

Market Mechanisms Country Fact Sheet : India

National Climate Change Policy in India

Name	National Action Plan for Climate Change
Objective	To achieve a sustainable development path that simultaneously advances economic and environmental objectives
Target sectors	8 Missions (2 on mitigation and 5 on adaptation)
Year announced	2008

Renewable Energy Policy in India

Electricity Act (2003)

Renewable Energy Certificate

Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation (2010)

Feed-in Tariff

Terms and Conditions for Tariff determination from Renewable Energy Sources (2009)

Source: CERC <http://www.cercind.gov.in/>

Nationally Appropriate Mitigation Actions (NAMAs)

Status of NAMAs Submission

Publication Date	28 January 2010
Emission Reduction Goal	Reduce emissions intensity of its GDP by 20-25% by 2020
Baseline year	2005

Source: GOI (2010) http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/indiacphaccord_app2.pdf

Institutional Framework

(1) Organisation Charts

Prime Minister's Council on Climate Change

Core Negotiating Team
(Multi – Ministry)

Coordination Unit for
Implementation of NAPCC
(Ministry of Environment
and. Forests)

Research Agenda
Principal Scientific Advisor to
GOI Ministry of Science &
Technology
(Specific Units of MST/other
Ministries)

Technical Support Group
(Multi - Ministry)

Ministry Specific Agenda
(Ministries)

(2) National Action Plan for Climate Change (NAPCC)

Principles

- Protecting the poor and vulnerable sections of society through an inclusive and sustainable development strategy, sensitive to climate change.
- Achieving national growth objectives through a qualitative change in direction that enhances ecological sustainability, leading to further mitigation of greenhouse gas emissions.
- Devising efficient and cost-effective strategies for end use Demand Side Management.
- Deploying appropriate technologies for both adaptation and mitigation of greenhouse gases emissions extensively as well as at an accelerated pace.
- Engineering new and innovative forms of market, regulatory and voluntary mechanisms to promote sustainable development

National Missions

Mitigation

National Solar Mission

•20,000 MW of solar power by 2020

National Mission for Enhanced Energy Efficiency

•10,000 MW of EE savings by 2020

Adaptation

National Mission for Sustainable Habitat

•EE in residential & commercial buildings, public transport, solid waste management

National Water Mission

•Water conservation, river basin management

National Mission for Sustaining the Himalayan Ecosystem

•Conservation & adaptation practices, glacial monitoring

National Mission for a Green India

•6 mn hectares of afforestation over degraded forest lands by the end of 12th Plan

National Mission for Sustainable Agriculture

•Drought proofing, risk management, agricultural research

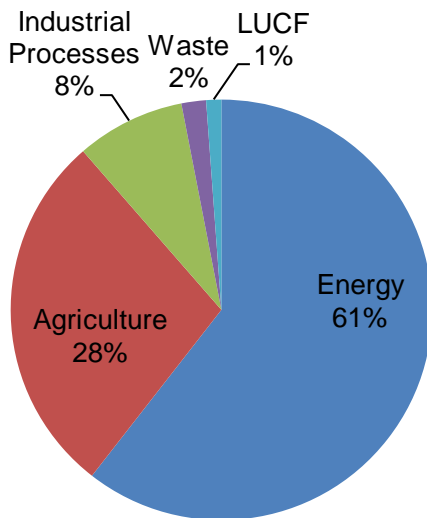
Overall

National Mission on Strategic Knowledge for Climate Change

•Vulnerability assessment, Research & observation, data management

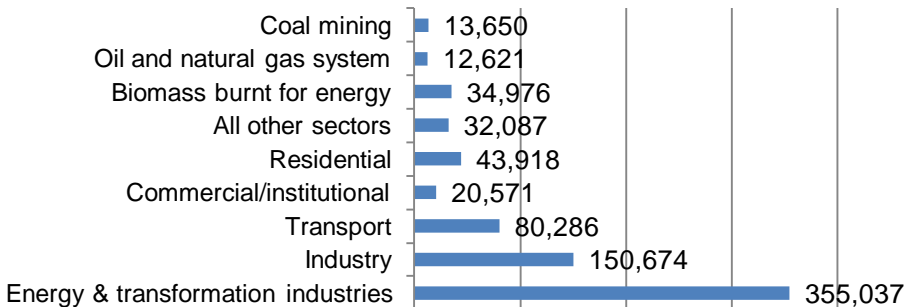
Information on GHG and NAMAs

Overview of GHG Emissions (1994)



