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Research Article

CARBON TRADING: A MARKET MECHANISM TOOL TO ADDRESS THE ISSUE OF GLOBAL WARMING WITH REFERENCE TO INDIA

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ABSTRACT

Carbon trading is a transferable pollution trading system. It is an exchange of credits between nations designed to reduce emissions of carbon dioxide. Carbon credits are measured in units of Certified Emission Reductions (CERs). One unit of certificate or carbon credit = 1 tonne of carbon dioxide equivalent (CO₂-e). The carbon trade originated with the 1997 Kyoto Protocol. To address the issue of global warming, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992, with the objective of limiting the concentration of green house gases in the atmosphere. Three modes of carbon trading (Kyoto mechanism)- Emissions Trading (ET), The Clean Development Mechanism (CDM), Joint Implementation (JI).

It provides monetary incentive to reduce pollution. Indian companies can make profits by selling the CERs to the developed countries to meet their emission targets. It will gain in terms of advanced technological improvements and related foreign investments, India is expected to raise \$100 million annually by trading in carbon credits and Indian companies are expected to corner at least 10 per cent of the global market in the initial years and according to industry estimates, Indian companies are expected to generate at least \$8.5 billion. It will contribute to the underlying theme of green house gas reduction by adopting alternative sources of energy, Superior environmental quality, Enhanced public awareness on recycling, Improvement in the quality of life of the city and efficient resource utilization. The paper studies carbon trading as a market mechanism tool to reduce global warming with reference to India.

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INTRODUCTION

Carbon trading is a transferable pollution trading system operated by the CDM (Clean Development Mechanism) - a part of Kyoto Protocol. It is an exchange of credits between nations designed to reduce emissions of carbon dioxide. Assessment of total no. of certificates and allotment of certificates to different carbon emitters creates the carbon market. Carbon credits are measured in units of Certified Emission Reductions (CERs). 1 unit of certificate or carbon credit = 1 tonne of carbon dioxide equivalent (CO₂-e). It's like a balance sheet. Some may have deficits and some may have surplus of certificates and it can be transferred. In carbon trading that country will benefit which can reduce pollution. It is a monetary incentive. If we pollute more than the issued certificate then monetary punishment will be enforced.

The carbon trade originated with the 1997 Kyoto Protocol. To address the issue of global warming, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992, with the objective of limiting the

concentration of green house gases in the atmosphere. To supplement the convention, the Kyoto Protocol came into force in February 2005, which sets limits to the maximum amount of emission of GHGs by the countries. The UNFCCC divides countries into two main groups. A total of 37 industrialized countries were listed in the convention's Annex - I. There are 24 countries included in Annex - II of the convention. These countries mostly were members of the organization for Economic Co-operation and Development (OECD) in 1992. All other countries not listed in the convention's Annexes, mostly the developing countries, are known as non Annex -I countries. At present these countries are not bound by the amount of GHGs emissions that they can release in the atmosphere though they also generate GHG emissions. During the first commitment period, 37 industrialized countries and the European Community committed to reduce GHG emissions to an average of five percent against 1990 levels by the commitment period of 2008-12. During the second commitment period, Parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-

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year period from 2013 to 2020; however, the composition of Parties in the second commitment period is different from the first. Three modes of carbon trading (Kyoto mechanism)-

- Emissions Trading(ET)
- The Clean Development Mechanism(CDM)
- Joint Implementation(JI)

Emissions trading or cap and trade is a market based approach used to control pollution by providing economic incentives for achieving reduction in the emissions of pollutants.

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, while the CDM involves investment in sustainable development projects that reduce emissions in developing countries. The Kyoto mechanisms stimulates sustainable development through technology transfer and investment, help countries with Kyoto commitments to meet their targets by reducing emissions or removing carbon from the atmosphere in other countries in a cost- effective way and encourage the private sector and developing countries to contribute to emission reduction efforts.

Both at national level as well as global level efforts have been made for sustainable development. Among such methods Carbon Trading is emerging as a system to reduce pollution at both global and national platform. It has dual benefit of revenue generation on one hand and pollution control on the undercurrent but it being the most important gain from the perspective of sustainable development.

India and Carbon Credits

If we shift our attention towards India's annual green house gas emission sector wise, we see that there is opportunity for us to reduce pollution to an appreciable extent. However, India can enter into CDM projects. Industries like cement, steel, power, textile, fertilizer etc emit green houses gases as an outcome of burning fossil fuels. Companies investing in Windmill, Bio-gas, Bio-diesel and Co-generation are the ones that will generate carbon credits for selling to developed nations. Polluting Industries which are trying to reduce emissions and in turn earn carbon credits and make money include steel, power generation, cement, fertilizers, waste disposal units, plantation companies, sugar companies, chemical plants and municipal corporations.

