

Carbon Trading: Present Scenario & Future Prospects Of Indian Paper Industries.

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ABSTRACT

Concerned about global warming, in the 1997 world earth summit held in Kyoto, Japan came out the inception of carbon trading to control emission of greenhouse gases which is responsible for rising atmospheric temperature and climate change.

Born in 1997 Carbon Trading took a real shape in 2003 and came to India in year 2005. This paper states the basic concept of the Carbon Trading and methodologies. It describes the 1st step to start with and up to trading the carbon credits in the carbon market. It also reviews the present scenario of generating carbon credits through Clean Development Mechanism (CDM) projects and trading in the market. Present scenario in Indian Pulp & Paper Industries and future opportunities available for them.

Introduction:

Ideas are like dreams, unbelievably romantic, and, such one is Carbon Trading an idea that lays its foundation on “earn by giving”. [1]

Born in 1997 at world earth summit held at Kyoto, Japan, this dream child can make miracles on society if practised rightly. The convention participated by more than 160 countries of the world was to negotiate binding limitations on green house gases (GHG) for the developed nations pursuant to the objective of Framework Convention on Climate Change of 1992.

The outcome was the Kyoto Protocol, in which the developed nations agreed to limit their green house gas emissions, relative to the levels emitted in 1990 or pay a price to those that do. At this point, comes, the Carbon Trading.

Carbon Trading System:

The trading system is governed by the rules and mechanism framed in Kyoto Protocol and signed & ratified by the member countries of United Nations Framework Convention on Climate Change (UNFCCC).

The Kyoto Protocol:

It is an international emissions reduction agreement, signed in 1997 in the Japanese city Kyoto, but requiring separate ratification by governments. It is a Protocol (set-of-rules) to UNFCCC, under which the signatories are obligated to cut overall green house gas (GHG) emissions by an average of 5.2% below 1990 levels over the period

2008-2012.

The Kyoto Protocol lists six major green house gases. They are Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons) and Sulphur hexafluoride (SF₆). These gases absorb light in the earth's atmosphere and re-emit infrared radiations, which increases the atmospheric temperature. These gases vary in their relative warming effect, which is called Global Warming Potential (GWP) of that gas. All these GHG emissions are converted and expressed in single term 'CO₂ equivalent (CO₂-e)' calculated according to their relative GWP.

[For example CO₂=1 in GWP relative scale, where as Methane (CH₄) =25 in the same scale. That means it has 25 times more warming capacity than CO₂. Hence 1 MT of methane emission is equal to 25 MT of CO₂-e. The GWP also varies according to their atmospheric life time. Let us compare all at 100years of life. CO₂ = 1 (always), Methane (CH₄) = 25 over

100years, Nitrous Oxide (N₂O) = 298 over 100 years, CFC-12 = 10900 over 100years, HCFC-22 = 1810 over 100 years, Tetrafluoromethene = 7390 over 100 years, Sulphur hexafluoride = 22800 over 100 years and Nitrogen trifluoride = 17200 over 100 years. Source: IPCC Fourth assessment Report.]

In this protocol all the participating countries or signatories to the UNFCCC are divided in to three groups:

- 1) Annex-I countries (Industrialised Countries)
- 2) Annex-II countries (Developed countries which pay for costs of developing countries)
- 3) Developing Countries.

Annex-I countries agree to reduce their emissions of greenhouse gasses to targets that are mainly set below their 1990 levels. They may do this by allocating reduced annual allowances to the major operators within their borders. These operators can only exceed their allocations if they buy emission allowances, or offset their excesses through a mechanism that is

Table-1 List of Annex-I countries

Sl. No.	Name of the country	Sl. No.	Name of the country	Sl. No.	Name of the country
1	Australia	14	Greece	27	Norway
2	Austria	15	Hungary	28	Poland
3	Belarus	16	Iceland	29	Portugal
4	Belgium	17	Ireland	30	Romania
5	Bulgaria	18	Italy	31	Russian Federation
6	Canada	19	Japan	32	Slovakia
7	Croatia	20	Latvia	33	Slovenia
8	Czech Republic	21	Liechtenstein	34	Spain
9	Denmark	22	Lithuania	35	Sweden
10	Estonia	23	Luxembourg	36	Switzerland
11	Finland	24	Monaco	37	Turkey
12	France	25	Netherlands	38	Ukraine
13	Germany	26	New Zealand	39	United Kingdom
				40	USA