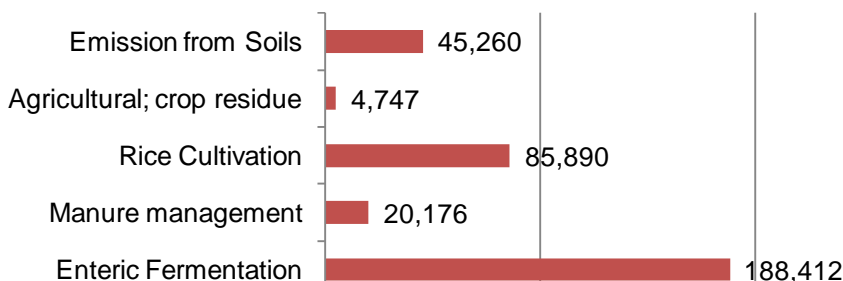
Energy sector

(Gg of CO₂e)



Agriculture sector

(Gg of CO₂e)



Source: India's Initial National Communication to UNFCCC
<http://unfccc.int/resource/docs/natc/indnc1.pdf>

Nationally Appropriate Mitigation Actions (NAMAs)

Estimated benefits and costs of some of the mitigation actions (NAMAs)

Action	Brief Description	Estimated Benefit (MT CO ₂ /yr in 2020)	Estimated Additional cost (\$ Billion/yr)
National Solar Mission	22,000 MW of solar by 2022 (600 MW constructed in 2010)	31	5.1
Nuclear Energy	20,000 MW by 2020	99	8.2
Renewable Energy	72,000 MW by 2022	104	4.3
Green India Mission	20 Mn Ha to be afforested.eco-restored	43	1.0
Total		~ 275 MT CO₂	~ \$ 19 Bn/yr

Source: India's Development Needs and Mitigation Actions, UNFCCC Workshop on NA I Mitigation Actions, 4th April 2011 Bangkok
http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/india_ws.pdf

Market Mechanism Instruments

PAT (Perform Achieve & Trade) scheme

- In 2001, Energy Conservation Act was adopted, which provided PAT as a mechanism for the promotion of energy saving. Accordingly, the Indian Government notified energy intensive industries as Designated consumers (DCs). About 500 DCs have been notified as of 2011.
- In 2008, Prime Minister's National Action Plan on Climate Change was announced. It includes "The National Mission for Enhanced Energy Efficiency" which further ushers in the implementation of PAT scheme in order for industries to achieve better energy efficiency beyond the Specific Energy Consumption (SEC) which are stipulated for each DC.

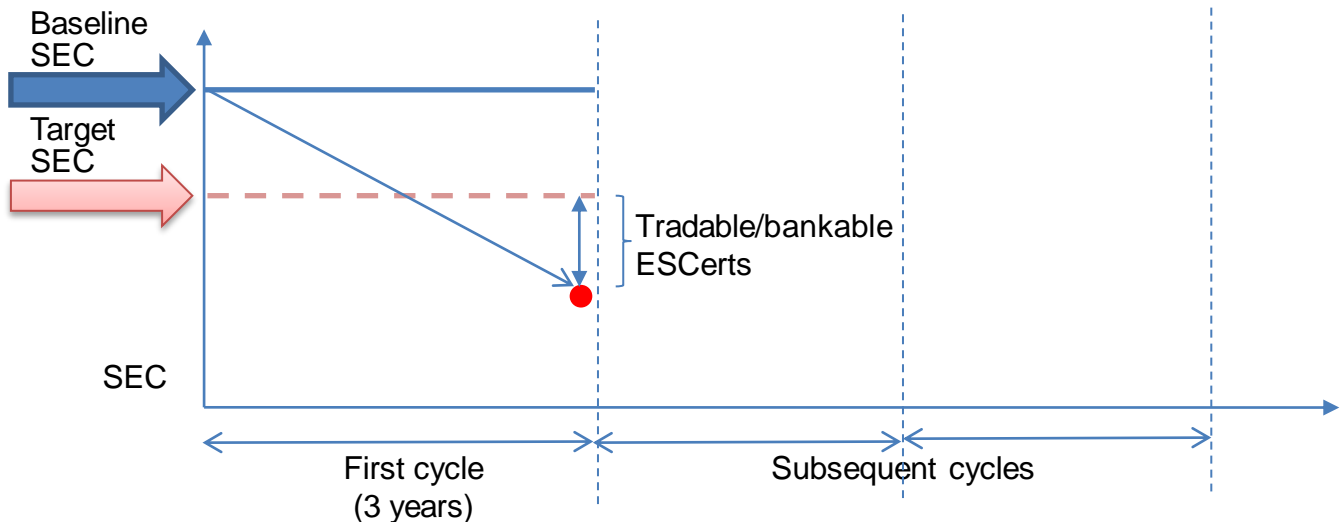
Energy Conservation Act (2001)

