

Fast-tracking CDM ⁱⁿ Indian States



www.teriin.org/cdm

Clean Development Mechanism

Environmental solutions, business opportunities



In 2001, the Kyoto Protocol established the CDM (Clean Development Mechanism), which enables private investors (developed countries and businesses in transition) of the UNFCCC (United Nations Framework Convention on Climate Change) meet their GHG (greenhouse gas reduction) targets at lower cost through projects in developing countries.

How can CDM benefit your project?

As a result of the Kyoto Protocol, carbon has become a tradable commodity with an associated price. The issue of CO₂ (carbon dioxide) reduced through a CDM project, when certified by a designated operational entity, is known as a CDM (Certified Emission Reduction), which can be traded. Revenue from CDMs can then be used for your project's annual cash inflow, equity, or debt.

What types of projects can benefit from CDM finance?

All CDM projects must result in a net GHG reduction, so in the case of energy efficiency improvement, renewable energy generation, or carbon sequestration through afforestation and reforestation. Typical CDM projects fall into the following categories:

• Renewable energy



The screenshot shows the IGES website interface. At the top, there is a navigation menu with 'Home' and 'Contact Us'. The main content area is titled 'CDM Programme' and includes a sub-section 'What is the Clean Development Mechanism (CDM)?'. The text under this section explains that CDM is one of the Kyoto Mechanisms, established under the UNFCCC, which enables private investors (developed countries and businesses in transition) to meet their GHG reduction targets at lower cost through projects in developing countries. It also mentions that CDM projects must result in a net GHG reduction.

www.iges.or.jp/en/cdm/

Fast-tracking CDM in Indian States



The Energy and Resources Institute



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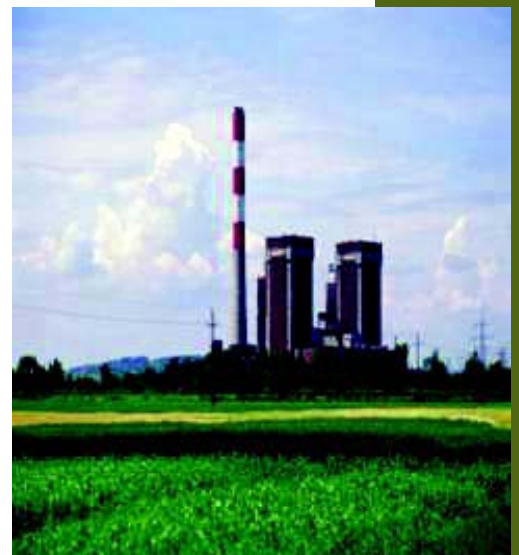
Information book developed by TERI (The Energy and Resources Institute) under the Integrated Capacity Strengthening for the CDM Programme of IGES (Institute for Global Environmental Strategies), Japan

Introduction

After seven years of rigorous negotiations, 16 February 2005 marked the coming into force of the Kyoto Protocol to the UNFCCC (United Nations Framework Convention on Climate Change). The Kyoto Protocol provides the impetus for trading in carbon as a commodity. This is driven by the fact that the Protocol delineates the commitments of developed countries to reduce their GHG (greenhouse gas) emissions. Apart from taking measures domestically, flexibility in achieving these reductions is granted through three instruments—ET (emissions trading), JI (joint implementation), and CDM (clean development mechanism). While ET and JI involve trading and project partnerships, respectively, among Annex I countries (developed countries and economies in transition), CDM envisages collaboration of Annex I countries with developing countries on GHG reduction projects.

With the Kyoto Protocol coming into force, there is renewed vigour for mechanisms such as the CDM, which will not only help Annex I Parties meet their binding emissions reduction commitments, but also provide for implementing projects that meet the sustainable development criteria of non-Annex I countries. It thus becomes important for developing countries, particularly India, to explore various opportunities for emissions reduction that align with the national development priorities. Government, business, and all other stakeholders need to gear up to maximize the benefits from the resulting spurt in CDM activities. In particular, a host of actions are required at the state level to provide an enabling environment for CDM in the country.

This document is aimed at state-level actors in the country who can play a pivotal role in facilitating CDM implementation. It provides an overview of the rules and regulations of CDM, describes the current status of national and international developments, and discusses ways in which state-level agencies can help enhance India's preparedness for CDM project identification, development, and implementation through appropriate policies and effective promotion.



What is CDM?

Kyoto Protocol and CDM

The world community first came together to address the threat of climate change through the UNFCCC (Box 1). This treaty was opened for signatures in June 1992 at the Rio Earth Summit. The UNFCCC came into force on 21 March 1994, and had been ratified by 198 countries as of May 2004. While the UNFCCC did not lay down legally binding emissions reduction targets for countries, it recognized the need for an agreement with emissions reduction commitments with a specific timetable.

Box 1 Scientific evidence of climate change

Climate change was first recognized as a problem of global magnitude and of immediate concern in the 1980s with the occurrence of unusually warm summers in the United States. It became apparent that the atmospheric 'greenhouse' phenomenon studied by the Swedish scientist Svante Arrhenius a hundred years ago was actually changing climatic patterns across our planet. Severe storms, floods, and droughts in the last decade have served as a reminder that urgent action is required to control the increase in the concentrations of GHGs (greenhouse gases).

In order to better understand the processes by which we are altering the earth's climate system, the IPCC (Intergovernmental Panel on Climate Change) was established jointly by UNEP (United Nations Environment Programme) and WMO (World Meteorological Organization) in 1988. The scientific output of this body has helped to define more clearly the range of possible impacts, to determine which locations and systems may be most vulnerable, and to identify mitigation and adaptation measures. The IPCC, in its Third Assessment Report, has confirmed that the evidence of human interference in the climate is stronger than ever. Atmospheric concentrations of carbon dioxide, methane, and nitrous oxides have grown by about 31%, 151%, and 17%, respectively, over the period 1750–2000. Specifically, carbon dioxide concentrations have increased from about 280 PPMV (parts per million by volume) in pre-industrial times to 360 PPMV in 2000. At the same time, the mean global surface temperature has increased by 0.6 °C (+0.2 °C) over the twentieth century. Scenario-based projections reported in Third Assessment Report indicate a higher rate of warming (1.4 °C–5.8 °C) over the period 1990–2100, while the sea level is projected to rise by 9–88 cm.

Changes in the surface air temperature and the sea level could change precipitation quantity and pattern, vegetation cover, and soil moisture. The impact on the natural and managed systems will depend critically on the rate of climate change. The predicted changes in global temperature are greater than any seen in the last 10 000 years. Further, regional temperature changes could be substantially different from the global average and the frequency, intensity, and duration of storms and other extreme weather events could increase. The impacts of climate change could include the dieback of tropical forests and grasslands, tremendous reductions in the availability of water from rivers, decline in cereal yields, and increased incidence of heat stress, malaria, and other vector-borne and water-borne diseases. Rise in the sea level could have a number of physical impacts on coastal areas, including loss of land due to inundation and erosion, increased flooding, and salt-water intrusion. These could adversely affect coastal agriculture, tourism, freshwater resources, fisheries and aquaculture, and human settlements and health.

Source IPCC (2001)

This was achieved in the form of the Kyoto Protocol in 1997. The Protocol covers the following six GHGs.

- CO₂ (carbon dioxide)
- CH₄ (methane)
- N₂O (nitrous oxide)
- HFCs (hydrofluorocarbons)
- PFCs (perfluorocarbons)
- SF₆ (sulphur hexafluoride)

Annex I Parties agreed to reduce their overall emissions of these six GHGs by an average of 5.2% below the 1990 levels by the first commitment period 2008–12. Among Annex I countries, the Protocol allowed for differentiated targets depending on the country's circumstances; for instance, Japan and the United States were required to reduce emissions by 6% and 7%, respectively, while Australia was allowed an increase of 8% over the 1990 levels.

The condition for the coming into force of the Kyoto Protocol was ratification by 55 countries accounting for 55% of Annex I 1990 carbon dioxide emissions. Since the United States, responsible for about 35% of Annex I 1990 carbon dioxide emissions, refused to ratify the Kyoto Protocol in early 2001, the fulfilment of this condition became contingent on ratification by Russia (accounting for 17% of emissions). With this achieved, the Protocol has been ratified by 141 countries, as of 2 February 2005, including 37 Annex I countries accounting for 61.6% of 1990 carbon dioxide emissions (Figure 1).