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Table-2List of Annex-II countries

Sl. No.	Name of the country	Sl. No.	Name of the country
1	Australia	13	Japan
2	Austria	14	Luxembourg
3	Belgium	15	Netherlands
4	Canada	16	New Zealand
5	Denmark	17	Norway
6	Finland	18	Portugal
7	France	19	Spain
8	Germany	20	Sweden
9	Greece	21	Switzerland
10	Iceland	22	United Kingdom
11	Ireland	23	USA
12	Italy		

agreed by all the parties to the UNFCCC.

Annex-II countries are a sub-group of the Annex-I countries. They comprise the OECD (Organisation for Economic Co-operation and Development) members, excluding those that were economies in transition in 1992.

Developing countries are not expected to de-carbonize their economy unless developed countries supply enough funding and technology. Setting no immediate restrictions under the UNFCCC serves three purposes:

- it avoids restrictions on their development, because emissions are strongly linked to industrial capacity,
- they can sell emissions credits to nations whose operators have difficulty meeting their emissions targets,
- they get money and technologies for low-carbon investments from the developed countries in Annex-II.

Developing countries may volunteer to become Annex-I countries when they are sufficiently developed.

Some opponents of the Convention argue that the split between Annex-I and developing countries is unfair, and that both developing countries and developed countries need to reduce their emissions unilaterally. Some countries claim that their costs of following the Convention requirements will stress their economy. This was one reason given by George W. Bush, outgoing President of the United States, for not forwarding the Kyoto Protocol to the United States Senate for ratification. Other countries point to research, such as the Stern Report, that calculates the cost of compliance to be less than the cost of the consequences of doing nothing.

The Carbon Trading Mechanism:

Under the Kyoto agreement, industrialised countries (Annex-I) must meet their targets primarily through national measures. However, the Kyoto Protocol offers them an additional

means of meeting their targets by way of three market based mechanisms. They are:

- 1) Emission Trading (ET)
- 2) Joint Implementation (JI)
- 3) Clean Development Mechanism (CDM)

These mechanisms

- Stimulate sustainable development through technology transfer & 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.
- Encourage the private sector and developing countries to contribute to emission reduction efforts.

Emission Trading (ET):

Parties (Annex I Parties) with commitments under the Kyoto Protocol have accepted targets for limiting or reducing emissions. These targets are expressed as levels of allowed emissions, or “assigned amounts,” over the 2008-2012 commitment periods. The allowed emissions are divided into “assigned amount units” (AAUs).

Emissions trading, as set out in Article 17 of the Kyoto Protocol, allows countries that have emission units to spare - emissions permitted them but not “used” - to sell this excess capacity to countries that are over their targets.

Thus, a new commodity was created in the form of emission reductions or removals. Since carbon dioxide is the principal greenhouse gas, people speak simply of trading in carbon. Carbon is now tracked and traded like any other commodity. This is known as the “carbon market.” This trading is within Annex-I parties. It is more practised in European Union and called as EUET.

Joint Implementation (JI):

The mechanism known as “joint implementation,” defined in Article 6 of the Kyoto Protocol, allows a country

with an emission reduction or limitation commitment under the Kyoto Protocol (Annex I Party) to earn emission reduction units (ERUs) from an emission-reduction or emission removal project in another Annex I Party, each equivalent to one tonne of CO₂, which can be counted towards meeting its Kyoto target.

Joint implementation offers Parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.

A JI project must provide a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to what would otherwise have occurred. Projects must have approval of the host Party and participants have to be authorized to participate by a Party involved in the project.

Projects starting as from the year 2000 may be eligible as JI projects if they meet the relevant requirements, but ERUs may only be issued for a crediting period starting after the beginning of 2008.

Clean Development Mechanism (CDM):

The Clean Development Mechanism (CDM), defined in Article 12 of the Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex II Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets.