As a welcome scenario, India now has two commodity exchanges trading in carbon credits. This means that Indian companies can now get a better trading platform and price for Certified Emission Reductions (CERs) generated. Multi Commodity Exchange (MCX) has launched futures trading in carbon credits. The initiative makes it Asia's first – ever commodity exchange and among the select few along with the Chicago Climate Exchange (CCE) and the European Climate Exchange to offer trades in carbon credits. The Indian exchange also expects its tie – up with CCX which will enable Indian firms to get better prices for their carbon credits and better integrate the Indian market with the global markets to foster best practices in emissions trading. On 11th April 2008, National Commodity and Derivatives Exchange (NCDEX) also has started futures contract in carbon trading for delivery in December 2008. Only those Indian companies that meet the

UNFCCC norms and take up new technologies will be entitled to sell carbon credits. Since India is exempted from framework of the treaty, it is expected to gain from the protocol in terms of transfer of technology and related foreign investments. India's participation in the carbon markets has contributed to the recognition that it is a useful tool in attracting climate friendly investments. In 2004, the growth in the Indian carbon market was fostered by a healthy number of indigenous management and technical consultants. In its capacity as the Designated National Authority (DNA) for the CDM, the Ministry of Environment and Forests (MOEF) also had the foresight to develop simple and transparent rules, whereby project developers can obtain a Letter of Approval (LOA) theoretically within sixty days, which is a key step required for project registration.

Challenges for India

- One of the challenges cited most frequently by top Indian climate experts is the need to meet poverty reduction needs and expand access to energy services while at the same time moving India down a low carbon development growth path. The difficulty in adopting low carbon energy technologies is due mostly to the additional cost and in some cases technical barriers to implementation.
- reducing economy-wide emissions in absolute terms is not yet a realistic option for India, and that emissions will continue to grow for at least the next decade as the country continues to grow and expand energy services
- High upfront transactions costs involved in registering CDM

Projects are a barrier, especially among smaller foundries.

Opportunities for India

Monetary gains

- Indian companies can make profits by selling the CERs to the developed countries to meet their emission targets.
- It will gain in terms of advanced technological improvements and related foreign investments.
- India is expected to raise \$100 million annually by trading in carbon credits and Indian companies are expected to corner atleast 10 per cent of the global market in the initial years.
- According to industry estimates, Indian companies are expected to generate at least \$8.5 billion.

Environmental gains

- It will contribute to the underlying theme of green house gas reduction by adopting alternative sources of energy.
- Superior environmental quality (Less odor, leach ate, disease vectors).
- Enhanced public awareness on recycling.
- Improvement in the quality of life of the city.
- Efficient resource utilization.

Type of projects, which are being applied for CDM (Clean Development Mechanism) and which can be of valuable potential, are

Energy efficiency projects

- Increasing building efficiency (Concept of Green Building/LEED Rating), e.g. Techno polis Building Kolkata
- Increasing commercial/industrial energy efficiency (Renovation & Modernization of old power plants)
- Fuel switching from more carbon intensive fuels to less carbon intensive fuels; and
- Also includes re-powering, upgrading instrumentation, controls, and/or equipment

Transport

- Improvements in vehicle fuel efficiency by the introduction of new technologies
- Changes in vehicles and/or fuel type, for example, switch to electric cars or fuel cell vehicles (CNG/Bio fuels)
- Switch of transport mode, e.g. changing to less carbon intensive means of transport like trains (Metro in Delhi); and
- Reducing the frequency of the transport activity

Methane recovery

- Animal waste methane recovery & utilization
- Installing an anaerobic digester & utilizing methane to produce energy
- Coal mine methane recovery
- Collection & utilization of fugitive methane from coal mining;
- Capture of biogas
- Landfill methane recovery and utilization
- Capture & utilization of fugitive gas from gas pipelines;
- Methane collection and utilization from sewage/industrial waste treatment facilities

Industrial process changes

Any industrial process change resulting in the reduction of any category greenhouse gas emissions

Cogeneration

Use of waste heat from electric generation, such as exhaust from gas turbines, for industrial purposes or heating (e.g. Distillery-Molasses/ bagasse)

Agricultural sector

- Energy efficiency improvements or switching to less carbon intensive energy sources for water pumps (irrigation)
- Methane reductions in rice cultivation
- Reducing animal waste or using produced animal waste for energy generation (see also under methane recovery)

CONCLUSION

Carbon trading as a market mechanism tool yields twin objectives of revenue generation and pollution control, re-enforcing the concept of sustainable development. In India the industrial sector contributes the highest to green house gas emissions. But, it has also the highest potential in the area of creation of CERs. So, India being exempted from emission reduction commitment has a huge potential in the creation of CERs by which it can gain in both monetary and environmental terms. The monetary incentive through carbon trading will thus serve as a great tool to reduce pollution and move towards the ultimate goal of sustainable development.

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