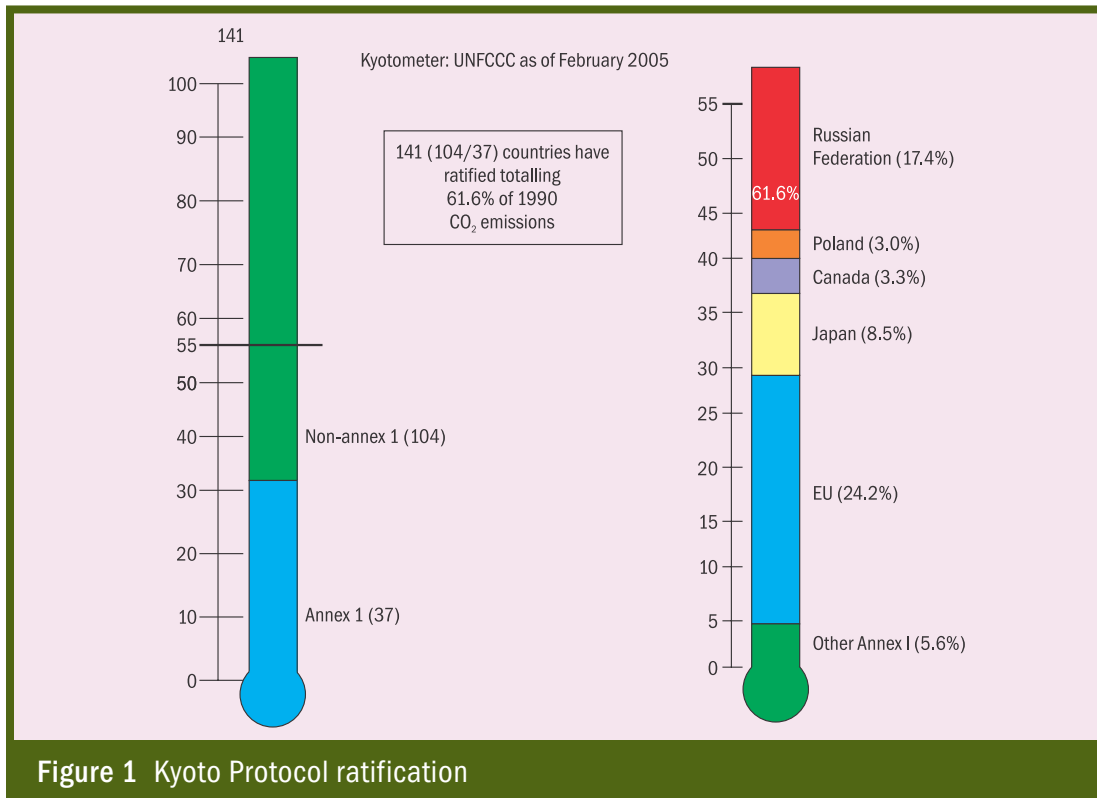


Figure 1 Kyoto Protocol ratification



To enable countries meet their reduction commitments in a flexible and cost-effective manner, the Protocol established three market-based mechanisms (ET, JI, and CDM). In particular, CDM allows Annex I countries to meet part of their Kyoto Protocol targets by using credits from projects that reduce GHG emissions in developing countries. The underlying rationale is that cutting GHG emissions in any part of the world can contribute towards reducing global atmospheric concentrations of GHGs. While the Annex I Parties benefit by obtaining reductions at costs lower than those in their own countries, the gains to the host Parties are in the form of finance, technology, and local sustainable development benefits.

Value of carbon

As a result of the Kyoto Protocol, carbon has become a tradable commodity with an associated value. One tonne of carbon dioxide reduced through a CDM project, when certified by a designated entity, is known as a CER (certified emission reduction), which can be traded. Revenue from CERs can form part of a project's annual cash inflow, equity, or debt.

There are varying estimates of the potential opportunities under CDM. Early studies of the demand for CDM had predicted impressive amounts of more than 4000 MTCO_{2eq} per year. However, the refusal of the US and Australia to ratify the Kyoto Protocol citing adverse economic impacts has severely shrunk the carbon market. Also, instead of investing in CDM, Annex I countries can more cheaply buy the excess quota of countries like Russia and Ukraine.¹

Nevertheless, in recent years a small market for carbon has started to emerge. Even in the anticipation of the coming into force of the Kyoto Protocol, some European countries, multilateral

Box 2 Emissions trading

Despite the delay in entry of the Kyoto Protocol into force, many countries have started implementing regulations for reducing and trading GHG (greenhouse gas) emissions. Foremost among these is the European Union's Emissions Trading System (EU ETS), which in January 2005 commenced operation as the largest multi-country, multi-sector GHG emissions trading scheme worldwide. In addition to this regional trading system, some countries like the United Kingdom and Denmark have launched domestic trading schemes.

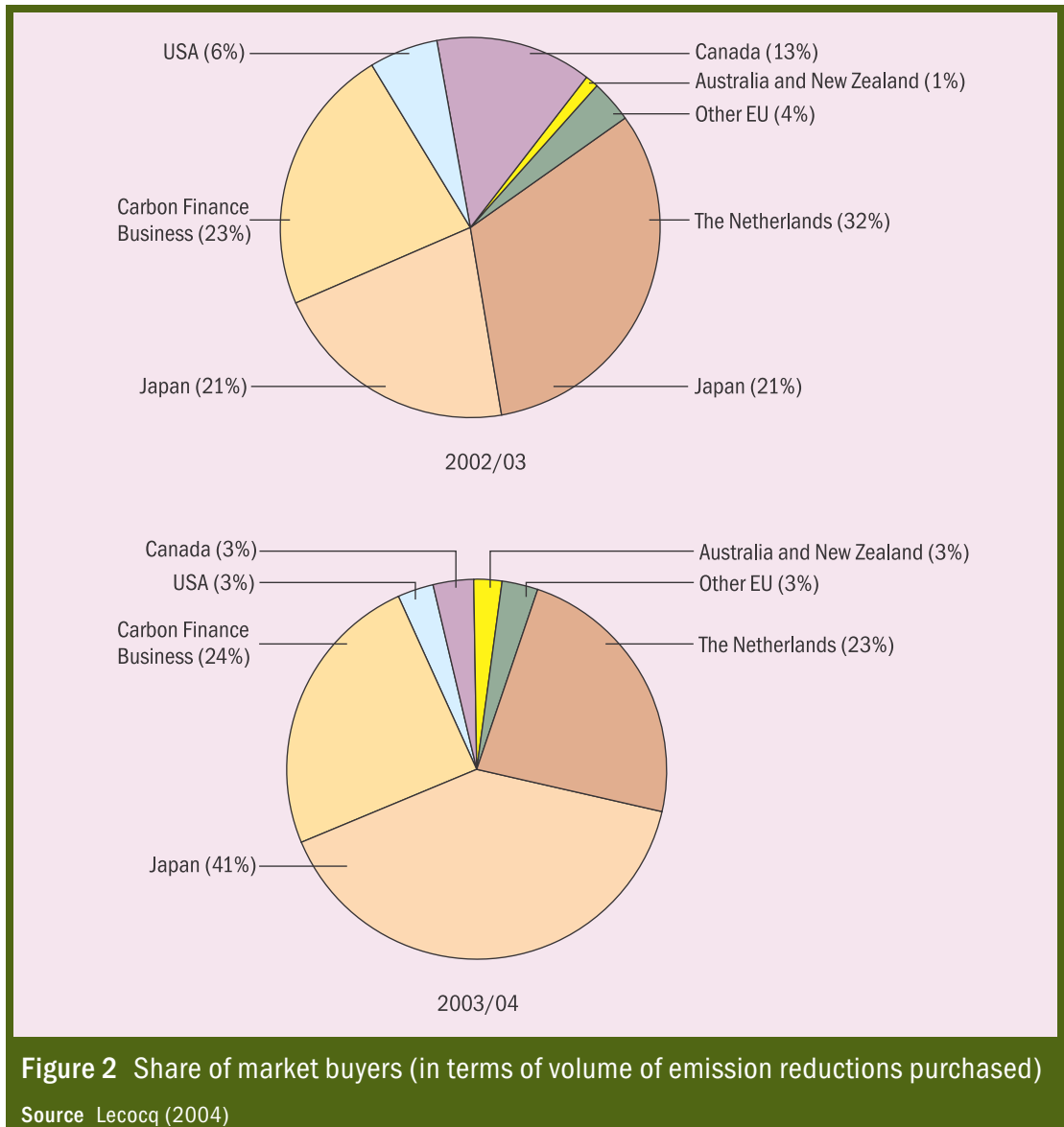
Even in countries like the US and Australia, which have decided not to ratify the Kyoto Protocol, some policy initiatives are emerging at the state level. Massachusetts and New Hampshire have planned state cap-and-trade of carbon dioxide emissions starting in 2006, while Oregon already possesses a GHG emissions reduction procurement initiative. The New South Wales trading system covers electricity retailers and aims to reduce emissions by 5% in 2012.

The corporate sector too is not far behind. Companies from seven US states, Canada, Brazil, and Mexico participated in CCX (Chicago Climate Exchange), and have committed to reduce their GHG emissions by 4% below their average 1998–2001 baseline by 2006. Companies like BP and Shell have also experimented with internal trading systems.

In January 2005, the prices in the EU ETS were about €7.20 / TCO_{2eq} for vintage 2005 allowances (Carbon Finance 2005).

Source Babu and Bhandari (2004)

¹ Under the Kyoto Protocol, countries like Russia and Ukraine were set targets according to their 1990 emission levels. Due to the ongoing economic slowdown, their emission levels were already 30% below their 1990 levels, giving rise to what has been termed as 'hot air'.



organizations, and corporates took the lead by launching CDM tenders, carbon funds, and emissions trading schemes (Box 2). Figure 2 shows the main buyers in the market.

While the pioneers were the Prototype Carbon Fund of the World Bank and the CERUPT (Certified Emission Reduction Unit Procurement Tender) programme of the Netherlands, the year 2004 saw the emergence of Japan as the largest buyer, and the launch of the Japan Carbon Fund (jointly managed by the Japan Bank for International Cooperation and the Development Bank of Japan). In this evolving market, brokers and consultants are also playing matchmaking roles between buyers and sellers. Some of these initiatives are listed in Annexe 1. As a result of these activities, in 2004, 127.2 MTCO_{2eq} were contracted, of which the share of CDM was 82 MTCO_{2eq} at an average weighted price of 4.2 Euros/TCO_{2eq} (Point Carbon 2005).

The prevailing carbon prices are too low to excite large-scale CDM project development activity. However, the EU ETS (European Union Emissions Trading System), which became operational in January 2005, creates a significant new market for CDM as a result of its Linking Directive. Furthermore, prices can be expected to rise as the deadline for meeting the Kyoto Protocol targets draws nearer, and countries/companies save carbon credits to meet stricter targets in the future.

CDM project cycle

As defined in Article 12 of the Kyoto Protocol, CDM is defined as a mechanism to address the following objectives.

- Assist non-Annex I countries in achieving sustainable development
- Help Annex I countries comply with their emissions reduction commitments
- Contribute to the ultimate goal of the UNFCCC, i.e. stabilization of GHG concentrations in the atmosphere

Projects in developing countries are eligible under CDM if they help meet the above objectives by reducing GHG emissions relative to the 'baseline'. In other words, to qualify for credits, GHG emissions from a project activity must be reduced below those that would have occurred in the absence of the project. The project itself should not be part of the baseline scenario but should be 'additional' to what would have happened anyway. Without this 'additionality' requirement, there is no guarantee that CDM projects will create incremental environmental benefits, contribute toward sustainable development in the host country, or play a role in the ultimate objective of stabilizing atmospheric GHG concentrations. Some examples of CDM projects are listed below.