The mechanism is seen by many as a trailblazer. It is the first global, environmental investment and credit scheme of its kind, providing a standardized emission offset instrument, CERs.

A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers.

The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.

This mechanism is the only option for developing countries to trade their

certified emission reduction (CER) credits in the carbon market having no specific emission target. Hence Indian industries should take this opportunity to make money and participate in reducing global warming. Further we shall concentrate only on this mechanism.

**Basic requirement to start a CDM project:
National requirement and status of India:**

The country must have ratified the Kyoto protocol along with the Annex-II party. India has ratified it on 26th August 2002. To have a national system of estimating, monitoring and feedback to UNFCCC secretariat, the govt. of India has constituted an advisory group on climate change under the chairmanship of the Minister of Environment and Forests[3]. Invites to the advisory group include representatives of line ministries, research institutes and civil societies. Indian stand on CDM projects are:

- Host country to be the sole judge of the national sustainable development criteria.
 - The project activity shall promote transfer of technology.
 - Capacity building should be incorporated in all CDM projects.
 - Baselines will be defined on a project-to-project basis.
 - Funding for project activity shall be additional to ODA (Official Development Assistance), EF (Global Environment Facility) and other financial commitments of developed country parties.
- Detailed eligibility requirements are reflected in section F in the modalities & procedures (decision-3/CMP-1)

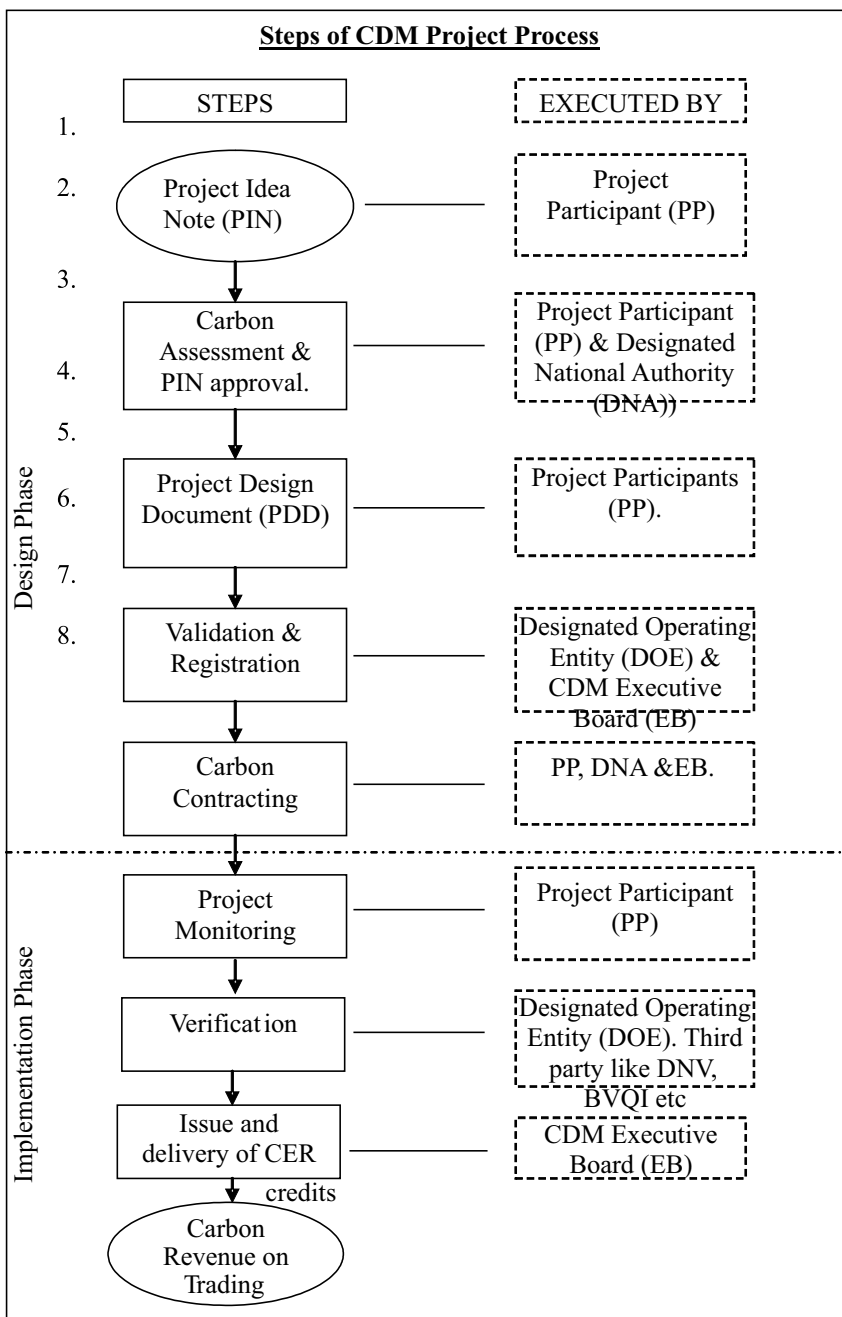
Steps for a CDM Project:

From the inception of the project it has to proceed through certain steps sequence wise. The steps are given in picture-1 and described below.

Project Idea Note (PIN): Carbon reduction idea to be put in pen and paper just like a project proposal. This note will be the skeleton of the CDM project. It will cover the present status (base line), project activities to be done and estimated reduction in green house gases (GHGs). It also covers sustainable development objectives to the nation.

Approval by National CDM Authority: This has to be approved

Picture-1 Steps of CDM Project Process



by the host country (here India) government. Each nation has its own criteria to approve a CDM project. The common and chief criterion is to fulfil sustainable development objectives (social, economic, environmental and other developmental criteria). The National CDM Authority, here in India the Director (Climate Change) under the Ministry of Environment and Forests called the Designated National Authority (DNA) has to approve the project. DNA has its' own assessment and evaluation criteria. Presently the

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Project Design Document (PDD): After getting approval from national authority one has to prepare Project Design Document (PDD). This PDD is to be submitted to CDM executive board, working under UNFCCC, for validation and registration.

In this PDD the most important thing is that you have to prove its 'additionality' [2]. That means it is not business-as-usual. The carbon credits are based on the difference in GHG emissions occurring as a consequence of business-as-usual practices (known as the 'baseline' scenario) and the reduced level of emissions occurring after the implementation of project activities. Additionality is designed to ensure that carbon credit projects result in real reductions in the current rate of GHG accumulation in the atmosphere. Not all projects that might appear to have positive GHG effects are additional [2]. For carbon credits to be acceptable under the terms of the Kyoto Protocol, no project can claim GHG emission reductions unless project proponents can reasonably demonstrate that the project's practices are 'additional' to the 'business-as-usual' or baseline scenario. The baseline scenario is broadly described as the collective set of economic, financial, regulatory and political circumstances within which a particular project is implemented and will operate.

Validation & Registration: Upon submission of the PDD with application form to Executive Board, the validity of the project rests on the case made that environmental performance (in terms of achieving GHG reductions) exceeds historical precedents, legal requirements, likely future developments, or a combination of all three. Establishing the base line scenario thus requires knowledge of long term trends in markets, local socio-economic context, macro-economic trends that may affect the conventional outputs of a project, and other relevant policy parameters. Consequently baseline determination is based on a range of assumptions and requires significant policy, sector and country knowledge. Hence, while preparing PDD, it is better to take help of a third party who has experience in preparing PDD for CDM projects. The same may be your DOE (Designated Operating Entity). DOE has to validate the project. Before validation, the Executive Board shall open it for public and ask comments / objections if any from them. If any comment came from public you have to reply satisfactorily and justify your claim.

Approved methodology: In the project design you have to state the methodologies to be used, which include instructions as to the

determination of the project baseline, the quantification of emission reductions generated by the project and monitoring plans. And the methodology must be preapproved by the CDM Methodology Panel. That means you have to choose from the approved methodologies. If a methodology is not available for a new project activity then the project proponent may write and propose a new methodology to the methodology panel for approval. The process of developing new methodologies is the most specialised step in the CDM project and can take more than one year to be concluded. At present 118 methodologies have been approved, out of which 63 are for large scale projects.

