

AN ANALYSIS ON CARBON CREDITS IN INDIAN PERSPECTIVE

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Abstract

The prices of fossil fuels have been increasing. This not only concerns the scarcity of resources but also develops concerns about environmental degradation; consequences of the increasing percentage of greenhouse gas emissions. These concerns have developed our interest in the development of alternative renewable energy resources. Renewable energy or Non-conventional methods are now being considered as a better source of fuel than nuclear power which can lead to increased of disasters. One of the major component of greenhouse gases ie GHG is carbon dioxide. This carbon dioxide absorbs the heat that should be release into space, causing the planet to become warmer also called as Global Warming. There is a global concern to reduce carbon emissions. One of the main solutions is Carbon Credits. The concept of Carbon Credits Trading has generated out of the Kyoto Protocol. The main idea behind this is to control the emission of green house gases. The concept is used to earn and trade carbon credits between various countries and governments.

In this paper, we will discuss alternative way out called carbon credits to reduce carbon emissions.

Key Words: Renewable resources, greenhouse gases, carbon emissions, Carbon Credits

Introduction

One of the most vigorously debated topics in today's time is the issue of climate change popularly called as Global warming. Global warming is the rise in the temperature of the Earth's atmosphere due to trapping of all the heat reflected off from the Earth's atmosphere is trapped by the Carbon dioxide gas in the atmosphere. Human influence has been the largest contributor in increasing the emission of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. The future climate changes will differ from region to region. These emissions persist in the atmosphere for a very long amount of time, not only decades or centuries but tens of thousands of years.

Carbon credits are a part of international attempt to mitigate and lessen the emission of greenhouse gases into the atmosphere. A carbon credit is a generic term used for a tradable

certificate or permit that represents the right to emit one tone of carbon dioxide or a mass of other greenhouse gases together with carbon dioxide which in totality is equal to one tone of carbon dioxide. One carbon credit equals one tonne of carbon dioxide or carbon dioxide equivalent gases.

A carbon footprint is the sum of carbon dioxide emitted by by an individual, event, organization, country or a product. Generally a carbon footprint is calculated for a period of one year.

Breaking down 'Carbon Credit'

The backbone of the carbon credit system are the governments and other regulating bodies that take it upon themselves to limit the total amount of emissions of carbon dioxide that is emitted. A carbon credit is a permit that allows the receiver of such a credit to emit a limited amount of hydrocarbon fuel over a specified period of time. Carbon Credit does not only mean to limit carbon emission but trading of it as well. Companies or nations can create a trade-off by helping to even out total worldwide emissions by creating a balance between

An example of Carbon Credits Trading

Under the Carbon emissions program, a company that emits less than its capped limit may sell the unused credits of carbon to a company that is currently exceeding its capped limit.

For example, Company A and country B both have a limit of 10 tons of emissions. Company A produces 12 tons of emissions whereas Company B produces only 8 Tons of emissions, this in turn creates 2 surplus Tons of emissions with company B. These 2 surplus Tones of emissions can be purchased by Company A from Company B to balance out the excess emissions that is emitted by Company A. If Company A does not purchase the excess Emissions, it would face penalties. If the fines to be paid exceed the cost of buying the Surplus credits, the Company will definitely purchase the Surplus credits instead of paying the fine. But if the price to purchase the surplus credits is more than the Fines and penalties levied, then the company might accept the fine itself.

Objectives of the study:

1. To study the theory of evolution of carbon credit market in India
2. To identify the top performers from India and their operations.

3. To analyse the setbacks, if any, faced by India in the carbon credit market.

Review of literature

Mr. Dhaval Sharma stated that in 1996, the Kyoto Protocol was established as a global policy established a global policy which aimed to reduce the emission of green house gases (GHG). Owing to this policy, slow and steady steps are being taken to implement a limit on the carbon emissions. Carbon markets are being established so that companies can exchange. Markets are being established so that companies can exchange carbon allowances. India signed the Protocol in August, 2002 and has emerged as a world leader in reduction of greenhouse gases by adopting Clean Development Mechanisms (CDMs) in the past few years.