- Carbon dioxide displacement through utilization of renewable energy for power generation and thermal energy
- Carbon dioxide reduction through energy efficiency improvement
- Carbon dioxide sequestration through afforestation and reforestation
- Landfill gas capture and energy generation
- Hydrofluorocarbon decomposition

In December 2001, negotiators worked out the detailed modalities and procedures of the international climate change policy regime, including the rules and regulations of the CDM, which were formulated as the Marrakesh Accords (Box 3).



The CDM Executive Board was established as part of the UNFCCC framework to oversee the CDM process. CDM projects have to undergo the series of steps illustrated in Figure 3. The glossary of CDM terms is given in Annexe 2.

Box 3 Clean development mechanism participation requirements as specified in Marrakesh Accords

- 1 Participation in a CDM project activity is voluntary.
- 2 Parties participating in the CDM shall designate a national authority for the CDM.
- 3 A Party not included in Annex I may participate in a CDM project activity if it is a Party to the Kyoto Protocol.
- 4 A Party included in Annex I* with a commitment inscribed in Annex B* is eligible to use CERs (certified emissions reductions), issued in accordance with the relevant provisions, to contribute to compliance with part of its commitment under Article 3, paragraph 1, if it is in compliance with the following eligibility requirements.
 - (a) It is a Party to the Kyoto Protocol;
 - (b) Its assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated and recorded in accordance with decision -/CMP.1 (Modalities for the accounting of assigned amounts);
 - (c) It has in place a national system for the estimation of anthropogenic emissions by sources and anthropogenic removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, in accordance with Article 5, paragraph 1, and the requirements in the guidelines decided thereunder;
 - (d) It has in place a national registry in accordance with Article 7, paragraph 4, and the requirements in the guidelines decided thereunder;
 - (e) It has submitted annually the most recent required inventory, in accordance with Article 5, paragraph 2, and Article 7, paragraph 1, and the requirements in the guidelines decided thereunder, including the national inventory report and the common reporting format. For the first commitment period, the quality assessment needed for the purpose of determining eligibility to use the mechanisms shall be limited to the parts of the inventory pertaining to emissions of greenhouse gases from sources/sector categories from Annex A* to the Kyoto Protocol and the submission of the annual inventory on sinks;
 - (f) It submits the supplementary information on assigned amount in accordance with Article 7, paragraph 1, and the requirements in the guidelines decided thereunder and makes any additions to, and subtractions from, assigned amount pursuant to Article 3, paragraphs 7 and 8, including for the activities under Article 3, paragraphs 3 and 4, in accordance with Article 7, paragraph 4, and the requirements in the guidelines decided thereunder.

* Refer Annexe 3

Source UNFCCC (2001)

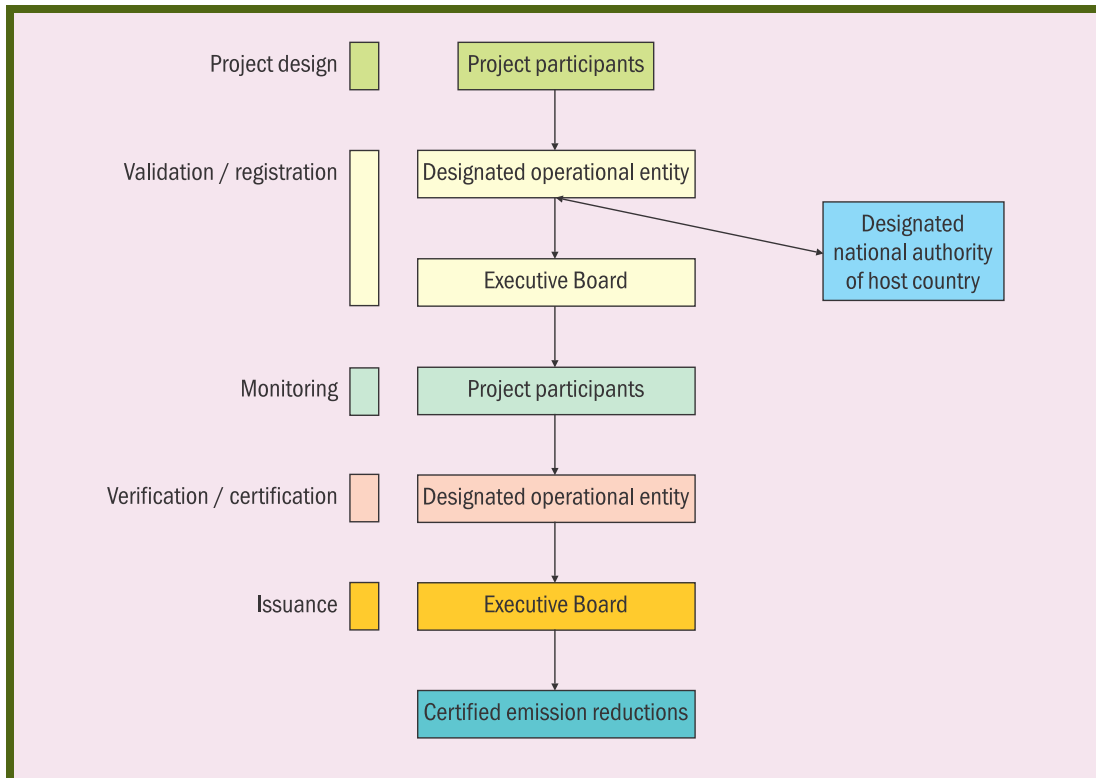


Figure 3 The CDM project cycle

Source UNFCCC (2005)

Step 1: Project formulation

The first step in the CDM project cycle is identifying an eligible project. As per the Marrakesh Accords, projects that reduce any of the six GHGs covered in the Kyoto Protocol are eligible for CDM if ‘anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity’. Carbon sequestration projects in the forestry sector are limited to afforestation and

reforestation. Nuclear energy projects have been deemed ineligible under CDM.

Further, three types of small-scale project categories have been defined, which are entitled to simpler and faster procedures (Box 4).

Box 4 Small-scale clean development mechanism project categories

- Renewable energy projects up to 15 MW (megawatt)
- Energy efficiency projects reducing energy consumption by up to 15 GWh (gigawatt hour) annually
- Other project activities that reduce emissions and directly emit less than 15 KTCO_{2eq} (kilo tonnes)
- Afforestation and reforestation project activities sequestering less than 8 KTCO₂ annually



The project has to be formulated as a PDD (project design document), which has the following key elements.

- General description of project activity
- Baseline methodology (including boundary and leakage aspects)
- Duration of project activity / crediting period
- Monitoring methodology and plan
- Calculation of GHG emissions by sources
- Environmental impacts
- Stakeholder comments.

Probably the most important element is the establishment of the baseline and the calculation of emissions reductions. The Marrakesh Accords allow for the following three baseline approaches.

- 1 'Existing actual or historical emissions data.'
- 2 Emissions from a 'technology that represents an economically attractive course of action, taking into account barriers to investment.'
- 3 'The average emissions of similar project activities undertaken in the previous five years, in similar... circumstances, and whose performance is in the top 20% of their category.'

Details of PDD requirements are available at <http://cdm.unfccc.int>.

Step 2: Approval by designated national authority

Each participating country is required to set up a DNA (designated national authority) for CDM. Each project must get approval from the relevant DNA that it assists the host country in achieving sustainable development.

Step 3: Validation

Validation of the PDD is carried out by third-party agencies known as DOEs (designated operational entities) accredited by the Executive Board. As part of validation, the DOE checks the following points.

- The host and Annex I countries involved in the CDM project have ratified the Kyoto Protocol.
- Stakeholder comments have been accounted for.
- Environmental impact analysis/assessment has been done.
- GHG emissions reduction is additional.
- Approved baseline and monitoring methodologies have been used; or a new methodology has to be submitted to the Executive Board.



Step 4: Registration

After validation, the DOE forwards its report to the Executive Board, which normally registers the project as a CDM project within eight weeks. An administrative fee is charged, which differs according to the size of the project (Table 1).

Table 1 Administration fee for CDM projects	
Volume of CERs generated annually (TCO ₂)	Fee (US dollars)
<= 15 000	5 000
>15 000 and <=50 000	10 000
>50 000 and <=100 000	15 000
>100 000 and <=200 000	20 000
>200 000	30 000

CDM - clean development mechanism; CERs - certified emission reductions

Step 5: Monitoring

Monitoring is the systematic surveillance of project performance by the project participants. For this purpose, a transparent and reliable monitoring plan must be specified to collect and archive all data needed to estimate GHG emissions occurring within the project boundary, determine the baseline GHG emissions, and determine leakage.

Step 6: Verification

Verification is the periodic independent review and ex post determination by the DOE of the monitored emissions reductions resulting from the CDM project. The DOE which has performed the validation cannot normally perform verification for the same project.

Step 7: Certification

Certification is a written assurance by the DOE that the project has achieved emissions reductions as verified.

Step 8: Issuance of CERs

Project developers can choose between the following two options for the period of receiving credits.

- 1 Ten years without any revision to the baseline
- 2 Twenty one years with a reassessment of the baseline after every seven years.

Within 15 days of the DOE making its certification report public, the Executive Board issues the necessary CERs. The only exception is if there is an objection by a

project participant or by three Executive Board members. A registry for the issuance and the tracking of CERs is under development by the Executive Board. Further, two per cent of the share of the proceeds from CDM projects is retained for the Adaptation Fund created under the Kyoto Protocol.

Table 2 summarizes the roles and responsibilities of the various agencies and stakeholders involved in the CDM project cycle.