CDM Projects where estimated emission reduction is $\geq 15,000$ MT of CO₂-e / annum, it is called a large scale project and $< 15,000$ MT of CO₂-e/annum is small scale project.

Project monitoring: After registration of the project with the CDM executive board, the project activity starts. The activities are monitored by project participants. The Socio-economic & environmental impact are also monitored along with monitoring of GHG emission by the participants. After fully implementation, the project is offered for verification.

Verification: The project verification is done by an independent third party organisation. And the third party must be accredited by CDM executive board and must not be a project participant. Here this third party is called Designated Operating Entity (DOE). There are more than 15 DOEs in total and 5 (like DNV, SGS, and BVQI etc) are operating in India. They will verify using the same approved methodology as stated in the PDD.

Issue of CERs: After verification and confirmation of reduction in GHG from the base line and certified by the DOE, the CDM Executive Board shall issue units of Certified Emission Reductions (CERs) to the participants. All the green house gases will be converted to CO₂ equivalent upon their potentiality to global warming. One unit of CER means one tonne of CO₂ equivalent. These will be credited to the national registry in the name of project participants. Commonly these are called Carbon Credits and these are bankable and tradable.

Revenue on trading: Among the project participants one or more are from Annex-II country that finances the cost of implementation of project. So a major share of carbon credits goes to that party to meet the emission targets set by UNFCCC. The excess carbon credits are sold in the international open market. The allocation of CER credits are done by mutual agreement between the participants before implementation. For trading there are 5 exchanges at present. They are 'Chicago Climate Exchange', 'European Climate Exchange', 'Nord Pool', 'Power Next' and the 'European Energy Exchange'. The carbon price is also highly volatile in the market, it has been sold @ 8Euro/unit to 30Euro/unit of CO₂-e in past.

Present Scenario:

India ratified the Kyoto Protocol in August 2002 and entered in to force in 2005. It took momentum in 2007, the highest number of CDM projects in the world. India accounted for 283 out of 819 CDM projects registered with Executive Board.

The recent report in Economic Times (indiatimes.com) heading "Rs15,000 crore Carbon Credits Awaits Indian Inc." says that Rs15,000 crore will be the carbon credit sale proceeds by 2012 for India provided the projects approved by national CDM authority got registered with the CDM executive board. Quoting the data compiled by industry body FICCI, it mentioned that 599 projects were approved by National CDM Authority by mid-April, 2007. The numbers of projects approved by national authority are **biomass (197), energy efficiency (166) and renewable energy (151)**. The list of Potential carbon credit volume contribution by type of projects is led by energy efficiency (11.33 crore), with industrial process (0.97 crore) and biomass (0.61 crore) following. Region/State wise ranking of approved projects are 1) UP: 69 2) AP: 68 and 3) Maharashtra:68. As on 26 June, 2007, 713 projects are approved by CDM executive Board with expected 151,970,186 (42.8% Of Total) annual average CERs and more than 960,000,000 expected CERs until end of 2012. In the list of expected average annual CERs by host party, China is leading with average annual reductions of 65,036,178 with 90 projects. India has 250 projects (35.06%) approved with average annual reductions of 22,998,713. Source: 1)

Table-3 CDM Projects Status: Registered and in the pipe line.

Data updated up to 5th may 2009

Sl. No	Status of CDM Projects	World	India	Indian Pulp & Paper Industries
1	Total No. of CDM projects Registered	1609	423	21
2	No. of Projects requesting registration	83	12	2
3	No. of Projects Review requested	30	6	0
4	No. of Projects under review	31	1	0
5	Corrections Following review	28	5	0
6	Corrections Following request for review	35	8	0
7	No. of Projects Rejected	104	37	1
8	No. of Projects withdrawn	28	10	0
	Total	1948	502	24

Source- www.unfccc.int

economicstimes.indiatimes.com 2) unfccc.int

We shall see the recent data down loaded from UNFCCC website and compiled above and find the participation of Indian Pulp and Paper Industries. India's share 26.3% (423 out of 1609) and Pulp & paper sector within India is 4.96% of the total Indian projects.

