

Report of the Working Group on  
**NATIONAL ACTION PLAN**  
For Operationalising  
**CLEAN DEVELOPMENT MECHANISM (CDM)**  
**IN INDIA**



**PLANNING COMMISSION**

GOVERNMENT OF INDIA

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## Global Co<sub>2</sub> Emissions:

Power generation will account for almost half the increase in global emissions between 2000 and 2030. Transport will comprise more than a quarter. The residential, commercial and industrial sectors will account for the rest.

Global energy-related emissions of CO<sub>2</sub> will rise by 1.8% per year to 2030, slightly more quickly than primary energy demand. Non-hydro renewables will be increasingly used and improvements in technology will increase the efficiency of energy systems, but neither of these developments will be sufficient to offset the dominance of fossil fuels.

## Global Climate change :

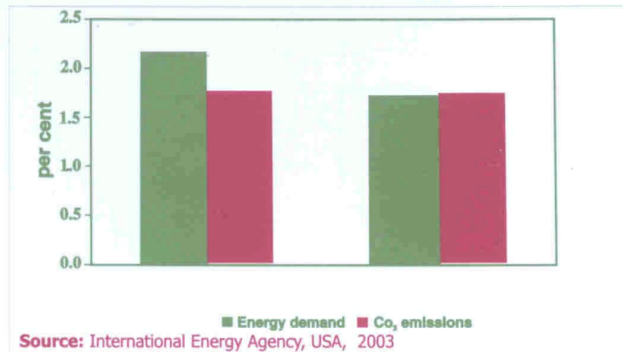
There is now convincing evidence that our climate is changing, and that these changes are not just part of a natural cycle. We cannot be entirely certain of the full extent of the change; knowledge of climate processes is incomplete and we cannot predict the future levels of greenhouse gas emissions.

However, advances in computer modelling and our understanding of climate mean, we can provide climate change scenarios as a sound scientific basis for climate impacts assessments. These should be considered by anyone responsible for long term planning and major investment decisions.

## Factors affecting climate :

The observed changes in global climate are likely to be due to a combination of both natural and human causes. The Earth's climate varies naturally as a result of interactions between the ocean and the atmosphere, changes in the Earth's orbit, fluctuations in energy received from the sun and Volcanic eruptions. The main human influence on global climate is likely to be through increasing emissions of Green House Gases such as carbon dioxide and methane. At present for example, about 6.5 billion tonnes of carbon is emitted globally into the atmosphere each year, mostly through the combustion of coal, oil and gas for energy. Changes in land use result in a further net annual emission of between 1 and 2 billion tonnes of carbon. increasing concentrations of GHGs in the atmosphere over the last 200 years have trapped more energy in the lower atmosphere, thereby altering global climate.

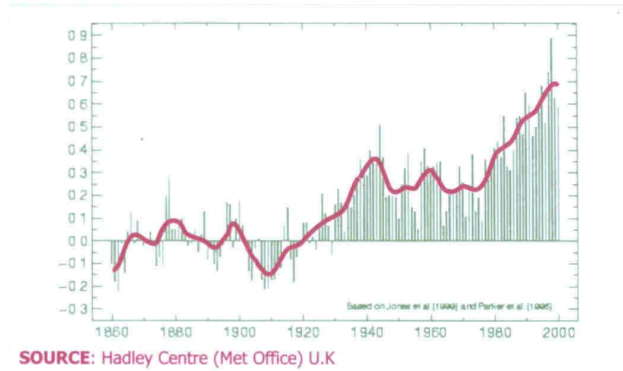
## Average Annual Growth Rate in World Energy Demand and CO<sub>2</sub> Emissions



Source: International Energy Agency, USA, 2003

(The projected steep rise in emissions illustrates the challenge that most OECD countries face in meeting their commitments under the Kyoto Protocol without additional policies.)

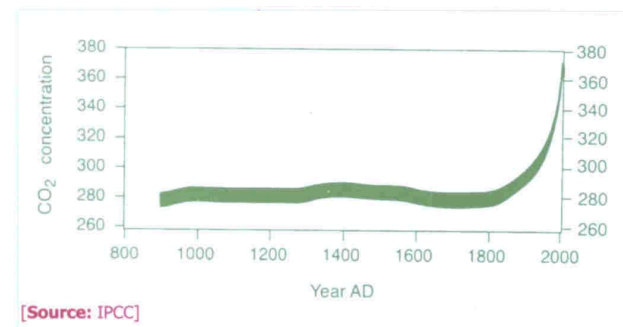
## Rise in Global Temperatures (1860-2000)



SOURCE: Hadley Centre (Met Office) U.K

(Records show that global temperature has risen by about 0.6°C since the beginning of the twentieth century, with 0.4°C of this warming occurring since the 1970s. The year 1998 was the warmest since records began in 1861, and 2001 was the third warmest. The 1990s was globally the warmest decade in the last 100 years, and it is likely the lastest of the previous millennium.)

## Rapid increase of Co<sub>2</sub> level in Earths Atmosphere over 200 years



[Source: IPCC]

(Increasing historic concentration (part per million) of carbon dioxide in the global atmosphere. Line thickness indicates uncertainty in the concentrations.)

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**Shri K.C. Pant**



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उपाध्यक्ष  
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**DEPUTY CHAIRMAN  
PLANNING COMMISSION  
INDIA**

December 10<sup>th</sup>, 2003

## FOREWORD

The threat posed by climate change is a global one, and it is entirely fitting that the global community is addressing this challenge through a multi-lateral and cooperative approach. The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the *Rio Earth Summit* about eleven years ago. The Government of India has demonstrated its deep and continuing commitment to global efforts to address climate change in many ways, such as acceding to the Kyoto Protocol of the UNFCCC, and hosting COP-8, the eighth session of the conference of Parties to the UNFCCC last year at New Delhi.

The Clean Development Mechanism (CDM) is a flexible arrangement under the Kyoto Protocol for international cooperation in reducing Green House Gas (GHG) emissions. GHG mitigation projects in developing countries can generate Carbon Credits, which are in demand in industrialized countries for meeting their Kyoto emission reduction targets. CDM is a market based mechanism, driven by the price of the Certified Emission Reductions (CERs) and hence, the Government has but a limited role in operationalising CDM in our country. Nevertheless, the government in India has taken steps to facilitate the process through the establishment of a Designated National Authority, of DNA as it is called, which will provide *host country endorsement* to the projects mitigating Carbon emissions and generating CERs for the nation. In addition, the government has also to undertake CDM Awareness Campaigns and Programmes, both at the general level as well as for the respective stakeholders; especially those who would participate in the process. Moreover, the government has to lay emphasis on Capacity Building issues so that a competitive market for the CDM can be set up in India, which would encourage the Indian industries and project promoters to garner maximum benefits out of this mechanism, while competing with other non-Annex-I countries.

With the establishment of the DNA, the process of obtaining *host country endorsement* would be made simple, clear and transparent. This would involve taking into consideration "Sustainable Development" criteria and financial and technical additionality in such a way that the maximum number of projects can come up in different areas for either carbon emission mitigation or for accumulating carbon credits.

Developing countries, including india, have many apprehensions regarding the CDM process because of a number of factors, such as the costs of CERs, the uncertainty of the CDM market, the complexity of CDM project cycle involving various steps, which could increase the transaction cost of the project, the delay in the EU Emission Trading Scheme and, above all, the issue of non-ratification of the Kyoto Protocol by a few leading GHG emitting countries of the world. These issues will have to be taken into consideration while preparing the road-map for operationalising the CDM.

I am happy that, in this Working Group Report, the concerned issues and probable solutions have been thoroughly discussed and necessary recommendaions made for operationalising CDM in India. This report will not only facilitate the DNA in its routine day to day operation; but should also help in creating awareness about this mechanism, especially among various stake holders involved in different sectors and in government at the central as well as state levels.



**(K. C. Pant)**

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**NEW DELHI - 110001**

9<sup>th</sup> December, 2003

## **PREFACE**

This document illustrates the Action Plan, which the Government of India would be unfolding during the next few years in order to make use of potential investments generating the CERs by offering creditworthy CDM projects from India. At present for India, it is very important that the country should gear up and get ready along with other developing countries to take the maximum advantage of the CDM, which will not only benefit the industries, the farmers and project promoters, but will also help the country in achieving the objectives of Sustainable Development, reducing pollution and promoting environment protection. Under the advice of PMO, Planning Commission constituted a Working Group under my Chairmanship to prepare a National Action Plan for Operationalising CDM in India; which will facilitate fast track approval of the CDM Proposals in a simplified way by the government of India. The Action Plan has been worked out with the help of the Members. The terms of references to the Working Group and its membership is flagged in the Annexure-I of this report.

The first Chapter of this Working Group report provides necessary information, especially on the history and the state of climate change process and Kyoto protocol. The second chapter, then brings out the CDM Process and Project Activity Cycle and the Stakeholders' Concerns in general. In addition, in third chapter, the CDM's international as well as national Market and its present and future potentials, especially on India's Context, have been discussed widely. Subsequently, the four and fifth Chapter discusses the recommendations of the Working Group for operationalising CDM in India.

The first thing we need to do for operationalising CDM is to establish a Designated National Authority (DNA), which has been recently organised and the same is expected to provide the legal teeth to the operationalisation. In this Working Group's Report looking into the various international experiences and UNFCCC norms as well as the National scenario, here at home; a model for establishing a DNA has also been discussed. In addition, the Working Group recommended the following steps, which had facilitated the formation of DNA. The DNA is likely to carry out its role and responsibility, through (i) A CDM Cell and (ii) A CDM Promotion Agency. The administrative and regulatory roles pertaining to CDM would be played by the CDM Cell, while the other would be facilitating the promotion and marketing. The CDM Promotion Agency, could be a NGO an Industrial Association.

The Working Group also proposes the establishment of a CDM Fund, with a very nominal up-front processing fee to be paid by the project promoters, seeking CDM approval, which is linked to the size of investment so that the activities of DNA, and CDM Cell, can be supported from this and the DNA could be made self-sustained. Costs are involved at every stage of CDM project cycle. The national CDM Authority should seek to find ways to minimize the transaction costs incurred during various stages so that the market can develop. Bulk

of the transaction costs are linked to the rigor of the CDM process that needs to be followed. This is expected to come down as more and more projects under CDM are executed. The transition cost can be reduced by I) streamlining of processes II) the Capacity Building of local consultants III) Providing easy access to information IV) bundling projects and by V) addressing the Taxation issues properly.

The working group realised the need for aggressive international marketing and domestic capacity building to attract maximum CDM investments to the country. Moreover, it is also felt that time bound programs are implemented to take maximum share of the CDM market. Details of these have been discussed under (i) Establishment of the DNA and CDM Cell (ii) Hiring the CDM Promotion Agency (iii) Execution of State-wise CDM Awareness Programmes (iv) Execution of Stake-holder specific Capacity Building Promotion programs (v) Preparation of the CDM Implementation Manual (vi) Preparation of the CDM Investor's Guide (vii) Execution of International CDM Road shows (viii) Organising an International Climate Technology Bazar in chapter-4.

The government is one of the key stakeholders in CDM. The various line ministries and departments can play significant role as facilitators and "enablers" for the CDM projects in their respective sectors. Therefore, they need to understand the CDM modalities and procedures and also technical issues such as CDM eligibility criteria for projects. The DNA has a significant role to play as has been already discussed earlier. They also need to understand the different kinds of risks involved for the government as well as project proponents, and the penalties for defaulters.