- Establish Bureau of Energy Efficiency (BEE) under Ministry of Power (MoP)
- Notification of Designated Consumers (DCs) in 8 sectors:

Thermal power, Fertilizer, Cement, Pulp and Paper, Textiles, Chlor-alkali, Iron and steel, Aluminum

National Mission for Enhanced Energy Efficiency

- Introducing 4 initiatives:
 - (1) PAT scheme
 - (2) Market Transformation on Energy Efficiency
 - (3) Energy Efficiency Financing Platform
 - (4) Framework for Energy Efficient Economic development
- Crediting mechanism of PAT scheme



- Each DC has specific target set by % reduction based on the current energy efficiency
- Energy source is converted into Metric Ton of Oil Equivalent (MTOE)
- DCs shall comply with targeted SEC
- DCs can buy Energy Saving certificates (ESCerts) in case of not meeting the target
- DCs shall pay a penalty for non-compliance

CDM Information

(1) Current Status of CDM in India

Basic Information (as of 1 November 2011)

Project Status	No. of projects
CDM projects registered at CDM executive board	738
CDM projects at or after the validation stage	1,022

Source: IGES CDM Project Database http://www.iges.or.jp/en/cdm/report_cdm

Basic Data for Registered CDM Projects (as of 1 November 2011)

	Registered CDM Projects					Rejected
	No. of Projects	Avg. Annual Emission Reductions (t-CO ₂)	Total ERs by 2012 (t-CO ₂)	Amount of Issued CERs (t-CO ₂)	Review Requested	
Wind Power	233	32,055	33,996,009	9,854,826	56	8
Biomass	180	38,613	37,839,697	8,617,197	61	15
Hydro Power	83	88,199	20,586,368	2,877,343	23	5
Energy efficiency	75	113,814	13,099,874	1,385,897	21	8
Waste gas/heat utilization	70	76,220	35,541,907	11,577,767	33	8
Fuel switch	20	358,053	27,760,522	7,637,476	7	0
Cement	17	114,708	16,806,437	1,382,047	2	4
Biogas	16	28,218	2,551,228	695,884	4	0
Methane avoidance	13	82,138	2,433,170	47,795	3	0
Afforestation & reforestation	7	72,246	5,828,972	0	1	0
HFC reduction/avoidance	7	1,577,424	82,691,940	74,813,284	2	0
Other renewable energies	6	18,503	419,763	0	2	0
N ₂ O decomposition	5	406,915	6,137,291	155,115	3	0
Transportation	3	211,355	1,065,277	82,317	0	0
Methane recovery & utilization	2	94,254	1,174,219	88,873	0	0
PFC reduction	1	433,551	1,301,367	33,624	0	0
Total	738	82,915*	289,234,041	119,249,445	218	48

Source: IGES CDM Project Database http://www.iges.or.jp/en/cdm/report_cdm.html

*average annual emission reduction of all the projects

(2) CDM Project Information

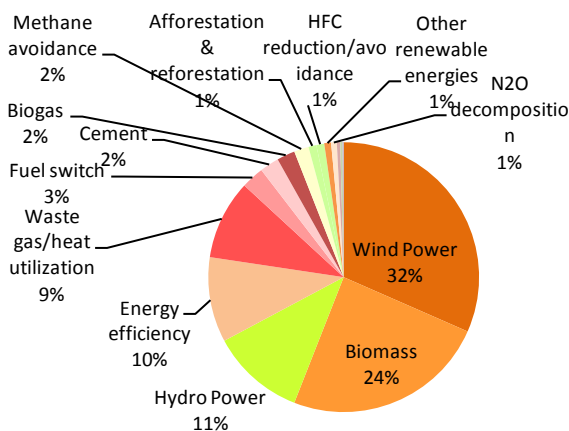
Since the establishment of the Indian DNA (Designated National Authority) in 2003, it has approved a significant number of projects. 738 projects have been registered by the CDM executive board, which account for about 21% of all the registered projects (as of 1 November 2011).