CDM Projects in Indian Pulp & Paper Industries:

Sector specific studies conducted for India Indicate a significant potential for CDM projects in the power sector and in enhancing energy efficiency in industries over the next decade. Several CDM projects are being implemented in Indian pulp & paper industries. Twenty one projects have been registered with Executive Board and many more are in the pipe line. The list of registered projects with Industry name, Title, estimated CERs and project reference no. is given in Table-4

Future Prospects for Paper Industries in CDM Bazaar:

Paper production is an energy intensive process requiring mechanical & thermal energy to transform raw materials in to finished products. The sector is therefore a significant global user of fossil fuels and electricity. A significant amount of biomass wastes in sludge, solid or liquid form is also generated and requires disposal. Consequently, the sector is a large emitter of green house gases.

The emission associated with this sector differs, based on the following factors:

1. The Pulping Process.
2. The Type of Paper Produced.

3. The Type of Fuel Used for Steam & Electricity Generation.
4. The Energy Efficiency of the Mill.

The emission reduction project must fall in to the limits of certain "methodologies" approved by the UNFCCC to be eligible as a CDM project. There are applicable methodologies for the following projects.

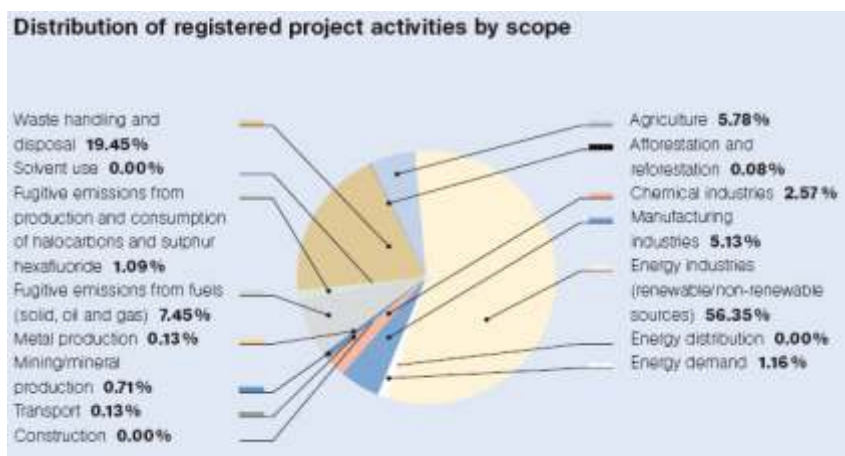
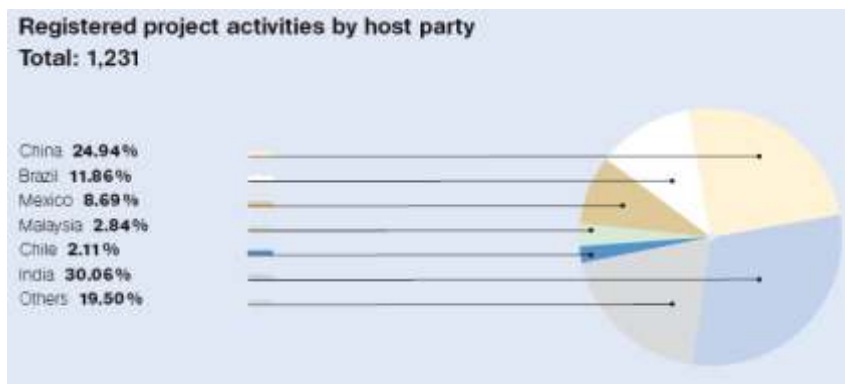
1. Fuel switch projects: from fossil fuel to natural gas.
2. Energy Efficiency and fuel switching measures for producing steam & electricity.
3. Methane recovery and avoidance from waste residues of pulping