Activity	Definition	Responsible entity
Project development	Developing a CDM project	Project promoter
Project design document	Developing a CDM PDD	Project promoter
Validation	Independent evaluation of PDD, including calculations of baseline emissions and estimated project emissions	DOE
Host country approval	Approval from host government is mandatory	Project promoter and host government
Registration	Formal acceptance of a validated PDD	Executive Board
Project implementation and monitoring	Commissioning and operation of the CDM project and measuring and recording project performance related indicators/parameters	Project promoter
Verification	Periodical independent review of monitored GHG reductions	DOE
Certification	Written assurance on the actual GHG reductions verified	DOE
Issuance of CERs	Issuance of CERs based on DOE's certification	Executive Board

CDM - clean development mechanism; PDD - project design document; DOE - designed operational entities; GHG - greenhouse gas; CERs - certified emission reductions.

Special consideration for small-scale projects

Recognizing the high sustainable development impacts of small projects, efforts have been made to encourage such projects by reducing the costs of going through the CDM project cycle. These measures include the following.

- Simplified baseline and monitoring methodologies approved by the Executive Board, which can be applied directly, thereby saving project development costs.
- PDD has simpler requirements related to sustainable development.
- The same DOE can undertake validation, verification, and certification for a small-scale project.



- Bundling of small projects is feasible, provided the bundle does not violate the small-scale project eligibility limit (e.g. 15 MW [megawatt] for renewable energy projects).
- A lower registration fee is charged.
- CERs are issued in four weeks, instead of the eight weeks taken for other projects.

Updated details are available at <http://cdm.unfccc.int/pac/howto/smallscalePA/index.html>.

Recent developments

Rapid developments have been taking place and the institutional superstructure for CDM is being set up both internationally and nationally.

The CDM Executive Board has approved simplified modalities for small-scale CDM projects. For others, a Meth (methodology) Panel is reviewing and approving new baseline and monitoring methodologies. The Meth Panel has developed and proposed consolidated methodologies and comprehensive additionality tools to streamline the project approval process. As of 1 February 2005, 19 baseline and monitoring methodologies have been approved in the following sectors.

- Energy generation and demand
- Manufacturing industries
- Fugitive emissions from fuels
- Fugitive emissions from halocarbons
- Waste handling and disposal
- Agriculture

Consolidated methodologies are available for grid-connected renewables and landfill gas projects. Draft guidelines for afforestation and reforestation projects exist and two methodologies have been proposed so far. Updated information on methodologies is available at <http://cdm.unfccc.int/methodologies>.

The first two CDM projects—one of which is a small-scale project—have been registered by the Executive Board by 1 February 2005. These are

- NovaGerar-landfill gas to energy project, Brazil
- Rio Blanco small hydroelectric project, Honduras

But 69 more projects are reported to be awaiting registration (CaPP 2005).



The following agencies have been accredited by the Executive Board as DOEs for providing third-party services related to validation, verification, and certification of CDM projects.

- Det Norske Veritas Certification Ltd (DNV)
- Japan Quality Assurance Organization (JQA)
- TÜV Industrie Service GmbH TÜV SÜD GRUPPE (TÜV)
- Societe Generale de Surveillance UK Ltd (SGS)

Twenty two more agencies have applied to the CDM Executive Board for accreditation (UNFCCC 2005a).

Why should India be interested?

Not only does India have a very high potential of CDM supply, but there is also considerable vibrancy in CDM project development. It is estimated that around 150 CDM project documents have been designed in India, and scores of project ideas are being discussed as potential CDM projects in various sectors. CDM project development in India is facilitated largely by consultants and funded by the private sector itself. Some projects have also been developed using various donor CDM capacity-building programmes in India (Canada, Germany, Japan, United Kingdom, The World Bank, UNDP [United Nations Development Programme] India, European Commission, etc.) or through CDM tenders. A couple of financial institutions in India are currently operating carbon funds. While IDFC (Infrastructure Development Finance Corporation) is operating on behalf of the Prototype Carbon Fund, RaboBank India is operating for the Government of Netherlands. These financial institutions have recently included carbon revenues in their financial appraisals. Three DOEs (DNV, TÜV SÜD, and SGS) are represented in India.

Potential CDM opportunities

The sectors holding the greatest potential for emissions reduction and hence potential CDM candidates are obviously the highest emitting sectors, namely power, energy-intensive industries (including unorganized small and medium enterprises), landfills, transport, livestock, agriculture, and use of synthetic fertilizer. The total GHG mitigation potential in key sectors in India till 2012 is estimated to be 417 MTCO_{2eq} (TERI 2005) and the sectoral break-up is shown in Figure 4.²



²This is only the technological potential based on various interventions that are at different stages of planning.



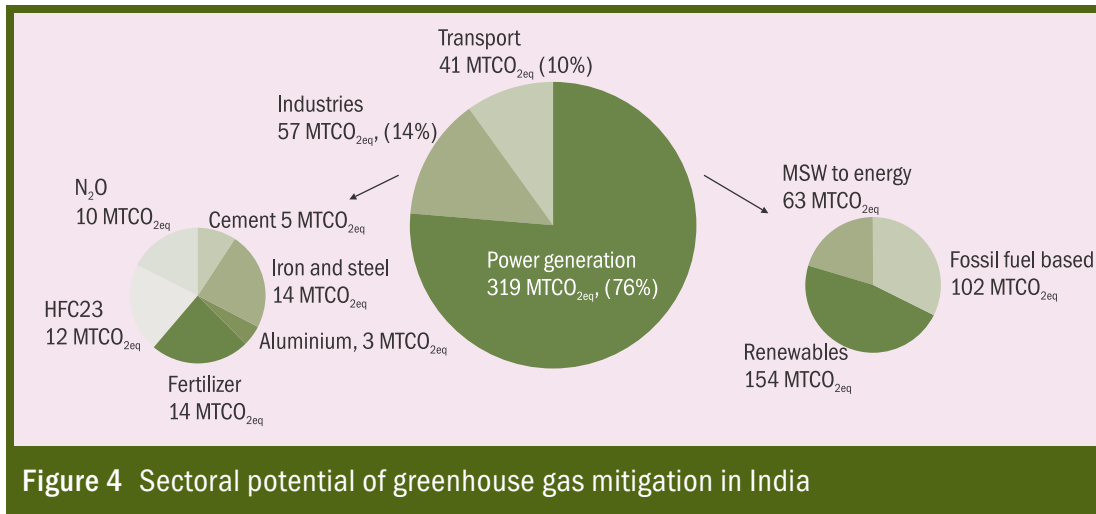


Figure 4 Sectoral potential of greenhouse gas mitigation in India

Among the new methodologies submitted to the CDM Executive Board for approval, India has the highest number of methodologies (cement, steel, biomass power, bagasse cogeneration, municipal solid waste to energy, municipal water pumping system, natural gas power, etc.). Among the projects selected under various Annex I government tenders and carbon funds, the largest number of projects is from India. India became the number one country from the CDM Investors' perspective as per the survey results of Point Carbon during April 2004, and continued to hold the position as of December 2004 (countries are rated and ranked on the basis of institutional conditions, investment climate, and project status and potential).

India's leading role in the global carbon market is largely attributed to enhanced awareness among stakeholders, increased private sector engagement, streamlined national approval procedures and the presence of several international donor-supported CDM activities. Besides, a strong human resource base and service sector make the country an ideal host for CDM projects. India's share of the CDM market, as estimated by the National Strategy Study for CDM implementation in India (Box 5) could be at least 10%, earning revenues of up to 100 million dollars per year (TERI 2005).

In terms of technologies, the Indian CDM project portfolio is currently dominated by small-scale projects, mainly from the renewable energy sector. This is in contrast to the international scenario where HFC (hydrofluorocarbon) decomposition and landfill gas to energy projects accounted for 49% of the total emissions reduction volume contracted in 2003/04 (Lecocq 2004). While projects related to renewable energy, energy efficiency (supply and demand side), and fuel switching, particularly in rural areas and small industries, are of particular interest to India, such projects may lose out to comparatively cheap and high-volume non-carbon dioxide projects.

To promote projects that match India's sustainable development priorities, relevant ministries can play a key role in exploring opportunities and making available some of the background information critical for CDM project development. For instance, the Ministry of Power commissioned a study of CDM opportunities in advanced power generation technologies, renovation and modernization, demand-side

Box 5 National Strategy Study on clean development mechanism implementation in India



The NSS (National Strategy Study) for CDM implementation in India was launched by the World Bank; the State Secretariat for Economic Affairs, Government of Switzerland; and the MoEF (Ministry of Environment and Forests), Government of India in October 2003. It was executed by TERI (The Energy and Resources Institute), New Delhi, in partnership with IDFC (Infrastructure Development Finance Corporation), a national legal expert, and appointed Swiss experts Infrast AG, Ernst Basler + Partners Ltd, and LASEN-EPFL. The summary of *CDM Implementation in India: The National Strategy Study* was released on 31 January 2005 by Dr Prodipto Ghosh, Secretary, MoEF, Government of India.

The study examines the international demand for certified emissions reductions, the supply potential from India, and the application of CDM methodologies in the Indian context by developing five project design documents (small hydro, small foundries, municipal street lighting, waste pelletization, and rural electrification). The study emphasizes the need to develop high-quality CDM projects within the next two years for India to capitalize on its CDM potential during 2008–12. It also presents the elements of a facilitative framework for CDM implementation in India, including the following.

- Adopting a proactive and sustainable CDM policy
- Strengthening the Indian NCA
- Establishing facilities for risk management and project financing.

Source TERI (2005)

management, and transmission and distribution loss reduction. The Ministry of Non-conventional Energy Sources also engaged the services of TERI for establishing baselines for renewable energy projects (grid-connected, off-grid, and non-power applications) (TERI 2004).

Host country approval procedure

India acceded to the Kyoto Protocol on 26 August 2002. Under a notification released in May 2004, the NCA (National CDM Authority) was set up under Section 3 of the Environment Protection Act 1986 (29 of 1986). This is an inter-ministerial committee comprising nine members from six ministries and the Planning Commission, and hosted by the MoEF (Ministry of Environment and Forests). The major functions of NCA are to accord HCA (host country approval) for CDM projects and to facilitate information dissemination.