In the initial stage of CDM development in India, biomass utilisation projects, waste gas/heat utilisation projects, and renewable energy (wind, hydro) projects were mainly being implemented. Other than those projects, India has various types of registered CDM projects that include energy efficiency (cement, steel and etc.), fuel switch, HFC reduction, N₂O decomposition, afforestation and reforestation, and transportation. Recently a number of Wind Power projects were registered giving wind power a top share in the Indian projects.

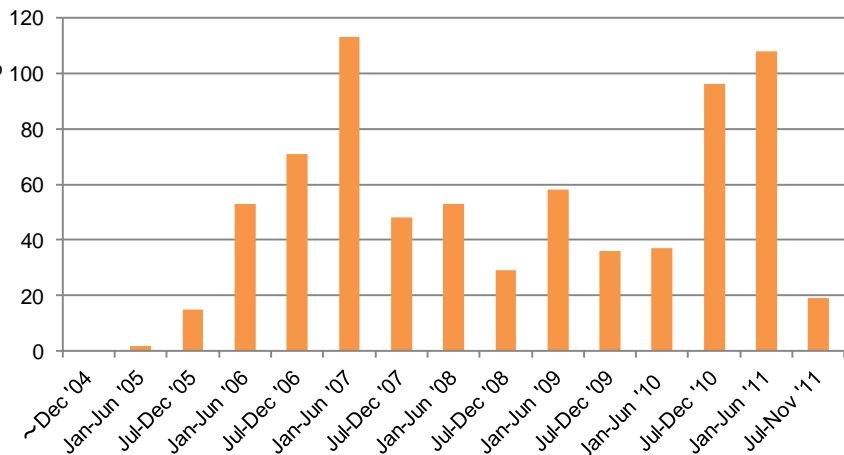
CDM promotion cells have been established at a state level. They conduct supportive activities such as information dissemination on CDM and coordination between local and national governments.

One of the features of CDM in India is its large share of unilateral CDM projects, CDM project developed by Indian stakeholders without the involvement (finance, technology) of Annex I countries. Indian project developers implement the project by bearing the transaction costs of CDM and taking on the risks of the projects. Therefore, the price of credits issued by unilateral CDM projects tends to be higher than bilateral or multilateral CDM projects.

1. The number of CDM projects registered at the CDM executive board (as of 1 November 2011): 738
2. The number of registered unilateral CDM projects (at the time of registration) (as of 1 November 2011): 603 (**82 %**)
3. Type of registered CDM Projects
(Total: 738 projects, as of 1 November 2011)



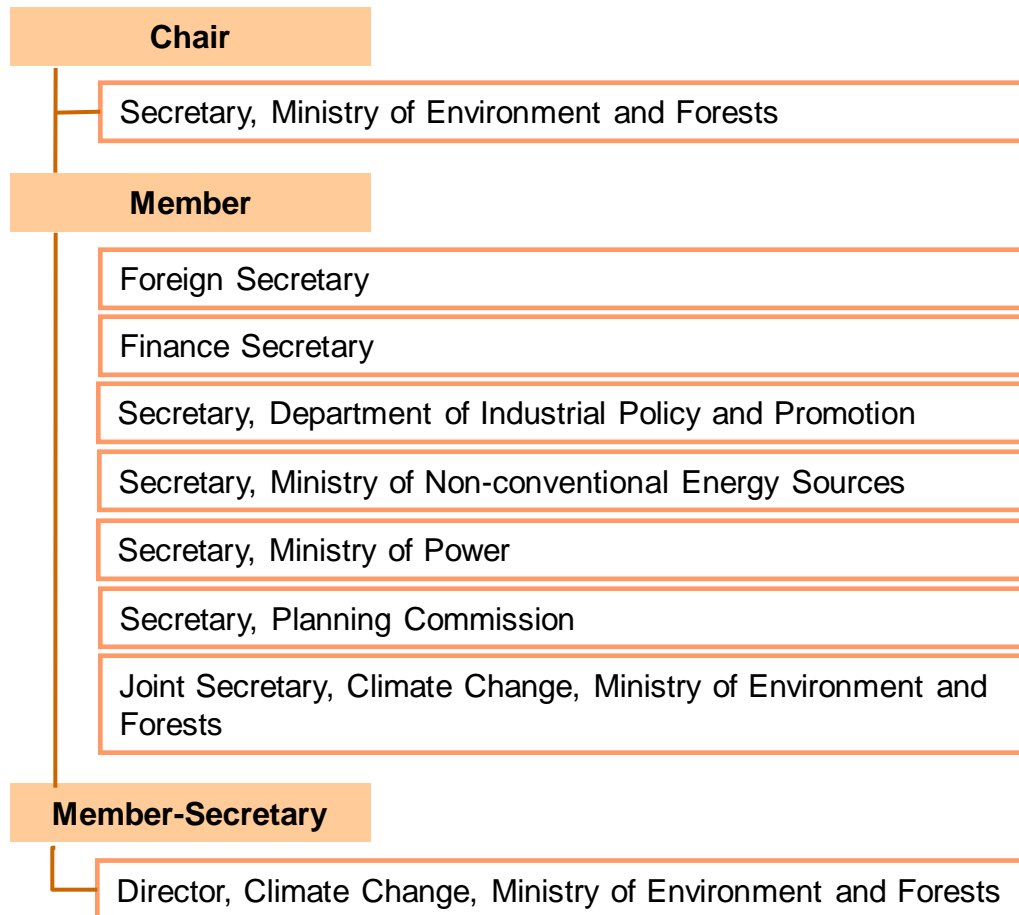
4. Number of registered CDM Projects per half a year