Forest MSW (2005) stipulated that wood compares favorably to competing materials Timber from plantations performs well compared to competing materials. One of the studies indicated that timber can store up to 15 times the amount of carbon that is released during its manufacture. Emissions released in manufacture of construction materials covered different products that are as follows. Aluminum and copper are the two major industries that release highest CO₂ through manufacturing process.”

Wara (2008) stipulates that “Global warming is one of the most difficult and important environmental challenges facing the international community. The most significant effort to address climate change is the Kyoto Protocol. To address a global environment problem with market based mechanism, Global market has done their first attempt called the Clean Development Mechanism.” “The CDM is a carbon credit mechanism where sellers, located in developing countries, can generate and certify emissions reductions which in turn can be sold to buyers located in developed countries.” (p. 1770)

S. Robert (2008) stipulated, “There is no structured policy to reduce the emissions of carbon dioxide and other greenhouse gases, majority of the previous researches were focused on the western countries. With reference to the emerging issue – global warming, majority of the country across the globe have started showing their serious concern for this issue, and need has been raised to form a structured policy to have fair distribution of emission allowances which also exert positive impact on the economy of the country.”

Doran (2007) had emphasis, “Human activity is motivating unwanted climate change that resulting from the emissions of greenhouse gases (GHGs) into the atmosphere. To avoid the serious and potentially appalling environmental, economic and health consequences associated with an increasing global temperature, everyone has to reduced and slowed for

global emissions of GHGs”

B. Robert (2009) found that there is broad agreement that the climate is warming: air and ocean temperatures are higher, snow and ice are melting, and sea levels are rising. Further, natural systems are being affected: plant and animal ranges are moving towards the poles, and there are changes in fish and algae due to rising ocean temperatures.

Chen and Wang studied the effect of supply and demand conditions on the price of carbon emission rights and concluded that government policies had the biggest impact as well. Weather changes will affect the demand for fossil fuel. Thus the demand and price for carbon emission rights will also be effected. Cold weather leads to increase in fossil fuel consumption and carbon emission to push up the price of emission rights and visa versa.

Maria Mansanet-Bataller, Angel Pardo and Enric Valor studied, “influence of weather on the price of carbon emission right empirically, and found an obvious positive correlation between the two factors such that cold weather leads to Increase in the consumption of fossil fuel and pushes up the price of emission rights.” (p. 80)

Alberola, E., Chevallier, J. and Chèze, B., stated, “hot weather had no obvious influence on the price of emission rights while extreme cold weather exerted a significant influence.” (p. 97)

Methodology

The following paper is exploratory in nature. An Exploratory research is research conducted for a problem that has not been studied more clearly, intended to establish priorities, develop operational definitions and improve the final research design. The data has been gathered from secondary sources like websites, news articles etc.

Analysis

India is currently the third largest country polluting the world, emitting 2407 million tCO₂ as of 2015. It is expected to contribute 6% of global GHG emissions by 2020. India ratified the Kyoto protocol in 2002; however, India being a developing country was not required to submit any obligatory reduction commitments. In 2009, India submitted a voluntary target for reducing the emissions intensity of its GDP by 20-25% by 2020, in comparison to the 2005 levels. India’s climate policy framework is based on its 2008 National Action Plan on Climate Change (NAPCC). This action plan specifies eight national objectives for 2017 that support and mitigate on improving, energy efficiency, solar technology, sustainable habitats, water, Himalayan ecosystems, “green India”, agriculture, and strategic knowledge. India’s

'Perform Achieve and Trade' (PAT) initiative, is currently undergoing its first phase (2012-2015), which is considered a test phase.

PAT - With the aim of making the Industrial sector energy efficient and to enhance the cost effectiveness by improving the energy efficiency of energy-intensive large industries. This scheme has set energy efficiency target for such industries and those who fail to achieve the target pay penalty. On the contrary, the industries that over achieve will get incentives in the form of energy saving certificates. These certificates are trade-able and can be bought by industries that are not able to achieve their assigned targets.