The NCA has stated that it would not like to rule out or prioritize any eligible sector under CDM at this nascent stage of the market. It endeavours to give single-window clearance to CDM projects within 60 days. Interim approval criteria applied

by the NCA in examining CDM projects for HCA are listed at <<http://envfor.nic.in/cc/cdm/criteria.htm>>.

As of 31 December 2004, the NCA has provided HCAs for 44 projects (Annexe 4).

Steps for evaluation

The steps followed for according HCA by the NCA are listed below (Figure 5).

- 1 Twenty copies of the project concept note and the CDM PDD have to be submitted in proper formats along with two soft copies in compact discs.
- 2 The documents are circulated to all the NCA members for comments and evaluation.
- 3 A meeting of the NCA is held with the project promoters and their CDM advisors, where the promoters give a brief presentation.
- 4 Any queries and issues are clarified in the meeting with the project promoters.
- 5 If the NCA members have no additional queries and are satisfied with the project, HCA is issued, preferably within 60 days.
- 6 If the NCA members have any enquiries, the information has to be submitted at the earliest. The appraisal is then redone for approval.

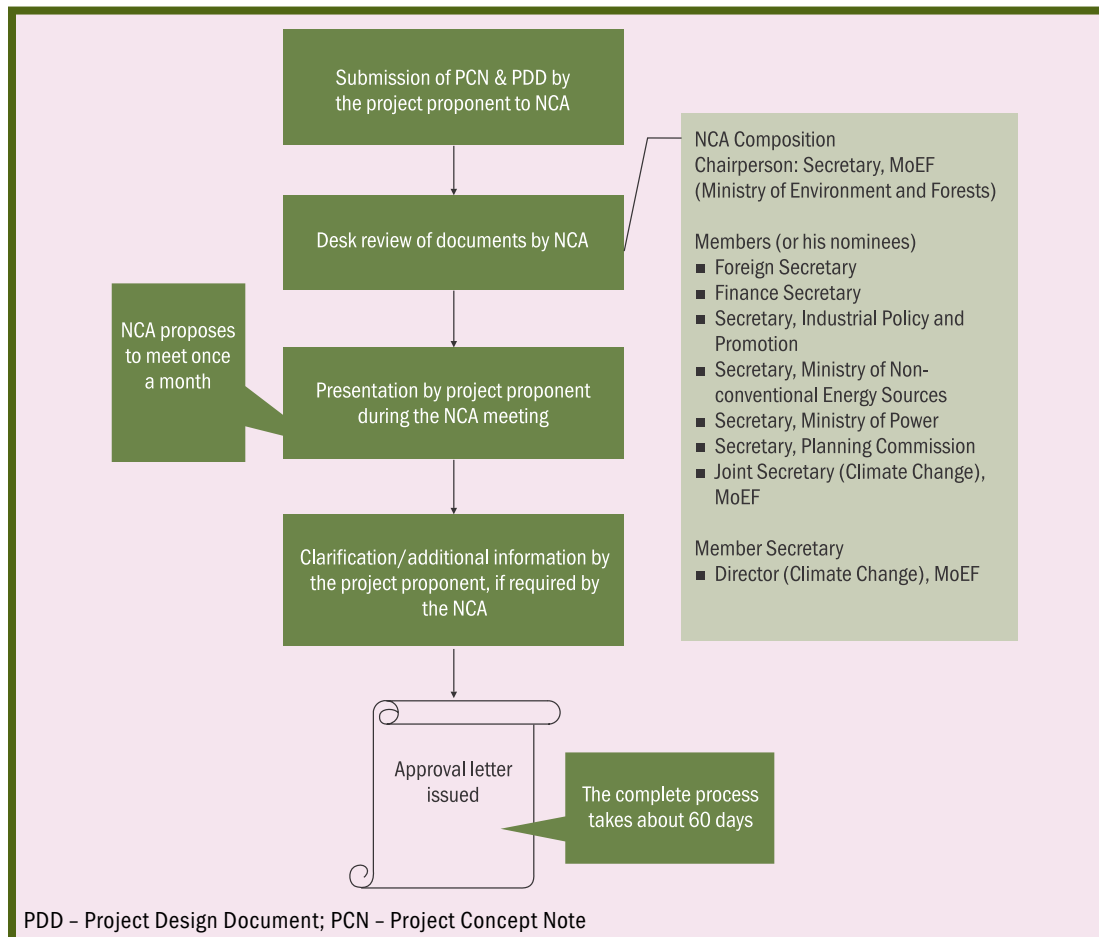


Figure 5 Process of host country approval by National Clean Development Mechanism Authority



The dynamic and transparent approval system at the NCA and the large number of projects being proposed shows the vibrancy and the potential of CDM market development in India. However, if India is to capitalize on its lead as a CDM supplier, it must take a proactive approach and develop a large number of projects within the next two years.

Why should states be interested?

The capacity of a developing country to host more CDM projects depends not only on the existence of large GHG mitigation opportunities, but also on the country's enabling policy environment and its associated infrastructure which encourages bottom-up project development. For a large democratic country like India, awareness on CDM at the state level is essential to sensitize relevant stakeholders to stimulate CDM project development on a larger scale.



Some state governments have evinced interest in CDM, and three states (Andhra Pradesh, Madhya Pradesh, and West Bengal) have already designated local institutions as their nodal agencies for CDM (Box 6). The concept behind establishing such state nodal CDM cells is to enhance participation by the private sector in CDM thereby generating more 'CDM-able' projects.



States with better CDM dissemination strategies can contribute to enhanced awareness among potential project proponents and other relevant stakeholders. Such awareness initiatives may equally assist state-level policy-makers in gaining a deeper understanding of the CDM process, and in devising strategies for integrating CDM in sectoral policies, especially in the SME (small- and medium-scale enterprises) sectors and socially oriented rural projects. The states may benefit by leveraging CDM revenues for increased investments in priority sectors, which may spur other states to consider CDM as well.



Rationale

The NCA can play a vital promotional role in encouraging CDM projects in the country through workshops, training programmes, CDM-related studies, etc. However, attention at the state level is essential to ensure widespread awareness, implementation, and policy consistency.

Moreover, since CDM-able projects are located all over the country, state agencies may be the first points of contacts for project identification and development. They are ideally placed for maximizing the public-private partnership, essential for the success of the CDM. Considering the scale of activities expected in India, infrastructure needs to be created at the state level for facilitation of CDM activities. These cells would have to work in close co-operation with the NCA at the central level for coherent policy planning, smooth and effective functioning, and quick approval of projects.

Individual states can establish CDM cells which can disseminate the NCA's mandate and process requirements for according HCAs for CDM projects, enlist consultancy service providers, and provide updates on international CDM developments. This will provide authentic guidance to project promoters in successfully designing CDM projects, engaging service providers, preparing requisite documents, and seeking HCA. Hence, the state-level agencies need to coordinate on a consistent basis with NCA in seeking assistance for implementing such initiatives. These cells should become a stepping stone, and ensure that they play a greater facilitating role for project developers.

Simultaneously these cells would need to establish coordination with their state governments for the integration of CDM with the state-level policies in promoting clean energy technologies.

All these efforts by the state cells would lead to an acceleration of CDM projects development in the country.

Functions

State-level agencies can facilitate CDM activities through such measures as listed below.

- Identifying and providing intensive capacity building to stakeholders for the better understanding of CDM and project development.



- Disseminating information on CDM project concept, characteristics, project cycle, baselines, crediting period, contractual issues, banking of CERs, national CER registry, and associated procedures.
- Identifying CDM-able projects and suitable promoters and analysing the state sector-wise potential under CDM.
- Making available transparent, authentic, and reliable data, which can be used for baseline calculations.
- Facilitating appropriate policies and services to CDM project promoters in project identification and the formulation of potential CDM projects, baseline development, quantification of emissions reductions, identification of operational entities, monitoring project performance, etc. These policies will have to be in consonance with national and international policies.
- Developing state-specific supplements to the NCA's CDM guidance on eligibility, baselines, estimates of transactions costs, legal issues (contracts, insurance, taxation of CERs, etc.), CER market, project development, etc.
- Developing a portfolio of CDM projects to offer to potential buyers.
- Sensitizing state finance corporations and financial institutions about CDM considerations and implications.
- Updating stakeholders with the ongoing changes in the CDM modalities and procedures at the UNFCCC CDM Executive Board, Conference of Parties, and Subsidiary Bodies.

Suggested composition

At the state level, several agencies are already engaged in assisting in the implementation of projects meeting the local environment standards and also

promoting environment-friendly projects, simultaneously. Typically these agencies include the state pollution control boards, energy development agencies, industrial promotion organizations, environment research and training institutions, state financing corporations, academic and research organizations, etc.

Such agencies are ideally suited to host the CDM cell and facilitate awareness and CDM-related information state-wide, in an effective way. Hosting CDM cells in such agencies minimizes the overheads and maximizes the outreach efforts combined with their existing dissemination strategies.

Suggested action plan

The existing technical expertise and proficiency within such agencies can be well utilized for spreading awareness about the CDM potential in the environment and energy sectors.





It is essential that the capacities of the state-level agencies are built around their existing areas of strength for enhancing their projects identification under CDM. Providing training and updating information on the CDM process-related issues is the second important step.

The skills and the capacities of the existing personnel can be built using the resources available either from the NCA or from the targeted donors funded programmes. The NCA has already designated one state-level agency each in five states in the country to facilitate and develop small-scale CDM projects and to develop the framework for bundling.

IGES (Institute for Global Environment Strategies), Japan, has been supporting TERI in India since 2004 for organizing workshops to provide awareness to the state-level policy-makers in India and build their capacity to establish state CDM cells and promote CDM projects development.

The workshops organized for the policy-makers during January 2005 in two cities in two regions of India (Pune in western region and Visakhapatnam in southern region) were attended by several state-level agencies. This capacity building effort and information dissemination approach were well received by the policy-makers who participated and discussions with them revealed several positive suggestions for enabling establishment of such CDM cells.

