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RESEARCH ARTICLE

CARBON TRADING –A FINANCIAL INCENTIVE TO POLLUTE LESS.

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Abstract

The carbon trade allows countries that have higher carbon emissions to purchase the right to release more carbon dioxide into the atmosphere from countries that have lower carbon emissions. Emissions trading or Cap and trade include the International emission trading (i.e.) between developed countries. "An emission trading system is a powerful policy instrument for managing industrial greenhouse gas (GHG) emissions". Trading in project-based credits can be termed as *Flexible* mechanisms such as *CDM* and *JI*. Clean Development Mechanism (CDM), based on article 12 of the Protocol, between developing and developed countries. The CDM allows emission reduction projects in developing countries to earn certified emission reductions (CERs), each equivalent to one tonne of CO2. Joint Implementation (JI) is based on article 6 of the Protocol. JI projects earn ERUs (Emission reduction units) each equivalent to one tonne of CO2. Carbon trading is one of the "fastest-growing specialties in financial services". And companies are scrambling to get a slice of a market now worth well over 100 billion and that could grow to $1 trillion within a decade.

Introduction:-

The carbon trade allows countries that have higher carbon emissions to purchase the right to release more carbon dioxide into the atmosphere from countries that have lower carbon emissions". The carbon trade also refers to the ability of individual companies to trade polluting rights through a regulatory system known as cap and trade. Carbon credits can be traded in the international market at their current market price. The carbon trade originated with the 1997 Kyoto Protocol and is intended to reduce overall carbon dioxide emissions to 5% below 1990 levels between 2008 and 2012. Brundtland Report, 1987 triggers the carbon trading, which says "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". KYOTO PROTOCOL is an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC). It was adopted in Kyoto, Japan, on 11 December 1997 that came into force in 16.02.2005. It commits State Parties to reduce greenhouse gases emissions, based on the premise that (a) global warming exists and (b) man-made CO_2 emissions have caused it. Currently there 192 parties belong to protocol, responsible for about 60% of GHG emissions. The objectives behind the concept of carbon trading were

- The Reduction of carbon emissions.
- A better environmental situations and to Mitigate Global Warming.
- Provide a financial incentive for companies to pollute less.
- Promotion of sustainable production processes and also sustainable lifestyles across the Globe.

If an environmentalist group plants enough trees to reduce emissions by one ton, the group will be awarded a credit. If a steel producer has an emissions quota of 10 tons, but is expecting to produce 11 tons, it could purchase this carbon credit from the environmental group. Personal carbon credits are carbon credits created and owned by individuals who reduce their greenhouse gas (GHG) emissions by a real and verifiable amount including transportation use, electrical use and home heating and cooling. British Petroleum in UK emitting more than the accepted norms of UNFCCC. Tie up with Subsidiary in India or China under CDM. The credits arising out of the use of the new technology are sold to counterparts in Europe. Thus a carbon credit market is created.

Carbon trading:-

A) Different types of Carbon Trading:-

The two kinds of trading are,

- ❖ Emissions trading (or cap and trade) which is allowance based.
- ❖ Trading in project-based credits.

Emissions trading are carried out in between the developed countries, while project-based trading is carried out in between developed and developing countries.

A.1) Emissions Trading:-

Emissions trading or Cap and trade include the International emission trading (i.e.) between developed countries. “Cap" meaning a legal limit on the quantity of a certain type of chemical an economy can emit each year. It is a market-based approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

The IETA (International Emissions Trading Association) says that, “An emission trading system is a powerful policy instrument for managing industrial greenhouse gas (GHG) emissions”. A global carbon price gives birth to a new commodity, and a new set of investment and financing opportunities. The European Union's Emissions Trading System (ETS) is the world's biggest scheme for trading greenhouse gas emissions allowances. Emissions trading holds **Assigned amount units (AAU)**.AAU is a tradable 'Kyoto unit' or 'carbon credit’ representing an allowance to emit greenhouse gases comprising one metric tonne of carbon dioxide equivalents calculated using their Global Warming Potential.

A.2) Project-Based Trading:-

Trading in project-based credits can be termed as *flexible mechanisms* such as

- ❖ Clean Development Mechanism (CDM).
- ❖ Joint Implementation (JI).

For a project to be eligible as a CDM or JI project activity, its expected emission levels must be lower than the baseline emissions. To select the correct baseline scenario from a set of alternatives, the Draft Optional Baseline Scenario Selection Tool (BSST) is developed. The baseline is not only a very important concept in determining the eligibility of a proposed project, but it also provides a basis from which to calculate the volume of carbon credits that can be issued.