Table-4

REGD PROJECTS FROM PAPER SECTOR	Registering SLNo.	Title	Name of Paper Industry	Annex-II Parties	Methodology *	Reduction g **	Ref
1	14-Jan-06	Methane Extraction and Fuel Conservation Project at Tamil Nadu Newsprint and Paper Limited (TNPL), Kagithapuram, Karur District, Tamil Nadu	TNPL, Tamil Nadu	Netherlands	AM0013 ver. 2	36860	124
2	03-Feb-06	Rice Husk based Cogeneration project at Shree Bhawani Paper Mills Limited (SBPML), Rae Bareilly, Uttar Pradesh, India	SBPML, U.P.	United Kingdom of Great Britain and Northern Ireland	AMS-I.D. ver. 6	14744	195
3	16-Dec-06	Demand side energy conservation and reduction measures at ITC Tribeni Unit	ITC, Tribeni, W.B.	United Kingdom of Great Britain and Northern Ireland	AMS-I.D. ver. 9 AMS-II.D. ver. 7	8195	745
4	24-Dec-06	Optimization of steam consumption by applying retrofit measures in blow heat recovery system	ITC, Bhadrachalam, A.P.	United Kingdom of Great Britain and Northern Ireland	AM0018 ver. 1	22587	677
5	12-Jan-07	Optimization of steam consumption at the evaporator	ITC, Bhadrachalam, A.P.	United Kingdom of Great Britain and Northern Ireland	AM0018 ver. 1	52247	679
6	15-Jan-07	Rice husk based cogeneration power plant-II at SBPML	SBPML, U.P.	Belgium	AMS-I.D. ver. 9	13993	802
7	10-Feb-07	Efficiency improvement of Turbine Generator to reduce fossil fuel consumption in the Coal fired boiler system	ITC, Tribeni, W.B.	United Kingdom of Great Britain and Northern Ireland	AMS-II.B. ver. 7	3050	821
8	19-Feb-07	Demand side energy efficiency programmes for specific technologies at ITC Bhadrachalam pulp and paper making facility in India	ITC, Bhadrachalam, A.P.	United Kingdom of Great Britain and Northern Ireland	AMS-I.D. ver. 9 AMS-II.D. ver. 7	21505	806
9	19-Mar-07	Energy Efficiency Measures At Paper Production Plant	APPM, A.P.	Switzerland	AMS-II.D. ver. 7	2877	832
10	01-Apr-07	Biomass based Cogeneration Power Project in Uttar Pradesh	Yas Papers Ltd. U.P.		ACM0006 ver. 3	33422	827
11	02-Apr-07	Rice Husk based power project at Satia Paper Mills Limited (SPML), Punjab, India,	Satia Paper Mills Ltd. Punjab	Switzerland	AMS-I.D. ver. 9	32598	855
12	02-Apr-07	Methane recovery from waste water generated from wheat straw wash at Paper manufacturing unit of Shreyans Industries Limited (SIL)	Shreyans Industries Ltd. Punjab		AMS-III.H. ver. 1	12978	835
13	25-May-07	6.75 MW Small Scale Grid Connected "Wind Electricity Generation Project" by Tamil Nadu Newsprint and Papers Limited	TNPL, Tamil Nadu	Switzerland	AMS-I.D. ver. 10	14431	1053
14	17-Jun-07	WCPM Energy Efficiency Project	WCPM, Karnataka		ACM0006 ver. 4	35693	1025
15	29-Aug-07	Biomass Based Cogeneration Units at Uttar Pradesh	K R Pulp & Paper Ltd. U.P.		AMS-I.C. ver. 8	53800	947
16	06-Jan-08	6 MW Rice Husk based cogeneration plant at Bhageshwari Papers Private Limited	Bhageshwari Papers Pvt Ltd. U.P.		AMS-I.C. ver. 9	28883	1379
17	01-Feb-08	6.0 MW Biomass based cogeneration power plant of Rama Paper Mills Limited, Kiratpur, Uttar Pradesh.	Rama Paper Mills Ltd. U.P.	Germany	AMS-I.D. ver. 10	24640	1181
18	01-Apr-08	Steam Optimization in Cooking Process in Paper Plant	APPM, A.P.		AM0018 ver. 1	34148	1403
19	05-Apr-08	6 MW Biomass residue based cogeneration unit by MPML at Village Hetti (Suria), District Nagpur in Maharashtra, India	Mak Paper Mills Ltd. M.S.		AMS-I.C. ver. 9	73582	1568
20	07-Nov-08	2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries Limited	Hanuman Agro Ind Ltd. M.S.		AMS-I.C. ver. 10	33126	1667
21	25-Mar-09	2.25 MW Rice Husk based cogeneration plant at Siddeshwari Industries Pvt Ltd	Siddeshwari Ind Pvt Ltd. U.P. (KwaB Mill)		AMS-I.C. ver. 12	17814	2255
		Total Reduction			Indian Paper mills	559973	
					India	34697344	