Designated National Authority (DNA) Information

(1) DNA Structure

The Indian Designated National Authority is the National Clean Development Mechanism Authority (NCDMA), which consists of 6 ministries and agencies and the Planning Commission. The main role of the NCDMA is to evaluate and approve proposed projects and disseminate information related to all aspects of CDM.

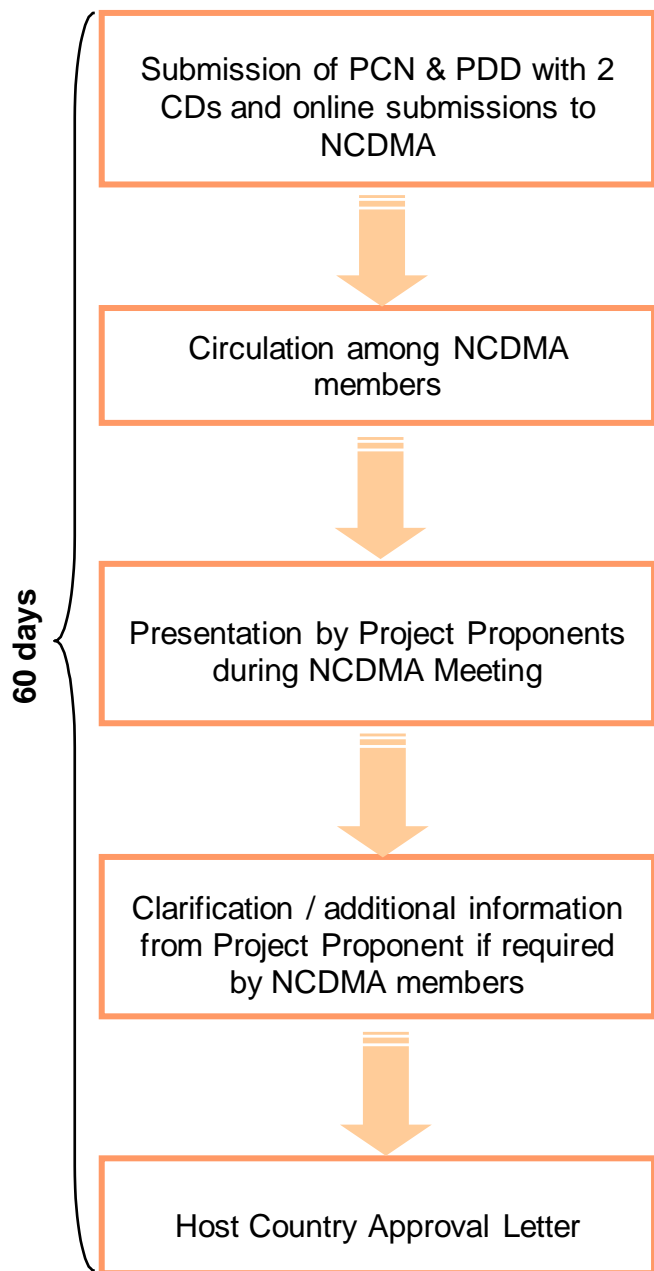


NCDMA has the powers:

- ❑ to invite officials and experts from Government, financial institutions, consultancy organisations, non-governmental organisations, civil society, legal profession, industry and commerce, as it may deem necessary for technical and professional inputs and may co-opt other members depending upon need.
- ❑ to interact with concerned authorities, institutions, individual stakeholders for matters relating to CDM.
- ❑ to take up any environmental issues pertaining to CDM or Sustainable Development projects as may be referred to it by the Central Government, and
- ❑ to recommend guidelines to the Central Government for consideration of projects and principles to be followed for according host country approval.