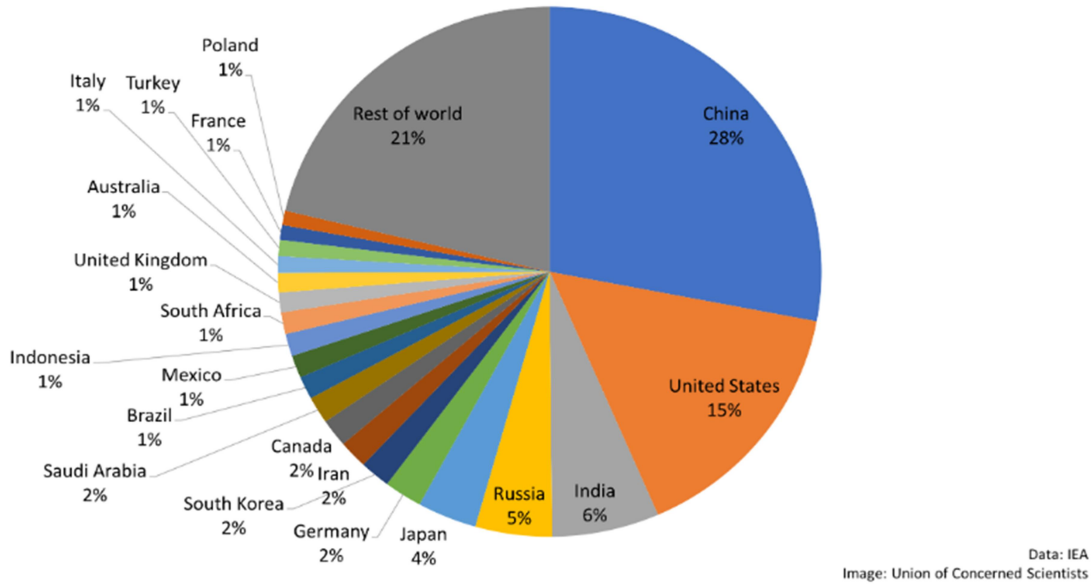
Brief History & Recent Developments

Timeline	
2002	Energy Conservation Act enters into force
2005	Kyoto Protocol comes into force for India on 16 February 2005
2008	National Action Plan on Climate Change (NAPCC) policy instated
2008	National Mission on Enhanced Energy Efficiency (NMEEE) approved
2009	National Mission on Enhanced Energy Efficiency (NMEEE) approved
2009	The PAT (Performance, Achieve and Trade) scheme introduced
2009	India signs voluntary Copenhagen target of 20-25% emissions intensity reduction relative to 2005 levels by 2020
2010	Levy on coal introduced
2010	Energy Conservation Act amended to allow trading in energy saving certificates
2011	India's pilot ETS is unveiled
2012	PAT first compliance period begins (2012-2015)

The Clean Development Mechanism of the Kyoto Protocol allows developing countries to profit from climate friendly projects, and India is second only to China in using the mechanism to help reduce its carbon emissions. The main aims of the CDM are :

- Contributing to stabilize and reduce the concentration of Green House Gas (GHG) concentrations in the atmosphere;
- Assisting industrialized countries to achieve the emission target set under the Kyoto Protocol in the most efficient and cost effective manner;
- Encouraging the private sector in developing countries to contribute in reducing to emission
- Assisting developing countries to achieve sustainable development, so that the resources are not encroached upon.

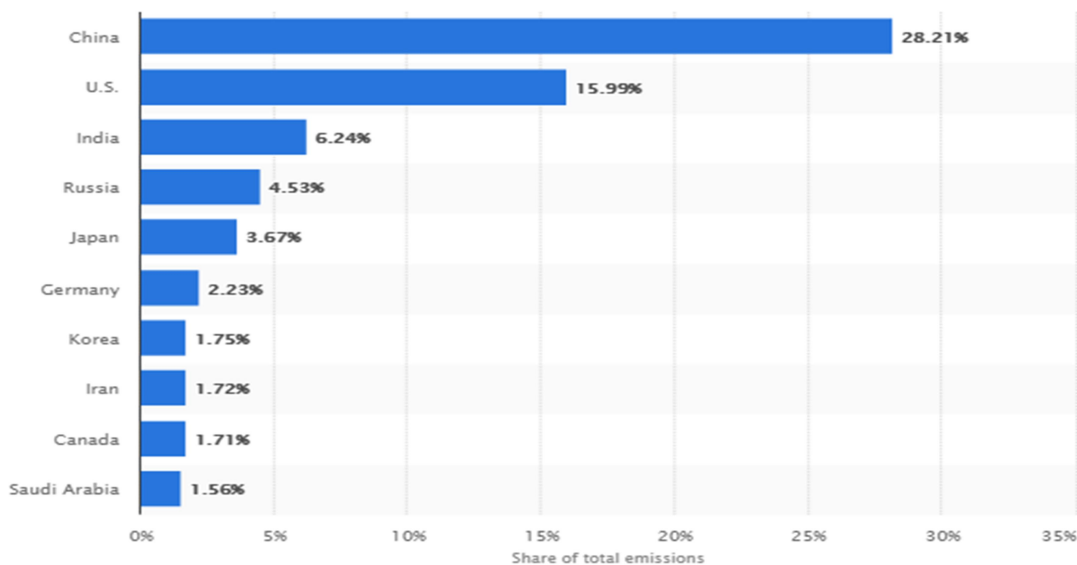
Producers of CO2 emissions worldwide in 2015 according to Global share