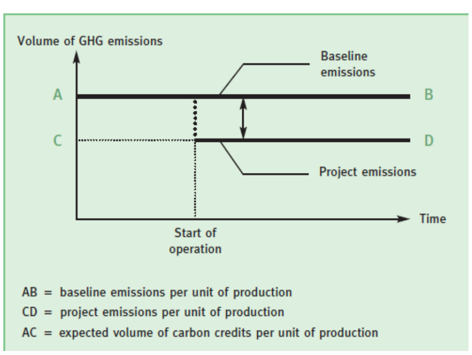


Figure 1: Baseline emissions

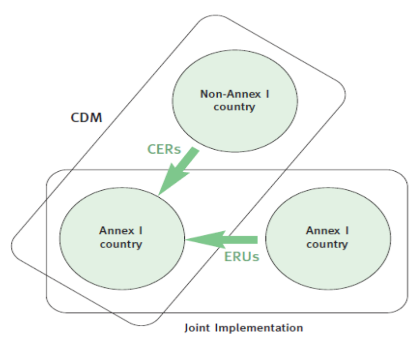


Figure 2: CDM Vs JI model

B. CDM:-

Clean Development Mechanism (CDM), is based on article 12 of the Protocol. It is the trading between developing and developed countries. The trading units used here is **Carbon Emission Reduction Units (CER).** The value of one CER (carbon emission reduction) in Indian Rupees is about Rs.1600/-.CDM is more preferable in our country.The CDM is supervised by the CDM Executive Board (CDM EB).

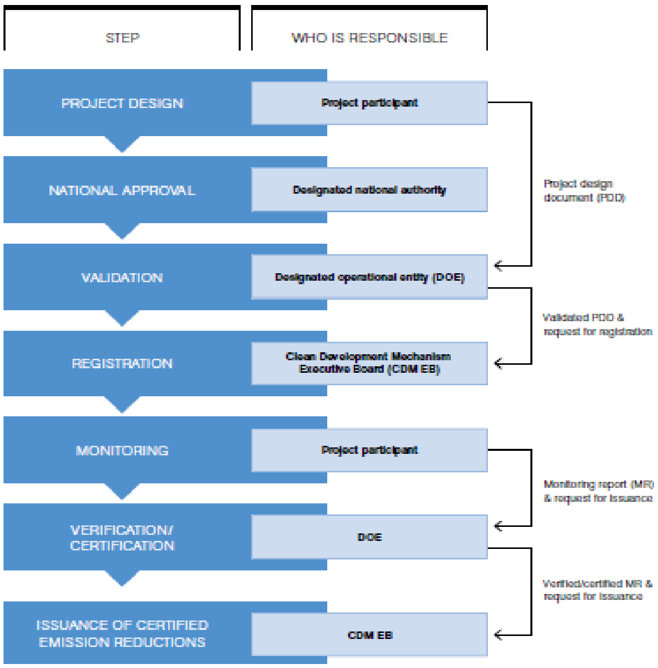


Figure 3: CDM project cycle

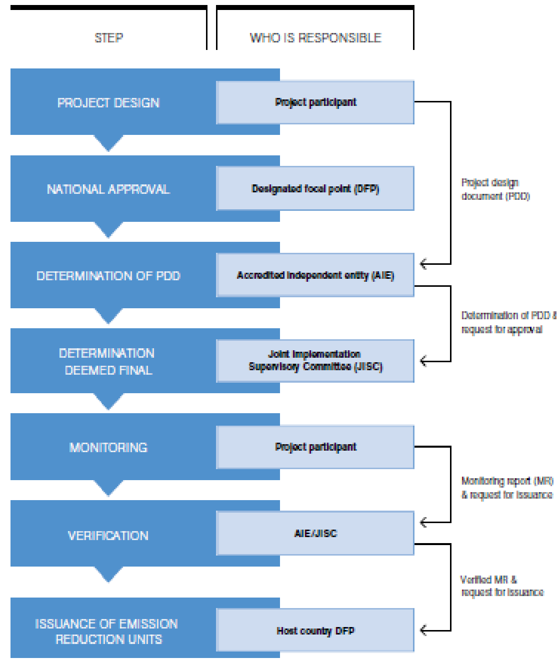
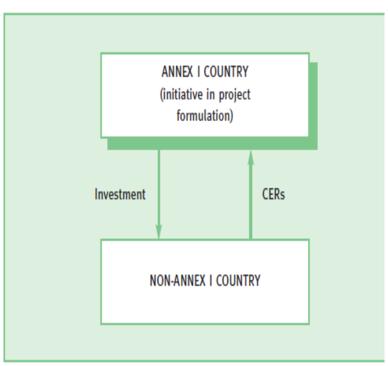
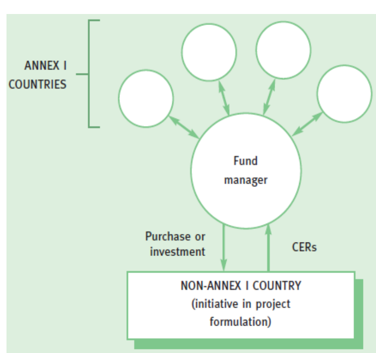


Figure 4: JI project cycle

Several CDM models have also been developed, which may help in better understanding of CDM based trading.

- ❖ Bilateral model.
- ❖ Multilateral model.
- ❖ Unilateral model.