Box 6 State clean development mechanism cells in India

A few states in India have taken the lead in establishing state nodal cells for the promotion of CDM. These are Andhra Pradesh, Madhya Pradesh, and West Bengal. It is also possible that Karnataka, Maharashtra, and Tamil Nadu will soon establish such cells.

CDM Cell in Andhra Pradesh

The Government of Andhra Pradesh has recognized EPTRI (Environment Protection Training and Research Institute) as the nodal agency for CDM. The EPTRI is involved in the capacity building of industries, government officials and consultants on CDM so that they can avail the benefits of carbon trading under the Kyoto Protocol.

CDM Cell in Madhya Pradesh

A CDM cell has been set up at MPPCB (Madhya Pradesh Pollution Control Board), Bhopal. The MPPCB is closely dealing with several industries regarding environmental upgradation, and thus it can facilitate promotion of CDM in the state by sensitizing industries. The member secretary will coordinate the CDM Cell. In addition, a Steering Committee at the state level has also been constituted. The Cell will act in coordination with the Steering Committee, Government of Madhya Pradesh, and the Ministry of Environment and Forests, Government of India.

CDM Cell in West Bengal

The West Bengal Renewable Energy Development Agency, the nodal agency for promoting renewable energy and energy efficiency projects, has recently been designated as the nodal agency for promoting CDM in the state.

Thinking ahead

The entry of Kyoto Protocol into force in February 2005 has invigorated the global carbon market. Given India's current lead in the CDM project development, there is a need to sustain this position to have consolidated gains from the carbon market.

This is possible only with proper infrastructure and widespread awareness amongst the private and the public sectors, and policy-makers at both the central and the state levels. State-level CDM cells can play a pivotal role in this respect by providing information, guidance, and support to project developers to ensure project approval and implementation. India has enterprising players and a potentially large supply of CERs. Proactive action at the state level will help project proponents earn maximum returns from CDM, and at the same time address the country's sustainable development needs.



Annexe 1

CDM information sources

UNFCCC CDM website

How to do a CDM project? CDM project cycle, and background rules and regulations	http://cdm.unfccc.int/Projects/pac
Registered CDM projects	http://cdm.unfccc.int/Projects/registered.html
Approved baseline and monitoring methodologies	http://cdm.unfccc.int/methodologies/PAMethodologies/approved.html
Approved small-scale project methodologies	http://cdm.unfccc.int/methodologies/PAMethodologies/approved.html
Accredited operational entities	http://cdm.unfccc.int/DOE/list
Additionality tool	http://cdm.unfccc.int/methodologies/PAMethodologies/Additionality_tool.pdf

CDM capacity building

Integrated Capacity Strengthening for the CDM Programme of IGES, Japan	http://www.iges.or.jp/en/cdm/main.html
CDM Information and Guidebook of the CDM capacity development programme of the UNEP Riso Centre	http://cd4cdm.org/publications.htm

World carbon market trends

IETA analysis 'Greenhouse gas market 2004: ready for take-off'	http://www.ieta.org/ieta/www/pages/download.php?docID=720
World Bank analysis '2004 state and trends of the carbon market'	http://carbonfinance.org/

CDM in India

National CDM authority hosted by MoEF: Interim approval criteria	http://www.envfor.nic.in (Divisions > Climate change)
Baselines for renewable energy CDM projects in India developed by TERI for MNES	http://mnes.nic.in/baselinertpt.htm
'National Strategy Study on CDM implementation in India' by TERI and partners	http://www.teriin.org/nss

Selected buyers and brokers

CO2e	http://www.co2e.com
Asia Carbon Group	http://www.asiacarbon.com/asiacarbon/home.php
EcoSecurities Standard Bank Carbon Facility	http://www.essbcarbonfacility.com
European Carbon Fund	www.europeancarbonfund.com
International Finance Corporation	www.ifc.org/carbonfinance
Japan Carbon Finance Ltd	http://www.jbic.go.jp/english/index.php
Natsource	http://www.natsource.com
KfW Carbon Fund	www.kfw.de/carbonfund
World Bank Prototype Carbon Fund, Community Development Carbon Fund, Biocarbon Fund, Netherlands Clean Development Facility, and Italian Carbon Fund	http://carbonfinance.org

CDM- clean development mechanism; UNFCCC - United Nations Framework Convention on Climate Change; IGES - Institute for Global Environment Strategies; UNEP - United Nations Environment Programme ; IETA - International Emissions Trading Association; MoEF - Ministry of Environment and Forests; MNES - Ministry of Non-conventional Energy Sources

Annexe 2

Glossary of CDM terms*

The following CDM glossary intends to assist in clarifying terms used in the Project Design Document (CDM-PDD), the Proposed New Methodology: Baseline (CDM-NMB) and the Proposed New Methodology: Monitoring (CDM-NMM) and the in the CDM modalities and procedures in order to facilitate the completion of the CDM-PDD, CDM-NMB and CDM-NMM by project participants.

Clean development mechanism (CDM)

Article 12 of the Kyoto Protocol defines the clean development mechanism. “The purpose of the clean development mechanism shall be to assist Parties¹ not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under article 3”.

At its seventh session, the Conference of the Parties (COP) adopted modalities and procedures for a clean development mechanism (CDM modalities and procedures, see annex to decision 17/CP.7, document FCCC/CP/2001/13/Add.2) and agreed on a prompt start of the CDM by establishing an Executive Board and agreeing that until the entry into force of the Kyoto Protocol (a) this Board should act as the Executive Board of the CDM and (b) the Conference of the Parties (COP) should act as the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) as required by the Protocol and the CDM modalities and procedures.

Terms in alphabetical order:

“Attributable”:

See “measurable and attributable”.

Approval by Parties involved:

A written approval constitutes the authorization by a designated national authority (DNA) of specific entity(ies)’ participation as project proponents in the specific CDM project activity. The approval covers the requirements of paragraphs 33 and 40 (a) and (f) of the CDM modalities and procedures.

The DNA of a Party involved in a proposed CDM project activity shall issue a statement including the following:

* Source: http://cdm.unfccc.int/Reference/Documents/Guidel_Pdd/English/Guidelines_CDMPDD_NMB_NMM.pdf

¹ In this glossary, the term “Party” is used as defined in the Kyoto Protocol: “Party” means, unless the context otherwise indicates, a Party to the Protocol. “Party included in Annex I” means a Party included in Annex I to the Convention, as may be amended, or a Party which has made a notification under Article 4, paragraph 2(g), of the Convention.

- The Party has ratified the Kyoto Protocol.
- The approval of voluntary participation in the proposed CDM project activity
- In the case of Host Party(ies): statement that the proposed CDM project activity contributes to sustainable development.

The written approval shall be unconditional with respect to the above.

Multilateral funds do not necessarily require written approval from each participant's DNA. However those not providing a written approval may be giving up some of their rights and privileges in terms of being a Party involved in the project.

A written approval from a Party may cover more than one project provided that all projects are clearly listed in the letter.

The DOE shall receive documentation of the approval.

Authorization of a private and/or public entity to participate in a CDM project activity

See "Approval by Parties involved"

Baseline

See "baseline scenario".

Baseline approach:

A baseline approach is the basis for a baseline methodology. The Executive Board agreed that the three approaches identified in sub-paragraphs 48 (a) to (c) of the CDM modalities and procedures be the only ones applicable to CDM project activities. They are:

- Existing actual or historical emissions, as applicable; or
- Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment; or
- The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category.

Baseline methodology

A methodology is an application of an approach as defined in paragraph 48 of the CDM modalities and procedures, to an individual project activity, reflecting aspects such as sector and region. No methodology is excluded a priori so that project participants have the opportunity to propose a methodology. In considering paragraph 48, the Executive Board agreed that, in the two cases below, the following applies:

- (a) Case of a new methodology: In developing a baseline methodology, the first step is to identify the most appropriate approach for the project activity and then an applicable methodology;
- (b) Case of an approved methodology: In opting for an approved methodology, project participants have implicitly chosen an approach.

Baseline - new methodology

Project participants may propose a new baseline methodology established in a transparent and conservative manner. In developing a new baseline methodology, the first step is to identify the most appropriate approach for the project activity and then an applicable methodology. Project participants shall submit a proposal for a new methodology to a designated operational entity by forwarding a completed “Proposed New Methodology: Baseline (CDM-NMB)” along with a completed “Proposed New Methodology: Monitoring (CDM-NMM)” and the Project Design Document (CDM-PDD) with sections A to E completed in order to demonstrate the application of the proposed new methodology to a proposed project activity.

The proposed new methodology will be treated as follows: If the designated operational entity determines that it is a new methodology, it will forward, without further analysis, the documentation to the Executive Board. The Executive Board shall expeditiously, if possible at its next meeting but not later than four months review the proposed methodology. Once approved by the Executive Board it shall make the approved methodology publicly available along with any relevant guidance and the designated operational entity may proceed with the validation of the project activity (applying the approved methodology) and submit the project design document for registration. In the event that the COP/MOP requests the revision of an approved methodology, no CDM project activity may use this methodology.

The project participants shall revise the methodology, as appropriate, taking into consideration any guidance received.

Baseline - approved methodology

A baseline methodology approved by the Executive Board is publicly available along with relevant guidance on the UNFCCC CDM website (<http://unfccc.int/cdm>) or through a written request sent to cdm-info@unfccc.int or Fax: (49-228) 815-1999.

Baseline scenario

The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases (GHG) that would occur in the absence of the proposed project activity. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A (of the Kyoto Protocol) within the project boundary. A baseline shall be deemed to reasonably represent the anthropogenic emissions by sources that would occur in the absence of the proposed project activity if it is derived using a baseline methodology referred to in paragraphs 37 and 38 of the CDM modalities and procedures.

Different scenarios may be elaborated as potential evolutions of the situation existing before the proposed CDM project activity. The continuation of a current activity could be one of them; implementing the proposed project activity may be another; and many others could be envisaged. Baseline methodologies shall require a narrative description of all reasonable baseline scenarios.