Source - <https://www.ucsusa.org/global-warming/science-and-impacts/science/each-countrys-share-of-co2.html#.XCC3ZdlzBIU>

The picture depicts that on one hand developed countries like USA, Russia and on the other developing countries like India, China are the front runners in carbon-dioxide emissions in the world. Developed nations like the US and Russia generally have high carbon emission per person as compared to developing countries like India. But in absolute terms, developing countries might have high carbon emissions due to lack of refined processes and technology.

Carbon dioxide emissions worldwide in 2016, based on their share of global CO2 emissions



Source -<https://www.statista.com/statistics/271748/the-largest-emitters-of-co2-in-the-world/>

The largest Carbon-dioxide producers in 2016 emerged to be United States and three members countries of the BRICS namely Russia, India and China. These countries were listed as the some of the top ranked nations among the five largest carbon emitters, with China snatching the first spot. There are a large number of preventive or curable measures that can be taken up to reduce the carbon dioxide or similar gases emissions. Some measures that can be enumerated are :-

- Reforestation and tree plantation.
- Reduction of livestock waste by composting it
- Decreasing the use of fossil fuels in energy generation.
- All the countries should start using renewable sources of energy.
- The US is also prominent producer of wind and solar energy in their renewable energy source kitty.
- As visible from the above data, the carbon emissions from India increased from 2015-2016 from a Global 6% to 6.24%.

7 Indian companies among top 200 carbon clean firms

Seven Indian companies have made thier cut to the carbon-clean list of 200 biggest companies worldwide ranked according to the total revenue earned through production of clean-energy.

- Suzlon Energy, an Indian Company, a world leader in renewable energy solutions occupied the 68th rank for its wind farms.
- BHEL (Bharat Heavy Electricals Ltd) bagged the 106th spot for wind electric generators and solar cells,
- Tata Chemicals came at 114th spot for its for biodiesel chemicals, fuel cells, solar energy
- Thermax Ltd is at 139 for its vapour absorption chiller that uses water as refrigerant rather than ozone depleting chlorofluorocarbons
- Exide Indus came at 153rd rank for their electric storage batteries.
- IDFC Ltd ie Infrastructure Development Finance Company bagged 155th position for green infrastructure financing and
- Havells India has bagged position at 166 for energy meters.

Godrej Industries, NHPC Ltd, SJVN, and Bharat Electronics are four such Indian Companies that have been dropped out of the rankings.

World Rank	Name of company	Type of projects
68	Suzlon Energy	Wind farms
106	Bharat Heavy Electricals Ltd.	Wind electric generators and solar cells
114	Tata Chemicals	Chemicals for biodiesel, solar energy, and fuel cells
139	Thermax Ltd.	Vapour absorption chiller that uses water as refrigerant instead of ozone depleting chlorofluorocarbons
153	Exide Indus	Electric storage batteries
155	IDFC Ltd.	Green infrastructure financing
166	Havells India	Energy meters

Source : www.ibef.org

Setbacks to India in the Carbon credit market

India as the third largest contributor of CDM projects worldwide; it bagged a lot in terms of Certified Emission Reductions. However, there is a short fall in the demand for carbon credits and sharp decline in CER prices in recent years. Even though it is traded in different parts of the world, there is no full-fledged system for trading in India.

