



Study the Growth & Trend of Carbon Market in India

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ABSTRACT

Although India is the second largest generator of environment-friendly projects, domestic firms, public and private, are shying away from maximizing the monetary benefits derived from such carbon emission reductions. The country, which is second only to China in terms of generating of carbon credits through the introduction of low polluting technologies, ranks very low when it comes to encashing of these credits through carbon trading. Over 90 per cent of such credits generated are being held back by Indian firms, amid growing uncertainties in the global carbon trade market. As a result, there is a great opportunity awaiting India in carbon credit trading which is estimated to go up to \$100 billion by 2010. In the new regime, the country could emerge as one of the largest beneficiaries accounting for 25 per cent of the total world carbon trade, says a recent World Bank report. So, in this paper we have reviewed and put forward the concept and the growth and trend in adoption of Carbon Market in India.

KEYWORDS: Carbon Market, GHG, CDM and UNFCCC

1. Introduction:

1.1 Carbon Market:

Carbon finance is a new branch of Environmental finance. Carbon finance explores the financial implications of living in a carbon-constrained world, a world in which emissions of carbon dioxide and other greenhouse gases (GHGs) carry a price.

Environmental Finance is the use of various financial instruments (most notably land trusts and Emissions trading) to protect the environment. The field is part of both environmental economics and the conservation movement.

A greenhouse gas (sometimes abbreviated GHG) is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range.

The general term is applied to investments in GHG emission reduction projects and the creation (origination) of financial instruments that are tradeable on the carbon market.

1.2 Carbon Market In the World:

The World Bank's annual review of the global carbon market describes a carbon market that grew in total value by 11% in 2011, to \$176 billion, and where transaction volumes reached a new high of 10.3 billion tons of carbon dioxide equivalent (CO₂e). However, as expected, the market for primary CDM has dropped to its lowest level since 2004.

According to the World Bank's Carbon Finance Unit, 374 million metric tonnes of carbon dioxide equivalent (tCO₂e) were exchanged through projects in 2005, a 240% increase relative to 2004 (110 mtCO₂e) which was itself a 41% increase relative to 2003 (78 mtCO₂e).

The World Bank has created the World Bank Carbon Finance Unit (CFU). The World Bank CFU uses money contributed by governments and companies in OECD countries to purchase project-based greenhouse gas emission reductions in developing countries and countries with economies in transition. The emission reductions are purchased through one of the CFU's carbon funds on behalf of the contributor, and within the framework of the Kyoto Protocol's Clean Development Mechanism (CDM) or Joint Implementation (JI).[3] The World Bank is particularly supportive of Program of Activities (PoA) development.

The market for the purchase of carbon has grown exponentially since its conception in 1996.

The following is the estimated size of the worldwide [carbon market](#) according to the [World Bank](#) :

Dollars (millions of USD)

- 2005: 10,908 (7,971 in Main Allowances Markets & 2,937 in Project based transactions)
- 2006: 31,235 (24,699 in Main Allowances Markets & 6,536 in Project based transactions)
- 2007: 64,035 (50,394 in Main Allowances Markets & 13,641 in Project based transactions)

2. Literature Review:-

Cecilia Luttrell, Kate Schreckenberger and Leo Peskett [2007] The emergence of new financing mechanisms associated with the rise of carbon markets brings potential for increased investment in forestry. This paper explores the implications of these mechanisms for community forestry and suggests ways in which such finance may contribute to the pro-poor outcomes of community forestry. The paper also provides an opportunity for those working on the design of carbon financing mechanisms to draw on the experience of community forestry in structuring appropriate benefit systems. The main focus of the discussion is on 'Reducing Emissions from Deforestation and Forest Degradation' (REDD).

Christina Seeberg-Elverfeldt and Stefan Schwarze [2009] This study assesses which impact carbon sequestration payments for forest Management systems have on the prevailing land-use systems. Additionally, the level of incentives is determined which motivates farmers to desist from further deforestation and land use intensification activities. Household behaviour and Carbon finance options for smallholders' agroforestry in Indonesia resource allocation is analysed with a comparative static linear programming model. As these models are used as a tool for policy analysis, the output can indicate the adjustments in resource allocation and land use shifts when introducing compensation payments.

Dr Cameron Hepburn [2009] This study concludes that Many of the opportunities to reduce emissions at relatively low cost are located in developing countries. It appears that these opportunities must be seized to keep atmospheric carbon dioxide (CO₂) concentrations from exceeding the 450–550 parts per million (ppm) range suggested by Stern (2007). But poor countries are not immediately capable of taking these opportunities;¹ they have other pressing priorities for their scarce resources. The simple conclusion is that rich countries must provide large-scale flows of 'carbon finance' to poor countries.