In sixth and last chapter, the detailed strategies for operationalising CDM in LULUCF Sector has been dealt in details; followed by Annexures, consisting of administrative as well as technical references from UNFCCC Website. The Bibliographic references and some useful CDM Websites are placed at the end.

Before, I conclude, I wish to extend my sincere thanks to all Members of this Working Group for their support and invaluable inputs to enable me to bring this comprehensive report. My special thanks are extended to my colleague *Sri Srikanta K. Panigrahi*, who as the *Member-Secretary* of this Working Group, made all efforts in compiling the information and assisted me in preparing this report.



**(R. Mandal)**



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## List of Acronyms, Abbreviations and Units

<b>Abbreviation</b>	<b>Expanded Form</b>
<b>AAUs</b>	Assigned Amount Units
<b>ADB</b>	Asian Development Bank
<b>AIJ</b>	Activities Implemented Jointly
<b>ALGAS</b>	Asia Least-cost Greenhouse Gas Abatement Strategy
<b>APN</b>	Asia Pacific Network for Global Change
<b>ASEAN</b>	Association of South East Asian Nations
<b>BOV</b>	Battery-Operated Vehicle
<b>CBD</b>	Convention on Biological Diversity
<b>CBM</b>	Coal Bed Methane
<b>CBO</b>	Community Based Organisation
<b>CCEA</b>	Cabinet Committee on Economic Affairs
<b>CDCF</b>	Community Development Carbon Fund
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reduction
<b>CERUPT</b>	Certified Emission Reduction Unit Procurement Tender
<b>CFCs</b>	Chlorofluorocarbons
<b>CGE</b>	Consultative Group of Experts on National Communications
<b>CHP</b>	Combined Heat and Power
<b>CNG</b>	Compressed Natural Gas
<b>COE</b>	Committee of Experts
<b>COP</b>	Conference of the Parties
<b>DC</b>	Developing Countries
<b>DNA</b>	Designated National Authority
<b>DOE</b>	Designated Operational Entity
<b>EB</b>	Executive Board
<b>EIA</b>	Environmental Impact Assessment
<b>EIT</b>	Economies in Transition
<b>ERU</b>	Emission reduction unit
<b>EST</b>	Environmentally Sound Technologies
<b>ET</b>	Emissions Trading
<b>FDI</b>	Foreign Direct Investment
<b>FI s</b>	Financial Institutes
<b>GCOS</b>	Global Climate Observing System
<b>GDP</b>	Gross Domestic Product
<b>GEF</b>	Global Environment Facility
<b>GHG</b>	Green House Gases
<b>GOI</b>	Government of India
<b>GRULAC</b>	Group of Latin America and the Caribbean States
<b>GWP</b>	Global Warming Potential
<b>HFC</b>	Hydrofluorocarbon
<b>ICAO</b>	International Civil Aviation Organization
<b>ICRP</b>	Indian Climate Research Programme
<b>ICRISAT</b>	International Crops Research Institute for Semi-Tropics
<b>IETA</b>	International Emissions Trading Association

<b>IFC</b>	International Finance Corporation
<b>IGBP</b>	International Geosphere Biosphere Programme
<b>IHDP</b>	International Human Dimensions of Global Environmental change Program
<b>IIASA</b>	International Institute for Applied Systems Analysis
<b>IITM</b>	Indian Institute for Tropical Meteorology
<b>IMD</b>	India Meteorological Department
<b>IMO</b>	International Maritime Organization
<b>INC</b>	Inter-governmental Negotiating Committee
<b>INCaF</b>	Netherlands Carbon Facility
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>JI</b>	Joint Implementation
<b>JLG</b>	Joint Liaison Group
<b>LDC</b>	Least Developed Countries
<b>LULUCF</b>	Land Use, Land-Use Change and Forestry
<b>MNES</b>	Ministry of Non Conventional Energy Sources
<b>MoEF</b>	Ministry of Environment & Forest
<b>MOP</b>	Meetings of the Parties
<b>MVP</b>	Monitoring And Verification Protocol
<b>NAPA</b>	National Adaptation Programmes of Action
<b>NCE</b>	Non-Conventional Energy
<b>NGO</b>	Non-Governmental Organization
<b>NOC</b>	No Objection Certificate
<b>ODA</b>	Official Development Assistance
<b>ODA</b>	Overseas Development Assistance
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>PCF</b>	Prototype Carbon Fund
<b>PCN</b>	Project Concept Note
<b>PDD</b>	Project Design Document
<b>PFC</b>	Perfluorocarbon
<b>PIN</b>	Project Idea Note
<b>PPA</b>	Power Purchase Agreement
<b>RET</b>	Renewable Energy Technologies
<b>RMU</b>	Removal Unit
<b>SAARC</b>	South Asian Association for Regional Co-operation
<b>SBI</b>	Subsidiary Body for Implementation
<b>SBSTA</b>	Subsidiary Body for Scientific and Technological Advice
<b>SERC</b>	Scientific and Engineering Research Council
<b>SICLIP</b>	Swedish Climate Investment Programme
<b>TT</b>	Technology Transfer
<b>UNCCD</b>	UN Convention to Combat Desertification
<b>UNCED</b>	UN Conference on Environment and Development
<b>UNDP</b>	UN Development Programme
<b>UNEP</b>	UN Environment Programme
<b>UNEP-FII</b>	UNEP Financial Institution Initiative
<b>UNFCCC</b>	UN Framework Convention on Climate Change
<b>URF</b>	Uniform Reporting Format
<b>WCRP</b>	World Climate Research Programme
<b>WEOG</b>	Western European and Others Group (UN regional group)
<b>WHO</b>	World Health Organization
<b>WMO</b>	World Meteorological Organization
<b>WSSD</b>	World Summit on Sustainable Development



# The CDM Glossary

***The essential terms of international climate protection, agreement, mechanism, conventions and bodies of rules and regulations.***

## **Activities Implemented Jointly (AIJ)**

The Convention allows Annex I Parties to implement policies and measures jointly with other Parties to help them return their emissions to 1990 levels. This clause underpinned the decision, at COP-1, to launch a pilot phase of so-called "Activities Implemented Jointly" (AIJ). Under AIJ, an Annex-I Party may implement a project that reduces emissions (e.g. energy conservation) or increase the removal of greenhouse gases by carbon sinks (e.g. reforestation) in the territory of another Party, including a developing country, but without gaining credit for the resulting emission reductions or removals. The pilot phase is intended to build experience through learning by doing, for example in establishing baselines and calculating the environmental benefits of projects. Although the pilot phase was due to conclude by 2000, COP-5 decided to prolong it beyond that date to continue the learning process. The Secretariat compiles an annual synthesis report on the AIJ projects reported to it, which must have been endorsed by both host and investing countries. In reporting on their AIJ projects, Parties are expected to use a Uniform Reporting Format (URF), in order to maximize the comparability of information. The COP reviews the progress of the pilot phase every year, based on this synthesis report.

## **Adaptation Fund**

The Marrakesh Accords established an Adaptation Fund. The Fund, which will be managed by the GEF (as the Convention and Protocol's financial mechanism), is to be funded not only by the adaptation levy on CDM projects, but also by additional contributions from Annex-I Parties. Two percent of the CERs of each project will be paid into a newly-created Adaptation Fund to help particularly vulnerable developing countries adapt to the adverse effects of climate change as supporting capacity building. Projects in least developed countries are exempt from this part of the levy in order to promote the equitable distribution of projects. The Annex-I Parties that intend to ratify the Kyoto Protocol are required to report on their contributions to the fund on an annual basis, and these reports will be reviewed by the COP/MOP.

## **Alternative Energy**

Energy derived from non-fossil fuel sources.

## **Ancillary Effects**

Are the side effects of policies to reduce net greenhouse gas emissions, such as reductions in air pollutants associated with fossil fuels or socio-economic impacts on employment or agricultural efficiency.

## **Annex-B Countries**

List of the 39 countries, which target obligatorily determined emission reductions. They correspond to the states in Annex-I of the Framework Convention on Climate Change except for two states. Developed countries included in Annex-B of the Kyoto Protocol, which assigns quantitative emissions targets for the period 2008-2012.

## **Annexure-I Countries**

A list of 41 *Developed or Industrialized* countries, mostly OECD states including 11 countries in Central and Eastern Europe, which are having legally binding obligations to reduce their GHG emissions to an average of 5.2 percent below their 1990 levels over the period 2008-2012.

<b>Anthropogenic Emissions</b>	Greenhouse gas emissions associated with human activities such as burning fossil fuels or cutting down trees.
<b>Assigned Amount Units (AAUs)</b>	Units, allocated to countries, those who accepted an emission target under the Kyoto Protocol. The amount allocated is equivalent to the total emissions the countries have agreed to limit themselves to cover the first five year Commitment Period of 2008-2012; effectively. AAUs is exchanged through Emissions Trading. These units are all equal to one metric tonne of carbon dioxide equivalent.
<b>Baseline</b>	Is a reference on base scenario. A baseline serves to determine the effects of an emission reduction project. It is the greenhouse gas emission level that would occur in the absence of a certified project activity; which is used as a basis for analyzing the effectiveness of mitigation policies.
<b>Biological Options</b>	There are three: conserving an existing carbon pool, and thereby preventing emissions into the atmosphere; sequestering more CO <sub>2</sub> from the atmosphere by increasing the size of existing carbon pools; and substituting biological products for fossil fuels or for energy-intensive products, thereby reducing CO <sub>2</sub> emissions.
<b>Biomass</b>	The total mass of living organism in a given area or volume; biomass can be used as a sustainable source of fuel with low or zero net emissions.
<b>Burden Sharing</b>	Is an Agreement on the size of individual contributions of the States to States to the fulfillment of a bubbles emission reduction obligation. Therein the European member states determine different reduction targets to achieve the European Community's target of a reduction by eight per cent.
<b>Carbon Finance (CF)</b>	Resources provided to projects generating. (or expected to generate) the Certified Emission Reductions, (CERs), in the form of the purchase of such ERs.
<b>Certified Emission Reduction (CER)</b>	Units, assigned for CDM projects for achieving a reduction in emissions. These units are all equal to one metric tonne of carbon dioxide equivalent (CO <sub>2</sub> e).
<b>Chicago Climate Exchange</b>	The goal of the program is to design and implement a voluntary 'cap-and-trade' market for greenhouse gases. Primarily based in US Midwestern states, CCX has been able to increase its penetration of existing sectors in both the United States and Canada as well as European Union based companies with North American operations and new participants in Mexico and Brazil.
<b>Clean Development Mechanisms (CDM)</b>	A mechanism under Kyoto Protocol for reducing GHG emissions, raising from project investments of industrialized countries, those who invest in mitigating GHGs of a Developing Country; which don't have their own Kyoto emission targets. The firms in the industrialized country would get credits towards their emission reduction targets, while the firms in the developing countries would receive new capital flows and cleaner technology.
<b>Conference of the Parties</b>	The supreme decision-making body of the UNFCC Convention is its <i>Conference of the Parties (COP)</i> , which is an association of all countries that have ratified or acceded to the UNFCCC and is responsible for keeping international efforts to address climate change on track. The COP reviews the implementation

of the Convention and examines the commitments of parties in light of the Conventions objectives, new scientific findings and experience gained in implementing climate change policies. The COP adopts decisions to further develop the Convention's rulebook, negotiate substantive new commitments and meets once a year. Eight sessions of COP, have been held so far.