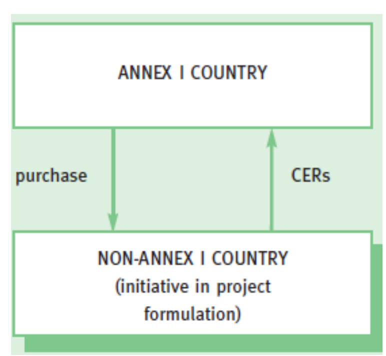


Figure 5: Multilateral model Figure 6: Bilateral model Figure 7: Unilateral model

B.1) Bilateral Model:-
The bilateral model views CDM projects primarily as a form of foreign direct investment (FDI) by way of equity investment in the particular non-Annex I country by an entity of an Annex I country.

B.2) Multilateral Model:-
The World Bank's Prototype Carbon Fund (PCF) is a typical example of a multilateral fund where a number of governments and companies contribute funds to acquire CERs and ERUs that will eventually be distributed between them.

B.3) Unilateral Model:-
Non-Annex I countries or the countries themselves design, initiate, organize, arrange, finance and carry out the CDM projects independently and without the involvement of Annex I countries, except through those countries purchase of CERs.

B) Joint implementation:-
JI is based on article 6 of the Protocol. JI projects earn ERUs (Emission reduction units) each equivalent to one ton of CO_2. The PDD (Project Design Document) should provide information such as: 1) A general description of the project activity, 2) Applicable baseline methodology, 3) Selection of baseline and demonstration of additionally, 4) Duration of the project and the crediting period, 5) Monitoring methodology and plan, 6) Estimation of project emissions and baseline emissions, 7) Environmental impact, 8) Stakeholder's comment.

C) National and global level carbon trading:-
About 65 per cent of India's carbon dioxide emissions in 2009 was from heating, domestic uses and power sector. India has a better opportunity for its industries to produce carbon credits because India has a much less emission level as compared to other developed nations. The CDM projects in India include biogas, biomass, energy efficiency, waste gas and wind energy. India has the second largest carbon market globally registered under CDM projects. Some examples of Carbon trading in India are

D.1) Jindal Vijaynagar Steel:-
The Jindal Vijaynagar Steel has recently declared that by the next ten years it will be ready to sell $225 million worth of saved carbon. This was made possible since their steel plant uses the Corex furnace technology which prevents 15 million tonnes of carbon from being discharged into the atmosphere.

D.2) Powerguda in Andhra Pradesh:-
The village in Andhra Pradesh was selling 147 tonnes equivalent of saved carbon dioxide credits. The company has made a claim of having saved 147 MT of CO2. This was done by extracting bio-diesel from 4500 Pongamia trees in their village. The Good News India in June, 2004 has reported that five other villages have followed Powerguda and made carbon credit sales.

D.3) Handia Forest in Madhya Pradesh:-
In Madhya Pradesh, it is estimated that 95 very poor rural villages would jointly earn at least US $300,000 every year from carbon payments by restoring 10,000 hectares of degraded community forests. The project would also provide other benefits, including protection of endangered leopards, monkeys and improved water supplies. In addition with proper management of the resource, villagers could sell fuel wood, quality lumber etc.

D.4) World vs. Indian carbon market:-
Industries and societies are encouraged to understand the different facets of environmental pollution and its reduction strategies. And the carbon financing in particular as 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.

Literature review:-
A brief literature survey was made from which most of basic concepts of carbon trading came to understand. The **carbon credit** is a permit which allows a country or organization to produce a certain amount of carbon emissions and which can be traded if the full allowance is not used**.** Carbon credits can be traded in the international market at their current market price. A carbon credit is a generic term for any tradable certificate or permit representing the right to emit CO2 .Using algae for reduction of CO2 concentration in the atmosphere is known as algae-based

carbon capture technology. Algae can consumes tons of CO2 for growth, thus reducing harmful greenhouse gases and earn carbon credit. To solve the problems of global warming and climate change, there developed some strategies of clean energy compositions to reduce gas emissions. Some problems will be resulted from executing energy compositions, they are redundant or not enough for clean energy. The Copenhagen Accord set the goal of limiting the long-term increase in global mean temperature to two degrees Celsius (2°C) to avoid catastrophic climate change. It was widely accepted that without price measures, it will be more difficult and expensive to meet the Copenhagen Accord goal of limiting temperature rise to 2° C. Several environmentalists regarding this carbon trading has subsided as they do not see the air getting any cleaner. By converting marginal croplands to permanent grasslands or forests, the accompanying increase in biomass and soil organic carbon can offset 20% or more of global fossil fuel emissions.

Conclusion:-

Carbon trading is one of the "fastest-growing specialties in financial services". And companies are scrambling to get a slice of a market now worth well over 100 billion and that could grow to $1 trillion within a decade. Bamboo can generate tradable amount of carbon under CDM and REDD schemes. It will promote the cultivation and management of woody bamboos in agroforestry and forest ecosystems and therefore, generating another income stream for the rural communities. Emissions trading give an incentive to innovate, since costly emission reduction technology now also generates revenues by selling the emission rights that become available. This makes it more attractive to invest in cleaner technologies. Personal carbon credits are carbon credits created and owned by individuals who reduce their greenhouse gas (GHG) emissions by a real and verifiable amount including transportation use, electrical use and home heating and cooling.

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