Rachel Godfrey Wood [2011] This paper assesses the practical contribution of the Gold Standard (GS) and Climate Community and Biodiversity (CCB) Standards to local development through the identification of high quality carbon offset projects and ensuring high standards of consultation with local communities during project development and implementation. It is based on desk research, involving analysis of the GS and CCB Standards' project databases, project design documents,

and secondary literature. In addition, over 20 representatives of the two standards systems, project developers, NGO representatives, and researchers were interviewed. The paper concludes that both standard systems successfully reward high quality projects which have a demonstrated commitment to local consultations and sustainable development benefits. Moreover, they serve to give well-meaning project developers frameworks with which to ensure that a wide range of criteria are considered in planning and implementing projects. As voluntary standards, it is unrealistic to expect either the GS or CCB Standards to improve poor-quality or unsustainable projects.

3. Background of the Study:

India, China and some other Asian countries have the advantage because they are developing countries. Any company, factories or farm owner in India can get linked to United Nations Framework Convention on Climate Change and know the 'standard' level of carbon emission allowed for its outfit or activity. The extent to which I am emitting less carbon (as per standard fixed by UNFCCC) I get credited in a developing country. This is called carbon credit. The country's dominance in carbon trading is expected to be driven, not so much by the domestic industry, but more by its huge tracts of plantation land, estimated to be over 15 million hectares, much larger than Australia which aims to be a major player in emission trading by adding 2 million hectare plantation by 2020. This research will intend to cover a gap in existing literature on the implementation and growth of the Carbon Market in India. This research is divided in two parts.

4. Growth & Trend of Carbon Markets in India:

Carbon markets, in a reformed form, represent the most feasible model for supporting private financial flows for the developing world to reduce its emissions on the scale required. The CDM has made a promising start, and is already providing carbon finance of several billions of Euros to the developing world, contributing to reducing the costs of compliance in Europe and other developed countries. Carbon trading provides a legitimate and coherent rationale for financial transfers on the scale necessary to shift China, India, and other developing economies on to cleaner growth pathways.

The sudden boom in the carbon market has greatly helped Indian industries to cash in on the carbon trading business. India certainly being the preferred location for carbon credit buyers or project investors because of its strategic position in the world today.

India is considered as the largest beneficiary, claiming about 31 per cent of the total world carbon trade through the Clean Development Mechanism (CDM). It is expected to rake in at least Rs 22,500 crore to Rs 45,000 crore over a period of time and Indian companies are expected to corner at least 10 per cent of the global market in the initial year. Carbon Trading has potential of exploring Indian market worth 18000 Cr.

Under the Kyoto Protocol, between 2008 and 2012, developed countries have to reduce emissions of greenhouse gases to an average of 5.2 per cent below the 1990 level. They can also buy CERs from developing countries, which do not have any reduction obligations, in case their industries are not in a position to lower the emission levels themselves. One tonne of carbon dioxide reduced through the Clean Development Mechanism (CDM) project, when certified by a designated entity, becomes a tradable CER.

GROUP CO ₂ EMISSIONS	TOTAL	TOTAL CO ₂ EMISSIONS	POPULATION	PER CAPITA
(METRIC TONS OF CO ₂)				
ANNEX-1 COUNTRIES	38	14,183	1,261	11.25
NON ANNEX-1 COUNTRIES	99	11,938	4,952	2.41
AGA (American Go Association)	27	7,868	1,636	4.81
BGA (British Go Association)	72	4,070	3,317	1.23
GLOBAL AVERAGE	137	26,121	6,213	4.2
SOURCE: IEA, 2007. HTTP://DATA.IEA.ORG/IEA.ORG/IEASTORE/STATISTING.ASP				

Developed countries have to spend nearly \$300 to \$500 for every tonne reduction in CO₂, against \$10 to \$25 to be spent by developing countries. In developing countries like India, the emission levels are much below the target fixed by the Kyoto Protocol. So, they are excluded from reduction of GHG emission. On the contrary, they are entitled to sell surplus credits to developed countries. The European countries and Japan are the major buyers of carbon credits.