**Economy in Transition (EIT)**

EIT are the countries of the former Soviet Union and Central and Eastern Europe.

**Emission Reduction Units (ERUs)**

Units, assigned for Joint Implementation projects for achieving a reduction in emission compared to business as usual. These units are all equal to one metric tonne of carbon dioxide equivalent.

**Emissions Tax**

A levy imposed by a government on each unit of CO<sub>2</sub> equivalent emissions from a source subject to the tax; can be imposed as a carbon tax to reduce carbon dioxide emissions from fossil fuels.

**Emissions Trading (ET)**

Portions of an Annex-I country's *emission allowances or rights* can be bought and sold on an *International Carbon Trading Market*, where the trading takes place between industrial nations, in order to enable *Emission Reductions* at the economically lowest costs. An industrialized country can buy – within certain limits – from an another industrialized country's Emission Allowances, if it does not achieve the reduction obligation by the measures, adopted in its own country. In other words, it is a market based approach to achieving environmental objectives that allows countries or companies that reduce GHG emissions below their target to sell their excess emissions credits or allowances to those that find it more difficult or expensive to meet their own targets. Under ET, developed countries with quantified emission limitation and reduction commitments under the Kyoto Protocol may acquire credits from other such Parties that do not need them for compliance with their own targets due to their emissions remaining lower than the upper limit provided for in the Protocol during the commitment period of 2008-2012 and who, therefore, have a surplus of credits.

**European Climate Change Programme (ECCP)**

The European Commission suggested a comprehensive Strategy on March 8, 2000 to combat climate change in the European Union; which is known as European Climate Change Programme (ECCP).

**European Pollutant Emission Register (EPER)**

In accordance with article 15(3) of the directive of the European Council on the Integrated Pollution prevention and Control (IPCC) the European Commission will make publicly available a directory of the most important emission and their sources on the basis of the information transmitted by the member states. Enterprises carrying out so-called IPCC activities (as per Annex-I / IPCC – Directive) and exceeding given threshold values are committed together relevant emission data for the EPER.

**First Commitment Period**

Annex-I countries required to mitigate their 5.2 percent of GHG emission reduction targets of 1990 level during 2008-2012.

**Flexible Mechanism**

is a Collective term for the instruments like *Clean Development Mechanism* (CDM), *Joint Implementation* (JI) and *Emissions Trading* (ET).

**Fossil fuels**

Carbon-based fuels from fossil carbon deposits, including coal, oil, and natural gas.

**G77**

Group of the originally 77 developing countries, established in 1964 in order to be able to represent effectively the interests of the third world. In 1991 it had

	altogether 129 members. During the climate negotiations the G77-States and China are often mentioned together (G77 + China).
<b>Green House Gases (GHGs)</b>	Six Gases, such as <i>Carbon dioxide (CO<sub>2</sub>)</i> , <i>Methane (CH<sub>4</sub>)</i> , <i>Nitrous oxide (N<sub>2</sub>O)</i> , <i>Hydrofluorocarbons (HFCs)</i> , <i>Perfluorocarbons (PFCs)</i> and <i>Sulphur hexafluoride (SF<sub>6</sub>)</i> ; responsible for the rise of atmospheric temperature, contributing to <i>Global Warming</i> and the natural greenhouse effect of the planet, are known as GHGs.
<b>Greenhouse Gas Protocol</b>	The GHG Protocol is an international initiative of enterprises, non-government organizations, governments as well as inter-governmental organizations under the umbrella of the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). Within the framework of the GHG Protocol internationally accepted standards for the calculation of greenhouse gas emissions are to be determined.
<b>Internal Rate of Return (IRR)</b>	The annual return that would make the present value of future cash flows from an investment (including its residual market value) equal to the current market price of the investment. In other words, the discount rate at which an investment has zero net present value (npv).
<b>Inter-governmental Panel on Climate Change (IPCC)</b>	The IPCC is a scientific and technical body consists of 2000 scientists, experts and government representatives, the same individuals who represent their countries at the Kyoto Protocol negotiations; decide, which assessments to be undertaken and accordingly the final reports would be reviewed and their summaries would be recommended to the Policymakers. The IPCC Plenary meetings are held once or twice a year, and usually attended by 100 or more countries. IPCC published assessment reports in 1990,1995 and 2001.
<b>International Emissions Trading Association</b>	The International Emissions Trading Association (IETA) is committed to establish a functional international framework for trading greenhouse gas emission reductions. IETA members seek to develop an emissions trading regime that results in real and verifiable greenhouse gas emissions reductions while balancing economic efficiency with environmental integrity and social equity. ( <a href="http://www.ieta.org">www.ieta.org</a> )
<b>Joint Implementation</b>	is an investment proposition by which two Annex-I countries can invest in a GHG saving project and share the carbon credits, where they can fulfill their obligations for emission reductions by investing into other Annex-1 countries, where the same emission reductions with smaller investments can be achieved. Emission rights or assigned amount units from the project country will be transferred to the investing country. In other words, Under the JI, a developed country with relatively higher costs of domestic greenhouse gas reduction activities would take up greenhouse gas reduction project activities in another developed country, which may offer opportunities for greenhouse gas reduction activities at lesser costs. Through this mechanism, both the parties would get credit towards the emission reduction targets achieved, while the project proponent would receive part of the new capital flows for the project execution.
<b>Kyoto Protocol</b>	The Kyoto Protocol was signed by the Governments and adopted in December 1997, during COP-3 at Kyoto, Japan. The Protocol creates legally binding obligations for 38 industrialized countries, including 11 countries in Central and Eastern Europe, to return their emissions of GHGs to an average of approximately 5.2 percent below their 1990 levels as an average over the period 2008-2012.

<b>Least Developed Countries (LDCs)</b>	The Marrakesh Accords also established a separate work programme for Least Developed Countries. This work programme is centred on the preparation of National Adaptation Programmes of Action (NAPAs), which open up a simplified channel for LDCs to inform donors of their vulnerability to climate change and their urgent adaptation needs. This responds to the fact that many LDCs already need support to help them adapt to climate change, but lack the capacity to prepare full national communications detailing those needs in the near future. The preparation of NAPAs would be funded by the newly-created least developed countries fund. In order to support LDCs in their preparation and implementation of NAPAs, the Marrakesh Accords launched a least developed country expert group with a mandate to provide technical guidance and advice to LDCs and to facilitate information exchange with other multilateral environmental treaties. The expert group, which is composed of 12 experts, will convene twice a year until COP-9 and would cooperate closely with the Consultative Group of Experts on National Communications from Non-Annex-I Parties.
<b>Marrakech Accords</b>	Governments agreed for a comprehensive rulebook, called " <i>The Marrakech Accords</i> " on how to implement the Kyoto Protocol in 2001 at COP-7. The Accords also intend to provide governments with sufficient clarity to consider ratification.
<b>GHG Mitigation</b>	Action to reduce sources or enhance sinks of greenhouse gases.
<b>National Registry</b>	A computerized system of registries would keep track of transactions in AAUs, CERs, ERUs and RMUs. Each Annex I Party must establish and maintain a National Registry. This would contain accounts for holding AAUs, CERs, ERUs and RMUs by the Party, as well as by any legal entities authorized by the Party to hold them. It will also contain accounts for setting units aside to comply with emissions targets at the end of the commitment period, and for removing units from the system. Transactions between account holding legal entities would take place through these national registries. The three mechanisms i.e JI, CDM, ET operate on the basis of accounting units, which are tracked and recorded through National Registries to be established and maintained by Annex-I Parties, Joint Implementation Projects result in Emission Reduction units (ERUs), CDM projects generate Certified Emission Reductions (CERs) and, under Emission Trading (ET), Annex-I Parties may exchange Assigned Amount Units (AAUs). They may also exchange CERs and ERUs, as well as RMUs generated through sink activities in the LULUCF sector. These units are all equal to one metric tonne of carbon dioxide equivalent.
<b>Non-Annex-I Countries</b>	The developing countries, those don't have legal bindings to mitigate their GHG emissions under Kyoto Protocol, during first commitment period.
<b>Project Concept Note (PCN)</b>	This is a little detailed document than PIN but smaller in size compare to Project Design Document, which also covers financial analysis as well as risk analysis.
<b>Project Designs Document (PDD)</b>	PDD is a document, which is prepared by the project promoters, providing the detailed information of the project to be considered for CDM benefits. It has to prepare a PDD and ultimately submit the same to the CDM Executive Board through a DOE, so that CER claimed can be approved. UNFCCC provides the detailed guidelines for PDD at Decision 17/CP.7, displayed at <a href="http://www.unfccc.int">www.unfccc.int</a> .
<b>Project Idea Note (PIN)</b>	is a brief and comprehensive note compared to PDD, which conveys the idea about the type of the project, its locations, the expected schedule, the financial

arrangements, technical summary and the expected environmental benefits; providing the basic information which helps in decision making process for the award of "Endorsement" or the "Host Country Approval".

**Prototype Carbon Fund (PCF)**

The PCF is intended to invest in projects that will produce high quality greenhouse gas emission reductions that could be registered with the United Nations Framework Convention on Climate Change (UNFCCC) for the purposes of the Kyoto Protocol. To increase the likelihood that the reductions will be recognized by the Parties to the UNFCCC, independent experts will follow validations, verification and certification procedures that respond to UNFCCC Rules as they develop. ([www.prototypecarbonfund.org](http://www.prototypecarbonfund.org))

**Removal Units (RMUs)**

Units, assigned for emissions, which are stored, such as carbon sequestered in Trees / forests or generated by LULUCF Projects that absorb GHGs or carbon dioxide (CO<sub>2</sub>) storage in underground Gas Reservoirs. These units are all equal to one metric tonne of carbon dioxide equivalent.

**Renewables**

Energy sources that, within a time frame that is brief relative to the earth's natural cycles and are sustainable; examples are non-carbon technologies such as solar energy, hydropower, and wind, as well as carbon-neutral technologies such as biomass.

**Second Commitment Period**

In the case of non-compliance with emissions targets, Annex-I Parties are granted 100 days after the completion of the expert review of their final emission inventory for the commitment period to make up any shortfall in compliance (e.g. by acquiring AAUs, CERs, ERUs or RMUs). If, at the end of First Commitment Period, a Party has still missed its emission's target, it must make up the difference in the next commitment period, plus a penalty of 30% is to be paid. The Party concerned would also be barred from "selling" under Emissions Trading and, within three months, it must have to develop a *Compliance Action Plan* detailing the action it would undertake to make sure that its target is met in the second commitment period i.e. 2013-2017.

**Sequestration**

The process of removing and storing carbon dioxide from the atmosphere through, for example, land-use change, afforestation, reforestation, or enhancements of carbon in agricultural soils.

**Spill-over Effect**

Is the kind of economic effects of domestic or sectoral mitigation measures on other countries or sectors, which can be positive or negative and include effects on trade, carbon leakage, and the transfer and diffusion of environmental sound technologies.

**Stakeholders**

Are the People or entities with interests that would be affected by a particular action or policy.