Another problem is that carbon credit system is not compulsory in India ie it is not

implemented compulsorily by Indian Law. Neither the govt. provides incentives to start up and boost the green projects nor imposes taxes on projects that are emitting carbon emissions over a ceiling limit. India has no emission targets to be followed as per the Kyoto protocol, Hence, the fixing of emissions limit in India is also a major problem.

1. **Loss of competitiveness-** There is an added cost in implementing and running an emission reduction policy. This added cost could bring about loss of competitiveness in the industrial sector. Hence, industries can find it no longer profitable to do business in a regulated sector.
2. **Leakage of carbon emission-** If the industries find it no longer profitable to do business in a regulated sector than they might shift in an unregulated region which could also lead to leakage of emissions by shifting from regulated to unregulated region.
3. **Ensuring Compliance** - The emissions limits can be implemented only if there regulating authorities ensure compliance. A weak compliance and regulation would threaten market stability and further encourage entities and companies to break the limits and rules.
4. **Cost** – A carbon market entails an increased cost due to market oversight, administration, and ensuring compliance. All these costs are especially higher in India due to the lack of existing compulsory reporting requirement to the requisite authorities.

Conclusion

Even though the Corporate's have made significant contribution in the carbon credit regime, Small Scale industries which are the backbone of the Indian economy can contribute a lot to the green economy initiative. If they were given subsidies to purchase solar power systems or adopting less energy consumption methods, it will be a remarkable achievement considering the Indian scenario. Another alarming situation is due to plastics and e- wastes. Recycling of degradable items such as rubber and usage of agri waste will reduce the carbon emission problem. Non degradable items like plastic should also be recycled. India is the largest producer and consumer of plastic. Plastic has a life span of nearly 300 years which can cause health problems as well as air pollution while burning. Incentives should also be given to such industries. Besides, Re usage of electronic items by small modifications will provide us with lesser e-waste. Thus carbon credit system has enormous potential in India in spite of the short term setbacks it has suffered due to global economic recession. It doesn't matter how India earned in terms of Emission trading. Rather it is essential to check the contribution of India in terms of CERs, Greener projects and events. As Indians, we cannot simply sit and say "global warming is the result of industrial revolution". If we are planting a tree and

nurturing it, it can be counted as one of the green initiatives at the grass root level. Through proper monitoring, evaluation and follow up of Green projects and imposition of carbon tax for non- green projects, India can achieve the targets of Clean and sustainable development and become a Green economy.

Recommendation

India is the fourth largest emitter of GHG in the world, but in absolute terms. In terms of per capita income India emits 1.2 tones per person which is much lower when compared with the western countries emitting 20 tones per person.

Certain measures that can be taken by India to reduce its carbon footprint:

1. Switching from more carbon intensive fuels to less carbon intensive fuels, for eg- combustion of coal is more carbon intensive than the burning of natural gas.
2. Re-powering, enhancing and upgrading controls and equipments such that it reduces emission of carbon
3. Improving vehicle efficiency by introducing new technologies
4. Changing the fuel type of vehicles, ie shifting from fuel supported vehicle to electric vehicles or using hybrid cars
5. Not burning the crop fields after harvest instead manual pickers or machines to be used
6. Capturing biogas by using a compost pit for all waste material
7. Collecting and utilizing methane from sewage and setting up industrial affluent and waste treatment facility.
8. Changing industrial process, products and packaging so that it results in reduction in GHG emission.
9. Carbon offset is a reduction in the carbon emission to compensate for or offset emission made somewhere else. Offsets support Renewable energy projects such as wind energy, biomass energy, tidal energy etc.
10. Tree plantation, carpooling
11. Three R's- reduce, recycle and reuse and helping reduce the size of landfill
12. Even though carbon credits are traded on the MCX (multi Commodity Exchange of India) but India still does not have a proper policy regarding trading of carbon in the market. Hence, the center has asked the National Commodity and Derivatives Exchange Limited (NCDEX) to formulate a proper policy framework which will make it clearer and easier to trade carbon credits.

A few simple changes on each one's part in India can make huge difference, especially if there are 1.35 billion.

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