(2) DNA Approval Procedure

Approval procedures in India are straightforward and project developers could get host country approval letters within 60 days unless proposed projects have questions from NCDMA. An NCDMA meeting for project approval is held every month.



1. Project proponent is required to submit the following for application:
 - Cover letter signed by the project sponsors
 - Project Concept Note (PCN) (one submitted through online form and 20 hard copies)
 - Project Design Document (PDD) (one submitted through online form and 20 hard copies)
 - Two CDs containing PCN and PDD
2. Approval procedures in DNA are as follows
 - Application documents submitted by project proponent are circulated among NCDMA members.
 - If NCDMA members have any preliminary queries the same is asked from the project proponents.
 - The project proponent and his consultants are normally given 10-15 days notice to come to the Authority meeting and give a brief power point presentation regarding their CDM project proposals. NCDMA members mainly evaluate if the project meets the national sustainable development priorities and seek clarifications during the presentation.
 - In cases when it is requested by NCDMA members, the project proponent should prepare and submit some additional clarifications or information.
 - Once the members of the Authority are satisfied, the Host Country Approval is issued.

Source: NCDMA "CDM India" http://envfor.nic.in/cdm/host_approval_process.htm

Approval Procedure for Programme of Activities (PoAs)

The Coordinator/ Managing Entity (CME) of a PoA is required to submit the PoA-DD, CPA-DD, CPA-DD (Typical) & PCN to the NCDMA for Host Country Approval. For CPAs (joining a PoA) that do not require any approval from any state/central agency e.g. replacement of bulbs, energy efficiency measures etc., the CME of the PoA shall post facto inform the Member Secretary, NCDMA, the salient details of CPAs added on a bi-annual basis. However for CPAs that need any state/central clearance, such CPAs shall be submitted to the NCDMA for approval as in the case of project based CDM activities.

(3) DNA Approval Criteria

1. Sustainable Development Indicators*

Social well-being	The CDM project activity should lead to alleviation of poverty by generating additional employment, removal of social disparities and contribution to provision of basic amenities to people leading to improvement in quality of life of people.
Economic well-being	The CDM project activity should bring in additional investment consistent with the needs of the people.
Environmental well-being	This should include a discussion of impact of the project activity on resource sustainability and resource degradation, if any, due to proposed activity; bio-diversity friendliness; impact on human health; reduction of levels of pollution in general.
Technological well-being:	The CDM project activity should lead to transfer of environmentally safe and sound technologies that are comparable to best practices in order to assist in upgradation of the technological base. The transfer of technology can be within the country as well from other developing countries also.

2. Additionality

Emission Additionality	The project should lead to real, measurable and long term GHG mitigation. The additional GHG reductions are to be calculated with reference to a baseline.
Financial Additionality	The procurement of CERs should not be from Official Development Assistance (ODA)

3. Baselines

Baselines should be precise, transparent, comparable and workable
Baselines should avoid overestimation
The methodology for the determination of baselines should be homogeneous and reliable
Potential errors should be indicated
System boundaries of baselines should be established
Interval between updates of baselines should be clearly described
Role of externalities should be brought out (social, economic and environmental)
Baselines should include historic emission data-sets wherever available
Lifetime of project cycle should be clearly mentioned

*The Project Proponents should commit a certain percentage of the CERs revenue every year (subject to a minimum of 2%) for Sustainable Development including society/community development and accordingly make monitorable action plan for the same and include in the PCN & PDD.