**Subsidiary Body for Implementation (SBI)**

The SBI helps with the assessment and review of the Convention's implementation, including the analysis of national communications submitted by Parties, liaison with the GEF, and financial and administrative issues; which meet at least twice a year to carry out preparatory work for the COP.

**Subsidiary Body For Scientific and Technological Advice (SBSTA)**

The SBSTA is responsible for providing advice to the COP on scientific, technological and methodological issues, including on the improvement of guidelines for preparing national communications and emission inventories, as well as cooperation with the IPCC and other relevant international

organizations. The SBSTA meets at least twice a year to carry out preparatory work for the COP.

<b>Subsidy</b>	A direct payment from the government to an entity, or a tax reduction to that entity, for implementing a practice the governmental wishes to encourage; greenhouse gas emissions can be discouraged by reducing fossil-fuel subsidies or granting subsidies for insulating buildings or planting trees.
<b>Technology Transfer</b>	An exchange of knowledge, money, or goods that promotes the spread of technologies for adapting to or mitigating climate change; the term generally refers to the diffusion of technologies and technological co-operation across and within countries.
<b>The United Nations Framework Convention on Climate Change (UNFCCC)</b>	The UNFCCC was opened for signature at the UN Conference on Environment and Development (The Earth Summit) in Rio de Janeiro, Brazil, in June 1992, and entered into force in March 1994. The Convention sets an "ultimate objective" of stabilizing atmospheric concentrations of greenhouse gases at safe levels.
<b>UK Emissions Trading Schemes</b>	The UK emissions trading scheme is the world's first economy-wide greenhouse gas trading scheme. Several organizations have voluntarily taken on a legally binding obligation to reduce their emissions against 1998-2000 levels, delivering over 4 million tonnes carbon dioxide equivalent emission reductions by the final year of the scheme. More details are available at ( <a href="http://www.defra.gov.uk/environment/climatechange/trading/index.htm">www.defra.gov.uk/environment/climatechange/trading/index.htm</a> ) & ( <a href="http://www.uketg.com">www.uketg.com</a> )
<b>Umbrella Group</b>	Informal group of industrialized countries within the international negotiations for the UNFCCC, which do not belong to the European Union: Japan, USA (up to their withdrawal from the Kyoto-Protocol), Canada, Australia, Norway, New Zealand, Iceland, Russia and the Ukraine.
<b>Voluntary Agreement</b>	An agreement between government and business, or a unilateral private sector commitment that is acknowledged by the government, aimed at achieving environmental objectives or improving environmental performance.
<b>Voluntary Measures</b>	Measures to reduce greenhouse gas emission that are adopted by firms or other sectors in the absence of government mandates; they can involve making climate-friendly products or processes more readily available or encouraging consumers to incorporate environmental values in their market choices.

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*For other details, please also refer to the Glossary at Annexure-X*

## Executive Summary

The challenge of climate change is a global one and, fittingly, the global community is addressing this challenge through a multi-lateral and cooperative approach. The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the *Rio Earth Summit* about eleven years ago. The Government of India has demonstrated its deep and continuing commitment to global efforts to address climate change by acceding to the Kyoto Protocol to the UNFCCC, and hosting COP-8, the eighth session of the Conference of Parties to the UNFCCC at New Delhi.

Although the countries of the developing world are more vulnerable to climate change, their contribution to the greenhouse problem has been much smaller than that of developed ones. Historically, developed countries have been responsible for more than 60% of greenhouse gases (GHGs) added in the last hundred years. According to UNFCCC, Since the largest share of historical and current global emission of GHGs has originated in developed countries, it is now, their turn to take the lead in combating these emissions, which are the main cause of global warming. Under UNFCCC and its Kyoto Protocol, several innovative mechanisms are available for enabling countries to meet their "target" of GHG emissions in the first commitment period 2008–12 at lowest cost. These mechanisms are referred to as "*Market based Mechanisms*" and provide for transactions between two nations. One of these mechanisms is called *Clean Development Mechanism* (CDM), in which the government or a company of one of the developed nations having a GHG reduction target can invest in a project developed by an entity in a developing country. The investor receives *Certified Emission Reductions* (CERs) verified by an independent *Operational Entity*. The CERs can be credited towards the investor's target. The developing nations called "*Host Countries*" (HC) have to set up a process of approval of these projects. The HC approval, basically ensures that the project meets "*Sustainable Development*" criteria decided by the Government of that country.

At present only a few developing countries are in advanced stages of CDM approval institution and project development. This document illustrates a *National Action Plan*, which the Government of India, would be unfolding during the next few years in order to make use of potential investments through the CERs by offering creditworthy CDM projects from India. Before discussing the proposed Action Plan in detail, it would be appropriate to discuss about the CDM and the developments that led to this approach. The first chapter of this Working Group report provides necessary information, especially on the history and the state of climate change process and Kyoto Protocol. The second chapter, then brings out the CDM Process and Project Activity Cycle and the Stakeholders' Concerns in general. In addition, in third chapter, the CDM's *international* as well as *national Market* and its present and future potentials, especially on India's Context, have been discussed. Subsequently, the fourth and fifth Chapter discusses the recommendations of the Working Group for operationalising CDM in India.

In 1990, India accounted for approximately three per cent (3 %) of global GHG emissions (1001352 giga grams CO<sub>2</sub> equivalent). The major part of India's emissions came from fossil-fuel-related CO<sub>2</sub> emissions. In per capita terms, India emitted 1.19 tonnes of CO<sub>2</sub>-equivalent, compared



to Japan's 8.8 tonnes and US's 19.8 tonnes in the same year (ADB-GEF-UNDP 1998). Ten years later, India's CO<sub>2</sub> emissions from fossil fuel combustion continued to be much lower than those of key developed countries. In per capita terms, India's emissions constitute just a fraction of the world average. Our CO<sub>2</sub> intensity of GDP (gross domestic product) at purchasing power parity is also lower than the OECD (Organisation for Economic Co-operation and Development) and world averages. Despite its low share in atmospheric GHG concentrations, and its overriding development priorities, India is undertaking numerous initiatives that contribute significantly to international efforts for atmospheric protection, thus placing the country on the path of climate-friendly development.

At present for India, it is very important that the country should gear up and get ready along with other developing countries to take the maximum advantage of the *Clean Development Mechanism* (CDM), which will not only benefit the industries, the farmers and project promoters, but also help the country in achieving the objective of Sustainable Development, reducing pollution and promoting environment protection. Under the advice of PMO, Planning Commission constituted a Working Group under the Chairmanship Adviser (E&F), to prepare a *National Action Plan for Operationalising CDM in India*, the *Action Plan* is ready with its recommendations, as discussed below:

The first thing we need to do for operationalising CDM is to establish a *Designated National Authority (DNA)*, which will provide the legal teeth to the operationalisation. In this Working Group's Report looking into the various international experiences and UNFCCC norms *as well as* the National scenario, here at home a model for establishing a DNA has been widely discussed.

The key roles of the DNA, as suggested in the WG Report would be the following:

- Develop/Modify Host Country CDM Endorsement Criteria, based on its sustainable development objectives
- Approval/Endorsement of the projects on behalf of the country for submission by respective project proponents /DOEs to the CDM Executive Board
- Formation of Committees to look into specific aspects of CDM
- Creation of a 'National CDM Fund', to make DNA self Sufficient in Its operation
- Monitoring of projects for Sustainability
- Annual reporting of its activities to the CDM Executive Board
- Though not mandatory for Non Annex I countries, maintaining a Registry of projects and CERs transaction involved

From the viewpoint of proponents, the DNA serves as a primary focal point of contact throughout a project life cycle. It is therefore desirable that the DNA, beyond its regulatory role, may also perform the following roles:

- Identify key sectors on the basis of sustainability criteria
- Develop CDM Guidelines for key sectors
- Facilitate bringing together potential CDM partners
- Promote and Market CDM, so that the nation can generate maximum CERs
- Coordinate with other government/regulatory bodies so as to ensure that their *Decision Making* does not impact the CER potential of the country (e.g. while issuing notifications/DOs the concerned agency may inadvertently be creating a baseline definition, which might convert a set of projects as "Business-as-Usual").

## Structure of the DNA

Looking at both the mandatory and desirable roles of the DNA as discussed above, the Working Group recommends the formation of the DNA, with members drawn from Ministries, such as MoEF, MEA, Finance, Power, Industry & Commerce, MNES and Planning Commission. Since MoEF, is the nodal Ministry for coordinating and implementing the CDM, *Secretary, MoEF* may act as the chairman of the DNA and concerned Joint Secretary as a Member and a Director level Officer as the Member Secretary of this National Authority. The Authority shall have powers to co-opt additional Members or invite officials from other Ministries of the Government of India and experts from Financial Institutions, Consultancy Organizations, NGO's, Civil Society, legal profession, Industry and commerce as it may deem necessary for technical and professional inputs. The Authority may recommend guidelines to the Ministries for consideration of projects and principles to be followed for according "*Host country Endorsement*". The Authority should meet as often as required or at least once in a month period. The DNA should carry out functions described above.

The Member-Secretary of the DNA shall be responsible for day-to-day activities of the *CDM Cell* and coordinating *CDM Promotion Agency* and the decisions of the DNA. He shall carry out preliminary examination of projects, arrange for meetings of the Authority, and submit reports regarding CDM to the Executive Board of UNFCCC as per requirements. Moreover, he shall also get detailed examination of the project proposals conducted through experts/consulting organizations for consideration by the DNA in accordance with guidelines established for the purpose. The DNA shall have autonomy and approval authority. This would allow transparent and speedy decision-making. If necessary, consultants may be hired on *contractual basis* as and when required. For exercising DNA's role effectively, it may be necessary to constitute the followings:

- An *expert panel* consisting of members, form the *Institutions/ Organisations already engaged* in the climate change and CDM activities; those who would guide DNA on *sectoral technical issues*, including Baselines.
- Another *experts panel* of *Financial Institutions* for attracting investors for *Foreign Direct Investment* (FDIs) in investing in CDM projects in India from the proactive Annex-I countries such as Germany, Netherlands, Sweden, Norway, Canada, Japan etc., which would help in promoting *an aggressive marketing policy* for CDM.
- The Third *expert panel* for assisting in setting up mechanisms for *promoting investments within the country* through India's *Financial Institution* (FIs) particularly to encourage unilateral CDM, in parallel with country's effort *to market CDM projects* in Annex-1 countries.

These three above expert panels would provide technical, marketing and promotional support to the National CDM Authority. Care must be exercised in selecting members of these panels, to ensure that they are not connected with projects under review under any capacity such as proponents, consultants, advisors or operational entities. These panels may have a few permanent members and provision of co-opting additional members depending on specific need from time to time.

The respective *roles* of these panels, to *minimize bias* and *conflicts of interest*, *promote environmental integrity*, *transparency* and *investor's confidence*, would help DNA to take independent decisions by *streamlining procedures* so that *transaction cost* could be kept minimum.

The second aspect of the operationalisation is the promotional part to enhance the general know-how and the technical awareness among the public associated stakeholders, industry groups, project promoters, the bankers and financial institutions.

In addition, Keeping this in mind, the Working Group recommends the following, which would facilitate DNA to carry out its role and responsibility:

- A CDM Cell
- A CDM Promotion Agency

The administrative and regulatory roles pertaining to CDM would be played by the CDM Cell, while the other facilitating roles such as promotion and marketing are envisaged to be played by the CDM Promotion Agency, which could include private sector/NGO.