* AM - Large scale, ACM - Consolidated Methodologies, AMS - Small
 ** Estimated emission reductions in metric tonnes of CO2 equivalent per annum (as stated by the project participants)

Status of CDM Projects in November 2008:



- process.
- Biomass based co-generating systems OR biomass gasification plant.
 - Install continuous digester and two stage oxygen delignification to get energy efficiency & recovery efficiency, consequently replacing equivalent amount of fossil fuel.
 - Forestry projects Reforestation of degraded land.

For example fuel switch CDM project, where a boiler consuming coal (fossil fuel) and providing steam to paper making process and generating power through turbine. Let the boiler modified to use bark wastes (or to increase the proportion of such renewable biomass in the fuel mix) instead of coal. Such an activity reduces GHG emissions in two ways. First, it reduces emissions that would arise from burning of coal. Second it avoids emission of methane that would occur by the land fill / disposal of the bark wastes. Both the impacts will be calculated in terms of CO₂-e equivalent. Likewise we can take other projects eligible for CDM methodology.

Criticism:

It should be pointed out that carbon trading is hugely contentious and many environmental and social justice activists oppose it due to its many inherent problems. Most emission trading schemes have large loopholes which distort the whole system. These range from reliance on 'credit generating projects' such as monoculture tree plantations, as well as lack of credible enforcement and verification systems to the use of financial instruments like carbon funds.

Trading in emissions effectively creates a commodity literally out of thin air. As such, global pollution trading is a form of privatisation of the atmospheric commons and allows the market and corporate actors (many of whom are the world's biggest polluters) to determine the pace and development of the 'carbon market'. In other way, it is granting a license to big brothers to pollute (crossing the binding targets) by paying some money to poor brothers who do not have binding emission targets. Even USA has not ratified the Kyoto Protocol till date and not honoured the binding target. Australia has done it very late in

2008.

It is already suggested by IPCC (Intergovernmental panel on climate change) that for the 2nd phase of carbon trading starting from 2012, there should be more stringent evaluation of the projects to generate real carbon credits and the binding emission targets must be set very low. There should be cutting of emissions from the source.

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References:

- B. Harikumar, "Carbon Trading" Kerala Calling, Volume 25, Number-3, January-2005, p38-39.
- Pranav Nahar & Pedro Moura-Costa, "An overview of the Global Carbon Market & CDM Opportunities for the Pulp & Paper sector in India" IPPTA J, p-137, Vol-18, No-4, Oct-Dec-2006.
- Shukla Sudheer Kumar, Vivek Kumar, Bansal M.C., "Indian Paper Industry: Kyoto Protocol and Clean Development Mechanism" IPPTA J, p-101, Vol-20, No-2, Apr-Jun-2008.
- A.K.Sarada, "Improving Rural Livelihood through Carbon Sequestration (CDM A/R) Project: JK's Path Breaking Initiative on CDM", IPPTA J, p-133, Vol-20, No-1, Jan-Mar-2008.
- Internet Website, www.unfccc.int.
- Gupta Shreekant, "Implementing Kyoto type flexibility mechanism for India: Issue & Prospects" April-2003, Source: www.ccsindia.org/pdf.
- "Clean Development Mechanism Project Opportunities in India" Teri, New Delhi, January-2001
- Mishra J.P., "An Introduction to Clean Development Mechanism" National work shop on environment and pollution management for sustainable development." Held at Lakshmi Narain College of Technology, Bhopal, 24-April,2004,p-56-59.
- "Climate Change", Special issue, Parivesh, Central Pollution Control Board, Ministry of Environment & Forests, October 2002.