CDM Relevant Information

Type* and Sizes of Projects/Activities Requiring EIA (Environmental Impacts Assessment) Report

(a) New start of, (b) expansion/ modernisation/ addition of capacity of, and (c) any change in product of the projects/activities in the table below shall require prior environmental clearance from:

- The Central Government in the Ministry of Environment and Forests for those under Category 'A' , and
 - The State Environment Impact Assessment Authority (SEIAA) for those under Category 'B' ,
- before any construction work, or preparation of land by the project management except for securing the land, is started on the project/activity:

Project or Activity	Category with Threshold Limit	
	A.	B.
Mining, extraction of natural resources and power generation (for a specified production capacity)		
Offshore and onshore oil and gas exploration, development & production	All projects	-
River valley projects	(i) $\geq 50\text{MW}$ hydroelectric power generation; (ii) $\geq 10,000$ ha. of culturable command area	(i) $< 50\text{MW} \geq 25\text{MW}$ hydroelectric power generation; (ii) $< 10,000$ ha. of culturable command area
Thermal Power Plants	$\geq 500\text{MW}$ (coal/lignite/naphta & gas based); $\geq 50\text{MW}$ (Pet coke diesel and all other fuels -)	$< 500\text{MW}$ (coal/lignite/naphta & gas based); $< 50\text{MW} \geq 5\text{MW}$ (Pet coke, diesel and all other fuels)
Materials Production		
Cement plants	≥ 1.0 million T/yr production capacity	< 1.0 million T/yr production capacity. All stand alone grinding units
Material Processing		
Petroleum refining industry	All projects	-
Coke oven plants	$\geq 250,000$ T/yr	$< 250,000$ & $\geq 25,000\text{T/yr}$
Manufacturing / Fabrication		
Chemical fertilizers	All projects	-
Petro-chemical complexes	All projects	-
Distilleries	(i) All Molasses based distilleries (ii) All cane juice/non-molasses based distilleries ≥ 30 KLD	All cane juice/non-molasses based distilleries < 30 KLD
Pulp & paper industry	Pulp manufacturing and pulp & paper manufacturing industry	Paper manufacturing industry without pulp manufacturing
Sugar Industry	-	$\geq 5,000$ tcd cane crushing capacity
Physical Infrastructure including Environmental Services		
Common Effluent Treatment Plants (CETPs)	-	All projects
Common Municipal Solid Waste Management Facility (CMSWMF)	-	All projects

Source: Environmental Impact Assessment Notification by Ministry of Environment and Forests <http://envfor.nic.in/legis/eia/so1533.pdf>

*Excerpt for projects/activity types relevant to CDM.

Kyoto Protocol Ratification Status

Date of signature of Climate Change Convention	10 June 1992
Date of ratification of Climate Change Convention	1 November 1993
Date of signature of Kyoto Protocol	—
Date of ratification of Kyoto Protocol	26 August 2002
Establishment of DNA	December 2003

Source: UNFCCC <http://maindb.unfccc.int/public/country.pl?country=IN>,
IGES CDM Country Guide for India <http://www.iges.or.jp/en/news/topic/0512cdm.html>

India Regional Grid Emission Factors (Unit: t-CO₂/MWh)

Regional Grid *	2005-2006		2006-2007		2007-2008***		2008-2009		2009-2010	
	OM**	BM**	OM	BM	OM	BM	OM	BM	OM	BM
Northern	0.99	0.60	1.00	0.63	1.00	0.60	1.01	0.68	0.98	0.81
Western	0.99	0.63	0.99	0.59						
Eastern	1.13	0.97	1.09	0.93						
North-Eastern	0.70	0.15	0.70	0.23						
Southern	1.01	0.71	1.00	0.71	0.99	0.71	0.97	0.82	0.94	0.76

Source: The Central Electricity Authority, Ministry of Power <http://www.cea.nic.in/>

* Covered region of each regional grid is as follows:

Northern: Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand

Western: Chhattisgarh, Gujarat, Daman & Diu, Dadar & Nagar Haveli, Madhya Pradesh, Maharashtra, Goa

Eastern: Bihar, Jharkhand, Orissa, West Bengal, Sikkim, Andaman-Nicobar

North-Eastern: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura

Southern: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicherry, Lakshadweep

** OM: Operating Margin, BM: Build Margin. Figures include inter-regional and cross-border electricity transfers.

*** Emission factors of Northern, Eastern, Western, and North-Eastern regional grids have been integrated since the publication of the 2007-2008 data.

References

- National CDM Authority (NCDMA)
<http://www.cdmindia.in/>
- “CDM India” (website of NCDMA)
<http://envfor.nic.in/cdm/>
- Market Mechanism Group, Institute for Global Environmental Strategies (IGES)
<http://www.iges.or.jp/en/cdm/index.html>