs of domestic greenhouse reduction would set up a project in another developed country that has a relatively low cost.

- ii) Under CDM, a developed country can take up a greenhouse gas reduction project activity in a developing country where the cost of GHG reduction project activities is usually much lower.
- iii) The developed country would be given credits for meeting its emission reduction targets, while the developing country would receive the capital and clean technology to implement the project.
- iv) Under IET, countries can trade in the international carbon credit market. Countries with surplus credits can sell them to countries with quantified emission limitation and reduction commitments under the Kyoto Protocol.

### **Benefit to India**

As far as India is concerned, our country has a lot of potential in the Carbon Credits market. India joined the Kyoto Protocol in August 2002 and it contributes to 25% of the total world carbon trade. The first company to take part in carbon trading was Shree Pandurang Cooperative Sugar Factory Ltd, Shripur which earned Rs. 3.97 crore from the UNFCCC.

India's domestic companies have already started investing in small projects such as cogeneration, hydel power, energy efficiency, natural gas alternative fuels etc. Rajshree Sugars Chemicals has been issued 71966 carbon emission reductions on 5th May 2010 for its cogeneration power project in Tamil Nadu. Currently there are about 227 projects in India whereas the global requirement is 350-500 million tons of additional carbon credits. India has a chance of creating a \$5 Billion Carbon Credits in the Market in the next five years.

### **Markets for Carbon Credits**

Emerging carbon credit markets offer enormous opportunities for the upcoming manufacturing/public utility projects to employ a range of energy saving devices or any other mechanisms or technology to reduce GHG emissions and earn carbon credits to be sold at a price. The carbon credits can be either generated by project participants who acquire carbon credits through implementation of CDM in Non Annexure I countries or through Joint Implementation (JI) in Annexure I. The buyers of carbon credits are principally from Annexure I countries. They are:

- i) Especially European nations, as currently European Union Emission Trading Scheme (EU ETS) is the most active market.
- ii) Other markets include Japan, Canada, New Zealand, etc.
- iii) The major sources of supply are Non-Annexure I countries such as India, China, and Brazil.

### **Types of Carbon Credit Market**

- i) Compliance markets have set a cap and trade system whereby the total annual emissions for an industry or country are capped by law or agreement, and carbon credits can be traded between businesses or sold in trading markets.

- ii) Voluntary markets exist for businesses or individuals to lower their carbon footprint by voluntarily purchasing carbon credits from an investment fund or company that has aggregated credits from individual projects that reduce emissions.

### **The Kyoto Mechanisms**

The three Kyoto mechanisms are:

- i) International Emissions Trading (IET) known as the carbon market,
- ii) Clean Development Mechanism (CDM) and
- iii) Joint Implementation (JI).

JI and CDM are the two project-based mechanisms which feed the carbon market. JI enables industrialized countries to carry out joint implementation projects with other developed countries (usually countries with economies in transition), while the CDM involves investment in of 2006, the estimated potential of emission reductions to be delivered by the CDM pipeline has grown dramatically to 2.9 billion tonnes of CO<sub>2</sub> equivalent approximately the combined emissions of Australia, Germany and the United Kingdom. Overall, more than 1230 CDM projects have been registered as at November 2008, with around 4200 more in the project pipeline.

### **Indian Scenario**

- i) India contributes 10.92% the world's average annual CERs but China leads with 64.24%
- ii) India's share is 20.01% while China leads with 48.53% of the total CDM projects in the world.
- iii) Gujarat being on the biggest earners of Certified Emission Reduction credits in India. The state has earned CERs credits worth of Rs3,486 crores or 505.19 Million Euros.
- iv) Out of the total CDM projects approved in India, 11.42% (or 255 projects) are in Gujarat which has so far earned CERs worth of Rs3,486.38 crores or 505.19 Million Euros. Gujarat's share in the country's total CERs earned is 17.28%.

Table 1: Number of Sectors, Projects and CER up to 2012 in India

Name of Sector	No. of Projects	CER up to 2012
Energy Efficiency	455	217421223
Forestry	10	10411540
Fuel Switching	81	61281198
Industrial Process	95	111780559
MSW	35	11526169
Renewable Energy	547	129658846.39
Renewable Biomass	355	91322012
Total (No. of Projects)	1578	633401547.39

### Benefits of Carbon Credits

- i) Better technologies for the company which is benefiting from generation of CERs.
- ii) Technology transfer from developed to developing countries
- iii) Additional source of foreign investment in developing countries which act as a catalyst in developing cleaner technologies.
- iv) Environmental benefits due to lesser GHG emissions and it is also an alternative investment for people who are looking for some innovative investments.

### Limitations of Carbon Credits

- i) It is found that administering transactions with Carbon Credits becomes very difficult as it is on a wide global scale. Hence chances of fraudulence go up.
- ii) Also there is only ONE internationally agreed mechanism-The Kyoto Protocol. If the UNFCCC comes up with a few more, then certain parts of the world can be looked after by any one such mechanism. Hence fraudulence chances can be reduced to a great extent.
- iii) Establishing a meaningful offset project is complex

### Conclusion

Carbon credit cannot be a standardized system as it is basically a policy created commodity. But it would allow for a great deal of policy and project level experimentation over the next few years until the various systems converge on some accepted modalities. It is thus expected to redefine global trade and may bring about a drastic change in the ratings of various countries in the global market in the near future. India and China are likely to emerge as the biggest sellers and Europe is going to be the biggest buyers of carbon credits. Countries not only invest in new technologies & heavy machinery in order to reduce their emissions but they can just do so by paying a minimal amount and getting a carbon emission certificate for their emissions.

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