### **CDM Approval Criteria**

As per the rules of the UNFCCC, it is the host country's prerogative to decide whether an applicant project activity assists in achieving sustainable development and accordingly approve projects. Hence, the two aspects that need to be looked into while evaluating CDM proposals by the DNA are the following.

- Whether the project meets national priorities, set by the *Five Year Planning Process*
- Whether it contributes to Sustainable Development of the country

There has been a great deal of debate in the country as to whether factors such as technical and financial additionality, etc. be considered for the necessary endorsement by the DNA. In this regard the Working Group felt that the CDM Executive Board has laid down rigorous processes to address this concern. Hence DNA should focus on the above two aspects plus some additional considerations for projects involving the following

- Projects involving *ODA* and *Subsidies*
- Projects involving *Technology Transfer*
- Projects involving *FDI* under the management control of the foreign partner.

It is further clarified that the "*Host Country Endorsement*" should only be issued in case of projects, which meet all the CDM approval criteria/considerations as set forth except few pertaining to sustainable development criteria of DNA and also needs to obtain other clearances such as environmental or techno-economic clearance, etc. Final approval as "*Host Country Endorsement*" can be issued only after such clearances (EIA, Environmental & Forestry Clearance) are submitted to the DNA.

### **Processing Fees for CDM Projects**

The Working Group proposes the establishment of a *CDM Fund*, so that the activities of DNA, CDM Cell and CDM Promotion Agency can be supported from this and the DNA could be made self-sustained. With a view to reduce the transaction cost of the project the Working Group has recommended a very nominal up-front processing fee to be paid by the project promoters, seeking CDM approval, which is linked to the size of investment. This CDM Fund would be charging a fee from projects generating CERs, in a following pattern:

- Projects generating CERs upto 50,000 per annum will be exempted from any charges
- Projects generating CERs exceeding 50,000 but less than 1 lakh per annum will be charged @ 1% of the CERs in excess of 50,000.
- Projects generating CERs in excess of 1 lakh per annum will be charged @2%.

Otherwise, if neither the *final generation of CERs* of a project, nor the *price of the same* is known, at the time of "*Host Country Endorsement*", we may charge a *fixed amount* based on the total proposed CERs in the line of *Registration Fees Structure* of the UNFCCC Executive Board.

## Management of Transaction Costs

Costs are involved at every stage of CDM project cycle. The national CDM authority should seek to find ways to minimize the transaction costs incurred during various stages so that the market can develop. The stages in the CDM project cycle are:

- PDD preparation stage
- Public consultation stage
- "*Host Country Endorsement*" Issuance stage
- Validation, Monitoring and Verification stage
- Registration and Approval by the Executive Board, stage

Bulk of the *transaction costs* are linked to the rigor of the CDM process that needs to be followed. This is expected to come down as more and more projects under CDM are executed. The transition cost can be reduced by adopting following routes :

- By Streamlining of processes
- Through the Capacity Building of Local Consultants
- By Providing easy access to information
- By Bundling projects
- By Addressing the Taxation issue

## Capacity Building and Promotion

The working group realised the need for aggressive international marketing and domestic capacity building to attract maximum CDM investments to the country. Moreover, it is also felt that time bound programs are implemented to take maximum share of the CDM market. Details of these have been discussed under (i) Establishment of the DNA and CDM Cell (ii) Hiring the CDM Promotion Agency (iii) Execution of State-wise CDM Awareness Programmes (iv) Execution of Stake-holder specific Capacity Building CDM Promotion programs (v) Preparation of the CDM Implementation Manual (vi) Preparation of the CDM Investor's Guide (vii) Execution of International CDM Road shows (viii) Organising an International Climate Technology Bazar, in Chapter-4.

Different areas where capacity building needs to be undertaken are suggested below:

## Project Identification and Formulation

Project developers in either the energy sector or the land use sector are familiar with traditional project development. However, the potential carbon flow or carbon upgrade component of projects is not commonly recognized. In order to promote CDM investment, the project developers need to be trained on how to identify projects in which the base project can be distinguished from the carbon component. They can also begin to understand the context of the UNFCCC and the Carbon Market and the PDD format, etc.

## Baseline Definition

The definition of the baseline is one of the most crucial technical aspects of a CDM project. A project baseline defines the level of expected emissions /carbon stores in the *Business-as-Usual* scenario without the implementation of the CDM project. It is the basis from which the CERs for a CDM project activity must be measured and it is important that it be established properly and credibly at the outset.

The principal responsibility for defining the baseline associated with a specific project will lie with the project developer and investor. However, the underlying assumptions and data that support a baseline definition must be derived from national standards of CDM Executive Boards guidelines.

## **Quantification of Emissions Reductions**

The amount of emissions reductions that will be associated by the proposed project is the difference between emissions in the baseline and the proposed project, minus the leakage. An accurate estimate of the emissions reduction potential may also be critical to the financial feasibility of the project. A low estimate may *unduly disqualify* a potential project based on inadequate revenue for financial sustainability. A high estimate may overrule the benefits of the project. Due to the critical role that estimated emissions reduction potential can play in financing decisions for CDM projects, it is important that project developers properly understand estimation of emissions reduction potential of CDM projects.

## **Monitoring the Project Performance**

To determine the actual performance and emissions reduction that is achieved, by the project during implementation, project indicators will need to be closely monitored. A monitoring plan should be established that is transparent and in accordance with National CDM Authority/ CDM Executive Board guideline in order for independent third party agents to verify the results.

In order to promote the widespread implementation of CDM projects the stakeholder: i.e., project developers, private companies, government agencies, bankers non-government organizations and other stakeholders involved in project development need to be trained on primary requirements for projects.

## **International Marketing for CDM**

The first step in this direction is to give a strong message to the world, of India's preparedness to face the CDM challenge. This is very necessary for two reasons:

Firstly, the experience of many of the Annex-1 countries during the AIJ phase was not very pleasant. Many countries had to wait for years together before their projects could be approved. It is therefore required to undo the past experience and to show to the world that India has learnt from the experience and is at present actively looking for CDM deals.

Secondly, India has an advantage in that it has taken the lead role during the *negotiating process* under the UNFCCC and moreover it has a substantial amount of capacity built up over the years, being a key player in the Kyoto Protocol processes. Many of the Western countries have shown their preferences to do business with India. Simplified and transparent "*Host Country Enderosment*" procedures can further enhance their interests in India. Unless we have a very simple and transparent processes, India is unlikely to be chosen as the natural choice for CDM transactions.

## **Need for targeted Marketing**

Rather than taking on the whole world at the same time, it would be much more effective if we can target few aggressive countries looking for investments to start with. Obviously, countries, which have high emissions reduction targets would be the right targets. The additional considerations would be to see their internal policies and how the countries are moving ahead to meet their targets. We can also see from the practical experience as to how they have been approaching the Indian market and what has been the scale of their activities, over the past couple of years or so. Some of the countries having substantial targets however, are more interested in meeting the targets through domestic action rather than investing under CDM. Countries like Netherlands and Finland have come up with international CDM tenders and can therefore be said to have taken the lead in the CDM game.

All said above, the possibility and pressure join the protocol by other countries cannot be ruled out for all times to come. As such India as a country, must keep United States and Australia

engaged in this climate change process.

To summarise, there is a need to have targeted marketing strategy to take maximum share of the CDM market. Following sections provide some of the methods by which India can promote itself in the global CDM market.

### **The Road show Organisation**

It has already been said before that the country should give a strong message that it is ready to receive investments under CDM. In order to transmitting this message loud and clear at least to those handful of countries, which are proactive in the carbon market, it is necessary that international road shows are conducted.

The road would involve touring to the targeted countries and making presentations before the chambers of commerce and industry, potential government departments and especially those private industries, which have been given emission reduction targets.

The committee recommends that such road shows be organized and executed immediately as CDM is clearly becoming a race and the sooner, one starts the better would be the outcome. Countries have already started bringing out tenders and more are likely to follow. Many international funding agencies are setting aside huge amounts of funds for development of GHG emissions reduction projects and once we show our willingness and eagerness to attract CDM projects, it will be much easier for a country like India to ensure that a sizable amount of technical assistance funding available with the international organisations like the World Bank and the Asian Development Bank also comes to India.

India should also conduct side-events during all the international events related to CDM especially during all the COPs.

### **Displaying our Ability to Deliver**

India has already sent strong signals to the CDM market by participating in various international tenders for procuring Certified Emission Reductions. There is however a further need to show to the prospective CDM investors, our preparedness when they come to our country. For this, it is necessary that we are ready to display our best CDM type projects, which are up and running and which display our capacity to run and maintain such CDM type of projects. Second, since the Kyoto Protocol process is fairly complex, we must also display an understanding of the subject and other finer details of the process. This can be achieved by undertaking targeted research projects the output of which can be displayed before the clients. For example, the Ministry of Non-conventional Energy Sources has commissioned five studies on the subjects of Baselines, Sustainable Development criteria, real life case studies, Simplified Procedures etc, and once these are published, they would be made available freely to all those who are interested in setting up CDM projects. Such an output along with well produced CDM publicity material would go a long way in raising the confidence levels of investors from Annex-1 countries, who can come and see that India has already invested a lot of time and money in the process and this will give them reassurance that their money would not go waste.

### **Organising an *International Climate Technology Bazar***

Another way being suggested to display India's readiness and potential is to deliver CDM projects is to organize an international carbon trade fair in the country. This is expected to gain wide publicity in the international carbon market. The developed countries and companies having emission reduction targets can be invited to the trade fair. This would also be a good opportunity for the Indian companies to showcase their CDM projects and attract potential buyers.

This should be in the form of a truly international exhibition and should be given adequate publicity especially in the targeted countries listed above and once these countries can see for themselves what India has been able to achieve in the field so far, investments will be expected to follow in its wake.

## **Preparing a *CDM Investor's Guide***

CDM investor's guide would be basically a document talking about opportunities and advantages of investing in India to attract CDM investors, Current position of the Govt. of India on climate change Policy issues, institutional infrastructure in place to deal with aspects of CDM etc. The awareness and capacity building programs can be executed by way of interactive workshops, or specific training programs. The CDM implementation manual would need to be developed and hosted at the website to be developed by the DNA.

## **The Key Stakeholders and their roles in CDM Promotion**

### **Role of Government**

The government is one of the key stake-holders in CDM. The various line ministries and departments can play significant role as facilitators and "enablers" for the CDM projects in their respective sectors. Therefore, they need to understand the CDM modalities and procedures and also technical issues such as CDM eligibility criteria for projects. The DNA has a significant role to play as has been already discussed earlier. They also need to understand the different kinds of risks involved for the government as well as project proponents, and the penalties for defaulters.

A broad perspective would help the government to assign roles and responsibilities for itself and regulate the roles and responsibilities of the other stakeholders. These include CERC, SERCs and state governments. CERC should prepare guidelines/recommendations in respect of power purchase from the CDM projects. The SERCs should provide price preference to these projects. If the MNES policy is not a viable option, the best possible and affordable tariff should be accorded to the RE based power. State governments should exhibit expediency and transparency of policy pronouncement. Business risk mainly emanates from the lack of clarity and biased implementation of policies in place. Delay in announcing or lack of clarity in policies lead to higher uncertainty than having even a bad policy in place. Further, the people of the respective government department or ministries will best know the specific issues and concerns at a national and state level. Hence it becomes invaluable for them to realise the implications of the CDM to attracting FDI and creating a climate conducive for investment in country.