To elaborate the different scenarios, different elements shall be taken into consideration, including related guidance issued by the Executive Board. For instance, the project participants shall take into account national / sectoral policies and circumstances, ongoing technological improvements, investment barriers, etc. (see Appendix C paragraph b (vii) and paragraphs 45 (e), 46, 48 (b) of decision 17/CP.7).

Crediting period

The crediting period for a CDM project activity is the period for which reductions from the baseline are verified and certified by a designated operational entity for the purpose of issuance of certified emission reductions (CERs). Project participants shall choose the starting date of a crediting period to be after the date the first emission reductions are generated by the CDM project activity. A crediting period shall not extend beyond the operational lifetime of the project activity.

The crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, for project activities starting between 1 January 2000 and the date of the registration of a first clean development mechanism project, the starting date of the crediting period may be prior to the date of registration of the project activity if the project activity is submitted for registration before 31 December 2005 (please refer to paras 12 and 13 of decision 17/CP.7, paragraph 1 (c) of decision 18/CP.9 and clarifications by the Executive Board, available on the UNFCCC CDM web site).

The project participants may choose between two options for the length of a crediting period: (i) fixed crediting period or (ii) renewable crediting period, as defined in paragraph 49 (a) and (b) of the CDM M & P.

Crediting period – fixed (also fixed crediting period)

“Fixed Crediting Period” is one of two options for determining the length of a crediting period. In the case of this option, the length and starting date of the period is determined once for a project activity with no possibility of renewal or extension once the project activity has been registered. The length of the period can be a maximum of ten years for a proposed CDM project activity. (paragraph 49 (b) of CDM modalities and procedures).

Crediting period – renewable (also renewable crediting period):

“Renewable crediting period” is one of two options for determining the length of a crediting period. In the case of this option, a single crediting period may be of a maximum of seven years. The crediting period may be renewed at most two times (maximum 21 years), provided that, for each renewal, a designated operational entity determines that the original project baseline is still valid or has been updated taking account of new data, where applicable, and informs the Executive Board accordingly (paragraph 49 (a) of the CDM modalities and procedures). The starting date and length of the first crediting period has to be determined before registration.

Certification

Certification is the written assurance by the designated operational entity that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions by sources of greenhouse gases (GHG) as verified.

Certified emission reductions (CERs)

A certified emission reduction or CER is a unit issued pursuant to Article 12 and requirements thereunder, as well as the relevant provisions in the CDM modalities and procedures, and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol.

Conservative

See “Transparent and conservative”.

Designated operational entity (DOE)

An entity designated by the COP/MOP, based on the recommendation by the Executive Board, as qualified to validate proposed CDM project activities as well as verify and certify reductions in anthropogenic emissions by sources of greenhouse gases (GHG). A designated operational entity shall perform validation or verification and certification on the same CDM project activity. Upon request, the Executive Board may however allow a single DOE to perform all these functions within a single CDM project activity. COP at its eight session decided that the Executive Board may designate on a provisional basis operational entities (please refer to decision 21/CP.8).

Fixed Crediting Period

See crediting period – fixed.

Host Party

A Party not included in Annex I to the Convention on whose territory the CDM project activity is physically located. A project activity located in several countries has several host Parties. At the time of registration, a Host Party shall meet the requirements for participation as defined in paragraphs 28 to 30 of the CDM modalities and procedures.

Issuance of certified emission reductions (CERs)

Issuance of CERs refers to the instruction by the Executive Board to the CDM registry administrator to issue a specified quantity of CERs for a project activity into the pending account of the Executive Board in the CDM registry, in accordance with paragraph 66 and Appendix D of the CDM modalities and procedures.

Upon issuance of CERs, the CDM registry administrator shall, in accordance with paragraph 66 of CDM modalities and procedures, promptly forward the CERs to the registry accounts of project participants involved, in accordance with their request, having deducted the quantity of CERs corresponding to the share of proceeds to cover administrative expenses for the Executive Board and to assist in meeting costs of adaptation for developing countries vulnerable to adverse impacts of climate change, respectively, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for the management of the share of proceeds.

Leakage

Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases (GHG) which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity.

Measurable and attributable

In an operational context, the terms measurable and attributable in paragraph 51 (project boundary) of the CDM modalities and procedures should be read as “which can be measured” and “directly attributable”, respectively.

Monitoring of a CDM project activity

Monitoring refers to the collection and archiving of all relevant data necessary for determining the baseline, measuring anthropogenic emissions by sources of greenhouse gases (GHG) within the project boundary of a CDM project activity and leakage, as applicable.

Monitoring methodology

A monitoring methodology refers to the method used by project participants for the collection and archiving of all relevant data necessary for the implementation of the monitoring plan.

Monitoring methodology - approved

A monitoring methodology approved by the Executive Board and made publicly available along with relevant guidance.

Monitoring methodology - new

Project participants may propose a new monitoring methodology. In developing a monitoring methodology, the first step is to identify the most appropriate methodology bearing in mind good monitoring practice in relevant sectors. Project participants shall submit a proposal for a new methodology to a designated operational entity by forwarding a completed “Proposed New Methodology: Baseline (CDM-NMB)” along

with a completed “Proposed New Methodology: Monitoring (CDM-NMM)” and the project design document (CDM-PDD) with sections A to E completed in order to demonstrate the application of the proposed new methodology to a proposed project activity.

A new proposed methodology will be treated as follows: If the designated operational entity determines that it is a new methodology, it will forward, without further analysis, the documentation to the Executive Board. The Executive Board shall expeditiously, if possible at its next meeting but not later than four months review the proposed methodology. Once approved by the Executive Board it shall make the approved methodology publicly available along with any relevant guidance and the designated operational entity may proceed with the validation of the project activity (applying the approved methodology) and submit the project design document for registration. In the event that the COP/MOP requests the revision of an approved methodology, no CDM project activity may use this methodology. The project participants shall revise the methodology, as appropriate, taking into consideration any guidance received.

Operational lifetime of a project activity:

It is defined as the period during which the project activity is in operation. No crediting period shall end after the end of the operational lifetime (calculated as from starting date).

Party involved

A Party involved is a Party that provides a written approval.
See “Approval by Parties involved”.

Project activity

A project activity is a measure, operation or an action that aims at reducing greenhouse gases (GHG) emissions. The Kyoto Protocol and the CDM modalities and procedures use the term “project activity” as opposed to “project”. A project activity could, therefore, be identical with or a component or aspect of a project undertaken or planned.

Project boundary

The project boundary shall encompass all anthropogenic emissions by sources of greenhouse gases (GHG) under the control of the project participants that are significant and reasonably attributable to the CDM project activity.

The Panel on methodologies (Meth Panel) shall develop specific proposals for consideration by the Executive Board on how to operationalize the terms “under the control of”, “significant” and “reasonably attributable”, as contained in paragraph 52 and appendix C, paragraphs (a) (iii) and (b) (vi) of the CDM modalities and

procedures. Pending decisions by the Executive Board on these terms, project participants are invited to explain their interpretation of such terms when completing and submitting the CDM-NMB and CDM-NMM.

Project participants

In accordance with the use of the term project participant in the CDM modalities and procedures, a project participant is (a) a Party involved, or (b) a private and/or public entity authorized by a Party involved to participate in a CDM project activity.

In accordance with Appendix D of the CDM modalities and procedures, the decision on the distribution of CERs from a CDM project activity shall exclusively be taken by project participants.

Project participants shall communicate with the Executive Board, through the secretariat, in writing in accordance with the “modalities of communication” submitted together with the registration form.

If a project participant does not wish to be involved in taking decisions on the distribution of CERs, this shall be communicated to the Executive Board, through the secretariat, at the latest when the request regarding the distribution is made.

See also: “Approval by Parties involved”, “Party involved” and “Request for distribution of CERs”

Renewable crediting period

See Crediting period - renewable

Request for distribution of CERs

The request regarding the distribution of CERs can only be changed if all signatories of the previous instruction have agreed to the change and signed the appropriate document.

A change of project participants shall immediately be communicated to the Executive Board through the secretariat. The indication of change shall be signed by all project participants of the previous communication and by all new and remaining project participants. Each new project participant needs authorization, as required.

Stakeholders

Stakeholders mean the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity.

Starting date of a CDM project activity

The starting date of a CDM project activity is the date at which the implementation or construction or real action of a project activity begins. Project activities starting between 1 January 2000 and the date of the registration of a first clean development

mechanism project have to provide documentation, at the time of registration, showing that the starting date fell within this period, if the project activity is submitted for registration before 31 December 2005.

Transparent and conservative

Establishing a baseline in a transparent and conservative manner (paragraph 45 (b) of the CDM modalities and procedures) means that assumptions are made explicitly and choices are substantiated. In case of uncertainty regarding values of variables and parameters, the establishment of a baseline is considered conservative if the resulting projection of the baseline does not lead to an overestimation of emission reductions attributable to a CDM project activity (that is, in the case of doubt, values that generate a lower baseline projection shall be used).

Registration

Registration is the formal acceptance by the Executive Board of a validated project activity as a CDM project activity. Registration is the prerequisite for the verification, certification and issuance of CERs related to that project activity.

Validation

Validation is the process of independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 17/CP.7 its annex and relevant decisions of the COP/MOP, on the basis of the project design document (CDM-PDD).

Verification

Verification is the periodic independent review and ex post determination by a designated operational entity of monitored reductions in anthropogenic emissions by sources of greenhouse gases (GHG) that have occurred as a result of a registered CDM project activity during the verification period. There is no prescribed length of the verification period. It shall, however, not be longer than the crediting period.

Annexe 3 Details of Annexes provided in the UNFCCC and the Kyoto Protocol

Countries listed in Annex I of the UNFCCC

Australia	Estonia ^a	Latvia ^a	Spain
Austria	Finland	Lithuania ^a	Sweden
Belarus ^a	France	Luxembourg	Switzerland
Belgium	Germany	Netherlands	Turkey
Bulgaria ^a	Greece	New Zealand	Ukraine ^a
Canada	Hungary ^a	Norway	United Kingdom of Great Britain and Northern Ireland
Czechoslovakia ^a	Iceland	Poland ^a	United States of America
Denmark	Ireland	Portugal	
European Economic Community	Italy	Romania ^a	
	Japan	Russian Federation ^a	

^a Countries that are undergoing the process of transition to a market economy.