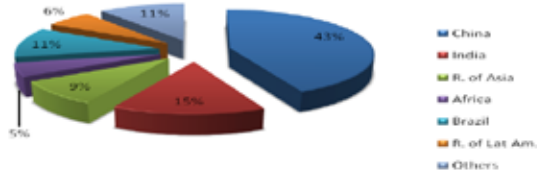
The UNFCCC divides countries into two main groups: A total of 41 industrialized countries are currently listed in the Convention's Annex-I, including the relatively wealthy industrialized countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992, plus countries with economies in transition (EITs), including the Russian Federation, the Baltic States, and several Central and Eastern European States. The OECD members of Annex-I (not the EITs) are also listed in the Convention's Annex-II. There are currently 24 such Annex-II Parties. All other countries not listed in the Convention's Annexes, mostly the developing countries, are known as non-Annex-I countries. They currently number 145.

Annex I countries such as United States of America, United Kingdom, Japan, New Zealand, Canada, Australia, Austria, Spain, France, Germany etc. agree to reduce their emissions (particularly carbon dioxide) to target levels below their 1990 emissions levels. If they cannot do so, they must buy emission credits from developing countries or invest in conservation.

Developing countries (non-Annex I) such as India, Sri Lanka, Afghanistan, China, Brazil, Iran, Kenya, Kuwait, Malaysia, Pakistan, Philippines, Saudi Arabia, Singapore, South Africa, UAE etc have no immediate restrictions under the UNFCCC. This serves three purposes:

- Avoids restrictions on growth because pollution is strongly linked to industrial growth, and developing economies can potentially grow very fast.
- It means that they cannot sell emissions credits to industrialized nations to permit those nations to over-pollute.
- They get money and technologies from the developed countries in Annex II.

Expected Average Annual CER's from Registered Projects by Host Party



According to Report on National Action Plan for operationalizing Clean Development Mechanism (CDM) by Planning Commission, Govt. of India, the total CO₂-equivalent emissions in 1990 were 10,01,352 Gg (Giga grams), which was approximately 3% of global emissions. If India can capture a 10% share of the global CDM market, annual CER revenues to the country could range from US\$ 10 million to 300 million (assuming that CDM is used to meet 10-50% of the global demand for GHG emission reduction of roughly 1 billion tonnes CO₂, and prices range from US\$ 3.5-5.5 per tonne of CO₂). As the deadline for meeting the Kyoto Protocol targets draws nearer, prices can be expected to rise, as countries/companies save carbon credits to meet strict targets in the future. India is well ahead in establishing a full-fledged system in operationalising CDM, through the Designated National Authority (DNA).

Metric Tons of Carbon Emissions in world during 2007

Host country	Number of projects	Estimated Emission Reduction (ktCO ₂ e / year)	Average project size (kt CO ₂ e / year)	Technology Transfer Claims as percent of	
				Number of project	Annual Emission Reduction
Brazil	226	24,491	108	32%	68%
China	671	203,184	303	37%	68%
India	716	55,248	77	14%	40%
Malaysia	56	8,782	157	71%	87%
Mexico	171	11,878	69	91%	87%
South Korea	34	16,692	491	50%	81%
Other host country	419	55,740	133	60%	58%
Total	229	376,015	164	57%	64%

India comes under the third category of signatories to UNFCCC. India signed and ratified 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. IFC has significant experience managing funds. Below are examples of projects managed for the Government of the Netherlands:

Brascan Energetica, Brazil - € 8,500,000 invested for run-of-river hydros

Deqingyuan, China - € 3,500,000 invested for bigoas to power

Enercon, India - €6,600,000 invested in wind farms

5. Conclusion

Carbon markets have been a key driver of channeling finance and investment to projects that reduce greenhouse gas emissions in developing countries since 2005, when the Kyoto Protocol came into effect. The verified emission reductions associated with these projects are used to generate financial assets (carbon credits) that are tradable in several carbon markets that have emerged at regional and national levels. The carbon finance associated with the sales of these credits contributes to meeting the incremental costs of 'greening' investments. Between 2005 and 2010 the cumulative value of origination and trade in these carbon credits was US \$95 billion (Cumulative value of trade in primary and secondary Clean Development Mechanism contracted credits. Source: State and Trends of the Carbon Market Report 2011, The World Bank). Significant investment flows have been mobilized, especially from the private sector, as carbon credits can be used to meet climate commitments while simultaneously contributing to low-emissions economic development in IFC client countries. As more countries seek to establish domestic carbon markets and use carbon pricing to achieve their climate related objectives, carbon finance is expected to remain a key instrument for catalyzing finance for low-emissions development.

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