### **Industry**

Industry or the project developers are the major beneficiaries of CDM. Proper knowledge of CDM including its rules and regulations can encourage the industry to explore new ideas and develop new projects that can qualify under CDM. CDM encourages companies to look at energy in its life cycle from a commercial and economic viewpoint - generation, use, reuse, efficiency, renewable sources and conservation. Moreover, industries can use CDM as the tool to source cleaner technologies for India. There is therefore a need for designing specific programs targeting different kinds of industries.

While Indian industry is the most informed among stakeholders, there are still few issues on which capacity building and institutional links need to be established. There is a high level of confusion between project level emission reduction and emission trading. Also, some of the stakeholders feel that GOI may be in a position to control the CER price. All such misconceptions need to be removed. Similarly the misconceptions about Technology Transfer, which is confused with cross border transfer of advanced technology need be cleared. Sectorally specialized project document preparation training courses are crucial as baseline and monitoring rules will differ considerably according to project types.

## **Banks & Financial Institutions**

Better appreciation of the CDM and its benefits to projects can encourage the financiers to invest in CDM projects as CDM has the potential to strengthen the project cashflows through foreign earnings. They also need to understand the other side of the coin such as the process intricacies and transaction costs etc. which would ultimately decide the net return to the project.

Barring few names majority of banks especially the private banks are still not the part of CDM project development process. The capacity building in this section needs to be mainstreamed into the existing training set up. All the training institutions in the banking sector could be networked into training programmes directed at informing them trends in risk management tools, climate change related risks to their portfolios in the light of future scenario of targets, market mechanisms – CDM in particular and also project structuring for qualification as CDM. It may be worthwhile to approach the bilateral aid agencies to develop programs for the bank officials at various levels from operating level to policy/decision making levels.

## **Insurance Companies**

The insurance sector is one sector in India, where the awareness level is rather low. It may be worthwhile to co-ordinate with the recently formed Task Force on Insurance Sector and CDM to develop capacity building for the insurance sector. One way is to establish links with the UNEP-FII program, which has been a co-operative program between international banks, research institutions and insurance companies. Training module with a focus on insurance companies may also be developed.

## **Civil Society**

The role of civil society is unique in the sense they do not have any direct benefits from their involvement in the subject. However, NGOs, independent experts and academic institutions have the potential to form dependable allies to both the government and the industry in helping shape the policies. The government may find national NGOs useful in imparting training to at least some stakeholder groups. They can also help develop community based CDM projects, which can benefit the community directly. Further, they may be able to reach out to a wide network across several developing countries in an effort to gather consensus on raising the selling price for CERs to the Annex-1 countries. In addition, they may become the partners in developing project proposals for the industry. Finally, they are the ones that will be able to add value to projects during the public consultation process.

In sixth chapter, the detailed strategies for operationalising CDM in LULUCF Sector has been dealt in detailed followed by Annexures, consisting administrative as well as technical references from UNFCCC Website. The Bibliographic references and some useful CDM Websites are placed at the end of the Annexures.

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# Chapter-1

## The history and process of climate change and kyoto protocol

### Preamble

Anthropogenic climate change has become visible in the past two decades. The community of nations, especially the developed ones, are required to take actions to reduce the emissions of greenhouse gases (GHG), which are the main cause of global warming. Under the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol; several innovative mechanisms are available for enabling countries to meet their “target” of GHG emissions in the first commitment period 2008–12 based. These mechanisms are referred to as “Market Mechanisms” and also provided for transactions between two nations. One of these mechanisms is called the Clean Development Mechanism (CDM)”, in which the government or a company of one of the developed nations having a GHG reduction target, can invest in a project developed by an entity in a developing country. The investor receives the “certified emission reductions” (CERs), verified by an independent operational entity. The CERs can be credited towards the investor’s target. The developing nations are called “Host Countries (HC)” who have to set up a process of approval of these projects: ensuring the project meeting “Sustainable Development” criteria decided by the Government of that country.

At present only a few developing countries are in advanced stages of CDM approval institution and project development. This document illustrates the Action Plan which the Government of India would be unfolding during the next few years in order to make use of potential investments through the CERs by offering creditworthy CDM projects from India. Before discussing the proposed Action Plan, a brief background of the climate change regime would not be out of place. This chapter provides necessary information about CDM and the developments that led to this approach. For further details, interested readers may refer to the various Information kits brought out jointly by several UN Bodies like UNFCCC, UNEP and UNDP.

### Introduction

On 9 May 1992, the world’s governments adopted the UN Framework Convention on Climate Change (UNFCCC). In doing so, they took the first step in addressing one of the most urgent environmental problems facing humankind. Five years later, on 11 December 1997, governments took a further step forwards and adopted the landmark Kyoto Protocol. Building on the framework of the Convention, the Kyoto Protocol broke new ground with its legally-binding constraints on greenhouse gas emissions and its innovative “mechanisms” aimed at cutting the cost of curb on emissions. Today, 186 countries are Parties to the Convention i.e. more than any other environmental treaty, and Kyoto Protocol is expected to enter into force any time now.

### The Science

While the world’s climate has always varied naturally, the vast majority of scientists now believe that rising concentrations of “Green House Gases” (GHGs) in the earth’s atmosphere,

resulting from economic and demographic growth over the past two centuries since the industrial revolution, are overriding this natural variability and leading to potentially irreversible climate change. Green House Gases (GHGs) – especially Carbon Dioxide, the most abundant from human sources – act like a blanket over the Earth's surface, keeping it warmer than it would otherwise be. The Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), released in 2001, confirms that “an increasing body of observations gives a collective picture of a warming world” with “new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities”.

Updating the findings of its 1995 Second Assessment Report, the IPCC projects that the climate will change more rapidly than previously expected. Global mean surface temperatures are projected to increase by 1.4 - 5.8°C by 2100, the fastest rate of change since the end of the last ice age. Global mean sea levels are expected to rise by 9 - 88 cm by 2100, flooding many low-lying coastal areas. Changes in rainfall patterns are also predicted, increasing the threat of drought or floods in many regions. Overall, the climate is expected to become more variable, with a greater threat of extreme weather events, such as intense storms and heat-waves. There is also the risk of abrupt and large-scale “surprises”, for instance, the weakening or complete shut down of the ocean thermohaline circulation (such as the Gulf Stream), or the collapse of the Greenland and West Antarctic ice sheets. While the likelihood that such devastating events will happen over the next hundred years is very low, it increases with the rate and scale of global warming.

The IPCC reports that the effects of climate change are already starting to be felt, for example, in the earlier flowering of plants and egg-laying in birds. The climate system is complex and scientists still need to improve their understanding of the extent, timing and impacts of climate change, but what we know already alerts us to its dangers. Although some people may benefit from climate change, the IPCC warns that more will suffer, with potentially dramatic negative impacts on human health, food security, economic activity, water resources and physical infrastructure. Farming could be seriously disrupted with falling crop yields in many regions, and tropical diseases, such as malaria or dengue fever, are expected to spread into new areas. Fresh water, already in short supply in many arid and semi-arid regions, is likely to become even scarcer in those regions, while sea level rise and changing weather patterns could trigger large-scale migration from more seriously affected areas. While no one will be able to escape from climate change, it is the poorer people and countries, which are most vulnerable to its negative impacts.

## **The Brief History**

Increasing scientific evidence of human interference with the climate system, coupled with growing public concern over global environmental issues, began to push climate change onto the political agenda in the mid-1980s. Recognizing the needs of policy-makers for authoritative and up-to-date scientific information, the World Meteorological Organization (WMO) and the UN Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change in 1988. That same year, following a proposal by the Government of Malta, the United Nations General Assembly took up the issue of climate change for the first time and adopted a resolution on the “Protection of global climate for present and future generations of mankind”.

In 1990, the IPCC issued its First Assessment Report, confirming that climate change was indeed a threat and calling for a global treaty to address the problem. This call was echoed by the Ministerial Declaration of the Second World Climate Conference, held in Geneva in October/

November of that year. The UN General Assembly responded to these calls in December of 1990, formally launching negotiations on a framework convention on climate change. These negotiations were conducted by an **Inter-governmental Negotiating Committee(INC)**.

The INC met for the first time in February 1991 and, after just 15 months of negotiations, governments adopted the United Nations Framework Convention on Climate Change at the INC's resumed fifth session on 9 May 1992. The Convention was opened for signature on 4 June 1992 at the UN Conference on Environment and Development (UNCED), the so-called "*Earth Summit*", in Rio de Janeiro, Brazil, and came into force on 21 March 1994. A decade after its adoption, 186 governments are now Parties to the Convention.

Since the Convention's entry into force, Parties have met annually in the Conference of the Parties (COP) to monitor its implementation and continue talks on how best to tackle climate change. The many decisions taken by the COP at its annual sessions now make up a detailed rulebook for the effective implementation of the Convention.

When they adopted the Convention, however, governments knew that its commitments would not be sufficient to seriously tackle climate change. At the first COP (Berlin, March/April 1995), in a decision known as the **Berlin Mandate**, Parties therefore launched a new round of talks to decide on stronger and more detailed commitments for industrialized countries. After two and a half years of intense negotiations, the Kyoto Protocol was adopted at COP-3 in Kyoto, Japan, on 11th December 1997.

The complexity of the negotiations, however, meant that considerable "unfinished business" remained even after the Kyoto Protocol itself was adopted. The Protocol sketched out the basic features of its "Mechanisms" and compliance system, for example, but did not flesh out the all-important rules of how they would operate. Although, 117 countries signed the Protocol indicating that they intended to ratify, many were still reluctant to actually do so and bring the Protocol into force before having a clearer picture of the treaty's rulebook.

A new round of negotiations was therefore launched at COP-4 (Buenos Aires, November 1998) to draft the Kyoto Protocol's rulebook. This round, based on an ambitious work programme known as the **Buenos Aires Plan of Action**, linked together negotiations on the Protocol's rulebook with talks on implementation issues under the Convention (such as finance and technology transfer). The deadline for negotiations under the Buenos Aires Plan of Action was set as COP-6 (The Hague, November 2000). However, the volume of work facing that session, and the difficult political issues at stake, led to a breakdown in negotiations.

Climate talks reconvened at a resumed session of COP-6 in Bonn, Germany, in July 2001. Here, governments struck a political deal – the so-called **Bonn Agreements** – signing off on the most politically controversial issues under the Buenos Aires Plan of Action. A few months later at COP-7 (Marrakesh, October/ November 2001), negotiators built on the Bonn Agreements to finally adopt a comprehensive package of decisions – known as the **Marrakesh Accords** – containing a detailed rulebook for the Kyoto Protocol, as well as important advances in the implementation of the Convention and its rulebook. The adoption of the Marrakesh Accords thus marked the close of a major negotiating cycle. Climate change is a long-term problem, however, and the climate change process is far from over. Governments will continue to meet to discuss how best to implement the Convention and the Protocol, and to decide on next steps to combat climate change.