Countries listed in Annex II of the UNFCCC

Australia	Finland	Japan	Sweden
Austria	France	Luxembourg	Switzerland
Belgium	Germany	Netherlands	Turkey
Canada	Greece	New Zealand	United Kingdom of Great Britain and Northern Ireland
Denmark	Iceland	Norway	Ireland
European Economic Community	Ireland	Portugal	United States of America
	Italy	Spain	

Annex A – The GHGs covered under the Kyoto Protocol and their sources

Greenhouse gases	Chemical industry
Carbon dioxide (CO ₂)	Metal production
Methane (CH ₄)	Other production
Nitrous oxide (N ₂ O)	Production of halocarbons and sulphur hexafluoride
Hydrofluorocarbons (HFCs)	Consumption of halocarbons and sulphur hexafluoride
Perfluorocarbons (PFCs)	Other
Sulphur hexafluoride (SF ₆)	Solvent and other product use
Sectors/source categories	Agriculture
Energy	Enteric fermentation
Fuel combustion	Manure management
Energy industries	Rice cultivation
Manufacturing industries and construction	Agricultural soils
Transport	Prescribed burning of savannas
Other sectors	Field burning of agricultural residues
Other	Other
Fugitive emissions from fuels	Waste
Solid fuels	Solid waste disposal on land
Oil and natural gas	Waste water handling
Other	Waste incineration
Industrial processes	Other
Mineral products	

Annex B – Quantified emission limitation or reduction commitment of Annex I countries

Party	Quantified emission limitation or reduction commitment (percentage of base year or period)	Total carbon dioxide emissions of Annex I parties in 1990 ^a (Giga grams)
Australia	108	288965
Austria	92	59200
Belgium	92	113405
Bulgaria ^b	92	82990
Canada	94	457441
Croatia ^b	95	–
Czech Republic ^b	92	169514
Denmark	92	52100
Estonia ^b	92	37797
European Community	92	–
Finland	92	53900
France	92	366536
Germany	92	1012443
Greece	92	82100
Hungary ^b	94	71673
Iceland	110	2172
Ireland	92	30719
Italy	92	428941
Japan	94	1173360
Latvia ^b	92	22976
Liechtenstein	92	208
Lithuania ^b	92	–
Luxembourg	92	11343
Monaco	92	71
Netherlands	92	167600
New Zealand	100	25530
Norway	101	35533
Poland ^b	94	414930
Portugal	92	42148
Romania ^b	92	171103
Russian Federation ^b	100	2388720
Slovakia ^b	92	58278
Slovenia ^b	92	–
Spain	92	260654
Sweden	92	61256
Switzerland	92	43600
Ukraine ^b	100	–
United Kingdom of Great Britain and Northern Ireland	92	584078
United States of America	93	4957022
Total		13728306

^a Data based on the information from the 34 Annex I Parties that submitted their first national communications on or before 11 December 1997, as compiled by UNFCCC

^b Countries that are undergoing the process of transition to a market economy.

Annexe 4

NCA approved projects (as on December 2004)

S. no.	Sector	Project type	Promoter	Capacity	Location
1	Renewable energy	Wind power project	Encon Services Ltd (ESL)	3 MW	Chitradurga, Karnataka
2	Renewable energy	Biomass based power	Raghu Rama Renewable Energies Ltd	18 MW	Ramanathapuram, TN
3	Renewable energy	Biomass based power	Clarion Power Corporation Ltd	12 MW	Prakasam, AP
4	Renewable energy	Biomass based power	Rithwik Energy Services Ltd	6 MW	Chittoor, AP
5	Renewable energy	Biomass based power	Alwar Power Co. Pvt. Ltd	7.5 MW	Alwar, Rajasthan
6	Renewable energy	Biomass based power	Vandana Vidyut Ltd	7.7 MW	Bilaspur, Chhattisgarh
7	Renewable energy	Biomass based power	Gujarat Ambuja Cements	24 MW	Ropar, Punjab
8	Renewable energy	Bagasse based cogeneration power	Dhampur Sugar Mills Ltd	27.5 MW	Dhampur, UP
9	Renewable energy	Bagasse based cogeneration power	Balarampur Chini Mills Ltd	20 MW	Haidergarh, UP
10	Renewable energy	Bagasse based cogeneration power	Haidergarh Chini Mills Ltd	20 MW	Haidergarh, UP
11	Renewable energy	Bagasse based cogeneration power	Sri Chamundeswari Sugars Ltd	22 MW	Mandya, Karnataka
12	Renewable energy	Bagasse based cogeneration power	Bannari Amman Sugars Ltd	20 MW	Sathyamangalam, TN
13	Renewable energy	Bagasse based cogeneration power	Bannari Amman Sugars Ltd	20.16 MW	Mysore, Karnataka
14	Renewable energy	Bagasse based cogeneration power	Triveni industries	22 MW	Deoband, UP
15	Renewable energy	Bagasse based cogeneration power	Shree Renuka Sugars Ltd	–	Belgaum, Karnataka
16	Renewable energy	Bagasse based cogeneration power	DCM Shriram Consolidated Ltd	7.5 MW	Kheri, UP
17	Renewable energy	Bagasse based cogeneration power	Rajashree Sugars and Chemicals	22 MW	Villupuram, TN
18	Renewable energy	Biodiesel production	Southern Online Biotechnologies Ltd	30 TPD	Naigonda District, AP
19	Renewable energy	Small hydroelectric power	Cosmos Consulting	9 MW	Kullu, HP
20	Renewable energy	Small hydroelectric power	Narayanapur Right Bank Canal	6 MW	Raichur, Karnataka
21	Renewable energy	Small hydroelectric power		10.25 MW	Karnataka
22	Renewable energy	Small hydroelectric power	Astha Projects (India) Ltd	5	HP
23	Renewable energy	Small hydroelectric power	Dharamshala Hydro Power Ltd	4.5 MW	Kangra, HP

24	Renewable energy	Small hydroelectric power	Orissa Power Consortium Ltd	18 MW	Visakhapatnam, AP
25	Renewable energy	Small hydroelectric power	Orissa Power Consortium Ltd	20 MW	Angul, Orissa
26	Renewable energy	Small hydroelectric power	Meenakshi Power Ltd	37 MW	Orissa
27	Municipal solid waste	Municipal Solid Waste to Energy Plant	Asia Bio-energy India Ltd	5.6 MW	Lucknow, UP
28	Fuel-switching	Fuel-switching from naphtha to natural gas	BSES Andhra Power Ltd	220 MW	Samalkot, East Godavari, AP
29	Fuel-switching	Switching of fossil fuel from naphtha to natural gas	Essar Power Ltd	515 MW	Hazira, Gujarat
30	Energy efficiency	Emission reduction in smelter	Indian Aluminium Co. Ltd		Hirakud, Orissa
31	Energy efficiency	BOF gas waste heat recovery Power project	Jindal Vijaynagar Steel Ltd	1.6 mtpa	Bellary, Karnataka
32	Energy efficiency	Corex gas waste heat recovery based power Project	Jindal Vijaynagar Steel Ltd	1.6 mtpa	Bellary, Karnataka
33	Energy efficiency	Optimal utilization of clinker and conversion factor improvement in cement manufacturing plant	Birla Corporation Ltd	–	Chittorgarh, Rajasthan
34	Energy efficiency	Energy Efficiency Initiatives	Kamat Hotels India Ltd	–	Andheri, Mumbai
35	Energy efficiency	Energy Efficiency through installation of modified CO ₂ removal system in Ammonia Plant	Indo Gulf Fertilizers Ltd	0.865 mtpa	Sultanpur, UP
36	Energy efficiency	Waste heat recovery based captive power plant	Orissa Sponge Iron Ltd	10 MW	Orissa
37	Energy efficiency	Energy efficiency using a coke dry quenching system	Tata Iron and Steel Company	–	Jamshedpur, Jharkhand
38	Energy efficiency	Fuel-switching for power generation	Chhattisgarh Electricity Co.	–	Raipur, Chhattisgarh
39	Energy efficiency	Energy Efficiency : Thermal efficiency improvements	Indian Rayon Industries Ltd	–	West Bengal
40	Energy efficiency	Demand side energy efficiency programme	Indian Rayon Industries Ltd	–	West Bengal
41	Energy efficiency	Waste Heat based captive power plant	Ispat Godavari	7 MW	Chhattisgarh
42	Energy efficiency	GHG Emission Reduction in forging SMEs	Special Purpose Vehicle of Punjab		Punjab
43	Energy efficiency	Waste Heat Recovery for captive power	OCL India Ltd	8 MW	Sundargarh, Orissa
44	Industrial process	GHG Emission Reduction by Thermal Oxidation of HFC	Gujarat Fluorochemicals Ltd		Panchmahals, Gujarat

TN-Tamil Nadu; AP-Andhra Pradesh; UP-Uttar Pradesh; HP-Himachal Pradesh

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With the Kyoto Protocol coming into force, there is renewed vigour for mechanisms such as the CDM (clean development mechanism), which will not only help Annex I Parties meet their binding emissions reduction commitments, but also provide for implementing projects that meet the sustainable development criteria of non-Annex I countries.

Governments, businesses, and other stakeholders in the developing countries, particularly India, need to gear up to maximize the benefits from the resulting spurt in CDM activities. In particular, a host of actions are required at the state level to provide an enabling environment for CDM in the country.

This publication is aimed at state-level actors in the country who can play a pivotal role in facilitating CDM implementation. It provides an overview of the rules and regulations of CDM, describes the current status of national and international developments, and discusses ways in which state-level agencies can help enhance India's preparedness for CDM project identification, development, and implementation.

This effort is an outcome of a series of workshops organized by The Energy and Resources Institute, India, since 2004 for policy-makers at the state level and supported by the Institute for Global Environment Strategies, Japan, under the Integrated Capacity Strengthening for the CDM Programme.