**Table 1 (a)**

**A chronology of the Climate Change Process**

Date	Events
1988	WMO and UNEP establish the IPCC. The UN General Assembly takes up climate change for the first time.
1990	The IPCC's <i>First Assessment Report</i> is published. It concludes that international negotiations on a framework convention should start as quickly as possible. The UN General Assembly opens negotiations on a framework convention on climate change and establishes an <i>Intergovernmental Negotiating Committee (INC)</i> to conduct these.
Feb. 1991	The INC meets for the first time.
9 <sup>th</sup> May 1992	The <i>UN Framework Convention on Climate Change (UNFCCC)</i> is adopted in New York at the resumed fifth session of the INC.
4 <sup>th</sup> June 1992	The UNFCCC is opened for signature at the "Earth Summit" in Rio de Janeiro, Brazil.
21 <sup>st</sup> March 1994	The <i>UNFCCC</i> enters into force.
7 <sup>th</sup> April 1995	<i>The first Conference of the Parties (COP-1)</i> in Berlin launches a new round of negotiations on a "protocol or other legal instrument".
11 <sup>th</sup> -15 <sup>th</sup> Dec 1995	The IPCC approves its <i>Second Assessment Report</i> . Its findings underline the need for strong policy action.
19 <sup>th</sup> July 1996	COP-2 in Geneva takes note of the " <i>Geneva Ministerial Declaration</i> ", which acts as a further impetus to the on-going negotiations.
11 <sup>th</sup> Dec 1997	COP-3 meeting in Kyoto adopts the " <i>Kyoto Protocol</i> " to the UNFCCC .
16 <sup>th</sup> March 1998	The Kyoto Protocol is opened for signature at UN headquarters in New York. Over a one-year period, it receives 84 signatures.
14 <sup>th</sup> Nov 1998	COP-4 meeting in Buenos Aires adopts the " <i>Buenos Aires Plan of Action</i> ", setting out a programme of work on the Kyoto Protocol's operational details and the implementation of the Convention. COP-6 is set as the deadline.
13 <sup>th</sup> – 24 <sup>th</sup> Nov 2000	COP-6 meets in The Hague, but fails to agree on a package of decisions under the Buenos Aires Plan of Action.
4 <sup>th</sup> – 6 <sup>th</sup> April 2001	The IPCC accepts the three Working Group contributions to its <i>Third Assessment Report</i> , which gave a stronger Evidence of warmer world.
16 <sup>th</sup> – 27 <sup>th</sup> July 2001	COP-6 resumes in Bonn. Parties adopt the " <i>Bonn Agreements</i> ", registering consensus on key political issues under the Buenos Aires Plan of Action.
29 <sup>th</sup> Oct – 9 <sup>th</sup> Nov 2001	COP-7 in Marrakesh adopts the " <i>Marrakesh Accords</i> ", a set of detailed decisions giving effect to the Bonn Agreements.
26 <sup>th</sup> Aug–4 <sup>th</sup> Sept 2002	The " <i>World Summit on Sustainable Development</i> " ( <i>WSSD</i> ) meets in Johannesburg, South Africa, to review progress since the 1992 Earth Summit.
23 <sup>rd</sup> Oct– 1 <sup>st</sup> Nov 2002	COP-8 in New Delhi, India; the simplified modalities & Procedures for small scale CDM Projects were adopted.
1 <sup>st</sup> -12 <sup>th</sup> Dec 2003	COP-9 in Milan, Italy: Unfortunately, <i>Kyoto Protocol</i> could not get ratified.

# The UN Convention Framework on Climate Change

## The Framework for Action

The Convention sets the overall framework for intergovernmental efforts to address climate change. It establishes an objective and principles, commitments for different groups of countries, and a set of institutions to enable governments to monitor the Convention's implementation and continue their talks on how best to tackle the problem.

## Objective and Principles

The **ultimate objective** of the Convention is "to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic interference with the climate system...". The Convention does not define what levels might be "Dangerous", although it does state that ecosystems should be allowed to adapt naturally, food supply should not be threatened, and economic development should be able to proceed in a sustainable manner. Defining what we mean by "Dangerous" is a tough political question, involving social and economic considerations as well as scientific judgement.

Addressing climate change is clearly not an easy task, raising difficult dilemmas such as how to distribute the burden of reducing emissions among different countries and dealing with scientific uncertainty. The Convention's **principles** embody the common understanding of governments on how to deal with these dilemmas.

The principles of "Equity" and "Common but Differentiated Responsibilities" respond to the fact that, although climate change is a global issue and must be tackled as such, the industrialized countries have historically contributed the most to the problem and have more resources to address it. The developing countries, for their part, are more vulnerable to its adverse effects and their technological, economic and institutional capacity to respond is generally lower. The Convention thus defines a global framework for addressing climate change, but requires industrialized countries to take the lead by modifying their long-term emission trends. It also calls on the richest among them to provide financial and technological resources to help developing countries tackle the problem and adapt to its adverse effects.

The so-called "precautionary principle", in turn, responds to the dilemma that, although many uncertainties still surround climate change, waiting for full scientific certainty before taking action will almost certainly be too late to avert its worst impacts. The Convention, following many environmental treaties before it, thus calls for "precautionary measures" to combat climate change, stating that, "where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures". Another important dimension to climate change is its linkage with development—indeed, many see climate change as fundamentally a development problem, rather than an environmental one. Patterns of energy consumption, land use and demographic growth are all key drivers of both development and climate change. Tackling climate change must be compatible with advancing the aspirations of the world's poor, as part of their efforts to achieve sustainable development. At the same time, industrialized countries in particular are concerned that the economic costs of mitigating climate change should be minimized. The Convention recognizes these concerns in a number of ways. It acknowledges, for example, that the first and overriding priorities of developing countries are

development and poverty alleviation. It also emphasizes the importance of promoting sustainable development, noting that sustainable economic growth and development will enable countries to better address climate change. In addition, the Convention calls for policies and measures to deal with climate change to be cost-effective, so as to ensure global benefits at the lowest possible cost.

### Groups of countries and their differentiated commitments

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

**Table 1 (b)**  
**Countries included In Annex-I to the Convention**

<b>Australia</b>	<b>Austria</b>	Belarus*
<b>Belgium</b>	Bulgaria*	<b>Canada</b>
Croatia*	Czech Republic*	<b>Denmark</b>
Estonia*	<b>European Community</b>	<b>Finland</b>
France	Germany	Greece
Hungary*	<b>Iceland</b>	<b>Ireland</b>
<b>Italy</b>	<b>Japan</b>	Latvia*
Liechtenstein	Lithuania*	<b>Luxembourg</b>
Monaco	<b>Netherlands</b>	<b>New Zealand</b>
<b>Norway</b>	Poland*	<b>Portugal</b>
Romania*	Russia Federation*	Slovakia*
Slovenia*	<b>Spain</b>	<b>Sweden</b>
Switzerland	<b>Turkey</b>	Ukraine*
<b>United Kingdom</b>	<b>United State of America</b>	

\* Countries with economies in transition; **Bold** denotes countries also included in Annex-II; Underline denotes countries added to Annex-I at COP-3 in 1997. *Turkey* has not yet ratified the Convention. A decision taken at COP-7 deleted its name from Annex-II and invited Parties to recognize its special circumstances, which will place Turkey in a different situation from that of other Annex-I Parties, when it becomes a Party.

**Note:** Kazakhstan has announced its intention to be bound by the commitments of Annex-I Parties, but is not formally classified as an Annex-I Party under the Convention. It will, however, be considered an Annex-I Party under the Kyoto Protocol, once it enters into force.

All Parties to the Convention – those countries that have ratified, accepted, approved, or acceded to, the treaty – are subject to an important set of general commitments, which place a fundamental obligation on both industrialized and developing countries to respond to climate

change. Under these commitments, all Parties must prepare and regularly update national climate change mitigation and adaptation programmes, including measures to address sources of greenhouse gas emissions and to protect and enhance so-called carbon “sinks” and “reservoirs” (forests and other natural systems that remove carbon from the atmosphere). They must also take climate change considerations into account in their other relevant social, economic and environmental policies, and use such methods as impact assessments to minimize any adverse economic, health or environmental consequences of climate change measures.

As part of these general commitments, all Parties must also promote the development, application and transfer of climate-friendly technologies and practices, as well as the sustainable management of carbon sinks. In addition, Parties are required to make preparations to adapt to climate change, participate in climate research, systematic observation and information exchange, and promote education, training and public awareness relating to climate change. All Parties must also compile an inventory of their greenhouse gas emissions, and submit reports – known as “national communications” – on the action they are taking to implement the Convention.

The Annex-I Parties alone, however, in order to demonstrate their leadership in addressing climate change, are subject to a specific commitment to adopt climate change policies and measures with the non-legally binding aim that they should have returned their greenhouse gas emissions to 1990 levels by the year 2000.

The Convention grants EITs “a certain degree of flexibility” in implementing their commitments, on account of the economic and political upheavals recently experienced in those countries. Several EITs have exercised this flexibility to select a baseline for their specific commitment other than 1990, that is, prior to the economic changes that led to big cuts in their emissions.

Although the emissions data needed to assess whether Annex-I Parties have succeeded in returning their emissions to 1990 levels by 2000 is not yet complete, preliminary indications suggest that, although Annex-I Parties as a whole will probably have met this goal, that achievement masks great variations among the Parties. While emissions in the EITs have declined steeply (by over 40% between 1990 and 1999), emissions in most Annex-II Parties (the OECD members) have continued to rise (by 6.6% between 1990 and 1999), with some experiencing percentage increases in double figures.

The Annex-II Parties are also required to provide financial resources to enable developing countries to meet their obligations under the Convention, and to help them adapt to the adverse effects of climate change. In addition, the Annex-II Parties must “take all practicable steps” to promote the development and transfer of environmentally-friendly technologies to both EITs and developing countries. Financial assistance provided by Annex-II Parties is mostly channeled through the Convention’s financial mechanism, currently operated by the **Global Environment Facility** (GEF).

The Convention recognizes the particular vulnerability of certain groups of developing countries. This vulnerability has two dimensions. Some groups, such as countries with low-lying coastal areas and those prone to drought and desertification, face particularly high risks from the adverse impacts of climate change. Others, such as countries that are highly dependent on income generated from fossil fuel production, processing or export, feel more vulnerable to the potential economic impact of climate change response measures. The Convention calls for full consideration to be given to possible funding, insurance and technology transfer that could help meet the specific needs and concerns of these vulnerable countries.

The 48 countries that are classified as **Least Developed Countries (LDCs)** by the UN are given special consideration under the Convention, on account of their particularly low capacity to respond to climate change and adapt to its adverse effects. Parties are urged to take full account of the special situation of LDCs with regard to funding and technology transfer.

## The institutions

The supreme decision-making body of the Convention is its **Conference of the Parties (COP)**. It meets every year to review the implementation of the Convention, adopt decisions to further develop the Convention's rulebook, and negotiate substantive new commitments.

The **Conference of the Parties (COP)**, is an association of all countries that have ratified or acceded to the UNFCCC; is responsible for keeping international efforts to address climate change on track. The COP reviews the implementation of the Convention and examines the commitments of parties in light of the Conventions objective, new scientific findings and experience gained in implementing climate change policies. The COP meets once a year and seven sessions have been held so far. The dates and venues for CoP sessions held to date is presented in Table-1 (c) below.

**Table 1(c)**  
**Dates, Venues for COP sessions held to date**

COP	Dates	Venue
COP-1	28 <sup>th</sup> Mar- 7 <sup>th</sup> April 1995	Berlin
COP-2	8 <sup>th</sup> -19 <sup>th</sup> July 1996	Geneva
COP-3	1 <sup>st</sup> -11 <sup>th</sup> Dec 1997	Kyoto
COP-4	2 <sup>nd</sup> -14 <sup>th</sup> Nov 1998	Buenos Aires
COP-5	25 <sup>th</sup> Oct- 5 <sup>th</sup> Nov 1999	Bonn
COP-6	13 <sup>th</sup> -24 <sup>th</sup> Nov 2000 13 <sup>th</sup> -27 <sup>th</sup> July 2001	The Hague Bonn
COP-7	29 <sup>th</sup> Oct – 9 <sup>th</sup> Nov 2001	Marrakesh
COP-8	23 <sup>th</sup> Oct- 1 <sup>st</sup> Nov 2002	New Delhi, India
COP-9	1 <sup>st</sup> Dec-12 <sup>th</sup> Dec 2003	Milan, Italy

COP-1 was held in Berlin in 1995, and launched a new round of negotiations on 'protocol or other legal instrument'. The Geneva Ministerial Declaration at COP-2 acted as a further impetus to the on-going negotiations. At COP3 held in December 1997, the Parties adopted the Kyoto Protocol. Again at COP-4 in November 1998, the Buenos Aires Plan of Action was adopted. More than 160 parties to the UNFCCC set a two-year deadline to strengthen the implementation of the FCCC and to facilitate the operationalization of the Kyoto Protocol. Broad political consensus on key elements of the Kyoto Protocol was reached at the resumed session of COP-6 in July 2001, and the detailed decisions were finalized with the signing of the Marrakesh Accords in November 2001 at the 7th meeting of the COP. COP-8 was organized at Indian capital city, New Delhi in October 2002. This year Italy is hosting COP-9 at Milan in December, 2003.

The Convention's two subsidiary bodies – the **Subsidiary Body for Scientific and Technological Advice (SBSTA)** and the **Subsidiary Body for Implementation (SBI)** – meet at least twice a year to carry out preparatory work for the COP. As their names suggest, the



SBSTA is responsible for providing advice to the COP on scientific, technological and methodological issues, including on the improvement of guidelines for preparing national communications and emission inventories, as well as cooperation with the IPCC and other relevant international organizations. The SBI helps with the assessment and review of the Convention's implementation, including the analysis of national communications submitted by Parties, liaison with the GEF, and financial and administrative issues.

The climate change **secretariat** provides support to the COP and the subsidiary bodies, performing such functions as preparing background documents, organizing negotiating sessions, compiling emissions data and giving advice on technical matters, as requested by the Parties. The secretariat, composed of some 150 staff including short-term staff and consultants, is currently based in Bonn.

Two other intergovernmental organizations, which are not formally part of the Convention's institutions, provide important services to it. These are the **Global Environment Facility** and the **Intergovernmental Panel on Climate Change**. The GEF currently operates the Convention's financial mechanism, which channels funds to developing countries on a grant or concessional basis. It was established by the World Bank, UNEP and the UN Development Programme (UNDP) in 1991 (with a pilot phase up to 1994) to fund certain developing country projects that have global environmental benefits, not only in the area of climate change, but also in biodiversity, protection of the ozone layer and international waters. The COP provides regular policy guidance to the GEF on its climate change policies, programme priorities and eligibility criteria for funding, while the GEF reports on its climate change work to the COP every year.

The IPCC is now one of the most important sources of information for the climate change regime. As well as its regular comprehensive assessments on the state of climate change science, published roughly every five years (the latest Third Assessment Report came out in 2001), the IPCC prepares shorter Special Reports and Technical Papers on specific issues in response to requests from the COP or the SBSTA. The IPCC's methodological work has also played an important role in the development of common guidelines for Parties to compile their inventories of greenhouse gases.

## Reporting and review

The requirement for all Parties to report on their greenhouse gas emissions and climate change activities is one of their most important obligations, providing the basis for the COP to assess the implementation of the Convention and its effectiveness.

## Annex-I Parties

Although all Parties must submit reports under the Convention, Annex-I Parties must report more often and in more detail. A first report – known as a **national communication** – was due from each Annex-I Party within six months of the entry into force of the Convention for that Party. The second national communication was due on 15 April 1997 (15 April 1998 for EITs) and the third by 30 November 2001. The deadline for the next communication has not yet been set, but will be within three to five years of the last one. The secretariat has now received two national communications from almost all Annex-I Parties, except those who only recently joined the Convention, with third national communications still being submitted. Most national communications are available from the secretariat web site.

Annex-I Parties must also submit an **annual inventory** of their greenhouse gas emissions to the secretariat by 15 April every year, including data on emissions for their base year (1990 except for some EITs) and for all years up to the last but one year prior to submission. Inventories due in April 2002, for example, should contain emissions data up to the year 2000.

Annex-I Parties must prepare their national communications and emission inventories according to agreed guidelines, using methodologies developed by the IPCC. These guidelines, the first of which were adopted by the INC in 1994 before the Convention's entry into force, have been revised twice, at COP-2 in 1996 for the second national communications and COP-5 in 1999 for the third, each time setting Preliminary version out in more detail the content and presentation required in order to improve the completeness, accuracy and consistency of information provided. Separate guidelines were adopted at COP-5 for reporting annual emission inventories, as well as for reporting on global climate observation activities; which is getting improved through continuous revision at each of the COPs.

The National Communications submitted by Annex-I Parties are compiled and synthesized by the secretariat. In addition, each national communication is subject to an **in-depth review** by teams of experts. These teams, consisting of some four to five people, are coordinated by the secretariat and selected from a roster of experts nominated by Parties. The in-depth review typically involves both a desk-based study and an in-country visit, and aims to provide a comprehensive, technical assessment of a Party's implementation with its commitments. The reports of the in-depth review teams, which typically expand on and update the national communications themselves, are made publicly available (including from the secretariat web site). The in-depth review of third national communications is due to be finished by COP-9 in 2003.

### **Non-Annex-I Parties**

According to the Convention, the preparation of national communications from non-Annex-I Parties is dependent on the receipt of funding. Once funding is received, non-Annex-I Parties are granted three years to prepare their initial national communications. LDC Parties may prepare a national communication at their discretion. Some 80 non-Annex-I Parties have now submitted their initial national communications, and this figure continues to rise as Parties secure the necessary funding from the GEF. No deadline has been set for second national communications, although Mexico has already submitted its second communication and some other non-Annex-I Parties are also working on theirs. Non-Annex-I Parties are not required to submit a separate annual emission inventory.

Guidelines for the preparation of national communications from non-Annex-I Parties were first agreed at COP-2 in 1996. The information required is less detailed than that asked of Annex-I Parties, in line with the more general commitments of non-Annex-I Parties under the Convention. The guidelines are currently under review; the aim is to agree on improvements to them by COP-8. Preliminary version As with Annex-I Parties, the National Communications of non-Annex-I Parties are compiled and synthesized by the secretariat. The secretariat has prepared an updated compilation and synthesis annually since 1999, to take account of new initial communications sent in by Parties. National Communications from non-Annex-I Parties are not subject to in-depth review.

**A Consultative Group of Experts (CGE) on National Communications from Non-Annex-I Parties** was established by COP-5 in 1999 in order to improve the preparation of

national communications from developing countries. Its mandate is to analyse problems encountered by non-Annex-I Parties in preparing their national communications (e.g. concerning financial or technical support, or data quality and availability) and provide a forum for these Parties to exchange information on their experiences with the national communication process. The CGE, which is composed of 24 members, meets twice a year, and also holds workshops to gather information on national experiences. It reports to the SBI on its work.

At COP-7, the CGE was given an additional mandate to look at technical problems and constraints that have affected the preparation of initial national communications by those non-Annex-I Parties that have not yet completed them. It was also asked to provide input to the on-going review and improvement of the reporting guidelines.

### **Methodological work**

Work is on-going within the SBSTA, in collaboration with the IPCC, to help improve the completeness and accuracy of reporting on national greenhouse gas inventories. The IPCC, for example, has developed “good practice guidance” for compiling emission inventories, including suggested quality assessment and control procedures. Several specific methodological issues are also currently on the SBSTA’s agenda. One particularly tricky issue concerns emissions from so-called “*bunker fuels*” used in international aviation and marine transport. These emissions are reported separately from national emission totals, as no agreed methodology currently exists for allocating them to the different countries involved (the countries of registration, origin and destination of a ship/aircraft, for example, may all differ). Other ongoing methodological work includes how to account for emissions from forest harvesting and wood products (e.g. plywood, pulp and paper), along with the development of methodologies to assess climate impacts, vulnerability and adaptation options.

### **Funding**

The main funding channel for developing countries is the Global Environment Facility, which operates as the Convention’s financial mechanism. Since 1991, approximately US\$ 1.3 billion has been provided in grants from the GEF Trust Fund for climate change activities. An additional US\$ 6.9 billion was contributed through co-financing from bilateral agencies, recipient countries and the private sector, making a total of US\$ 8.2 billion. Over the most recent reporting period (July 2000 to June 2001), total project financing for climate change activities exceeded US\$ 817 million, of which the GEF provided US\$ 197 million in grant financing. As part of the Marrakesh Accords, the COP gave additional guidance to the GEF that expanded the scope of activities eligible for funding, including in the areas of adaptation and capacity building. The Marrakesh Accords also established two new funds under the Convention (plus another fund, the adaptation fund, under the Kyoto Protocol). These will be managed by the GEF, as the operating entity of the Convention and Protocol’s financial mechanism, in addition to its climate change focal area:

- A **special climate change fund** will finance projects relating to: capacity building; adaptation; technology transfer; climate change mitigation; and economic diversification for countries highly dependent on income from fossil fuels; and
- A **least developed countries fund** will support a special work programme to assist LDCs.

A number of Annex-II Parties (OECD countries) have already declared that they will collectively contribute US\$ 410 million (€ 450 million) annually in extra funding for developing countries by 2005, with this level to be reviewed in 2008. The Marrakesh Accords require Annex-II Parties to report on their financial contributions on an annual basis, with these reports to be reviewed by the COP.

## **Development and Transfer of Technologies**

Promoting the effective development and transfer of environmentally-friendly technologies is critical to enabling developing countries to pursue their sustainable development objectives, while avoiding the climate-destructive development path of the industrialized world.

The secretariat has carried out a number of activities in support of Parties' efforts to promote technology development and transfer. At the request of the COP and the SBSTA, these activities have focused on the synthesis and dissemination of information, such as assessing the technology needs of developing countries and compiling information on the existing technology transfer activities of both Annex-II Parties and relevant intergovernmental organizations. The secretariat has also prepared technical papers on specific topics, such as adaptation technologies and terms of transfer. A key on-going project is the development of a technology information system, including an inventory of environmentally-friendly technologies, to be accessible on the internet.

This issue was given a boost at COP-4 in 1998, when Parties decided to launch a consultative process, led by the Chairman of the SBSTA. The aim of this consultative process was to formulate an agreed framework to promote the effective development and transfer of environmentally-friendly technologies under the Convention. Formulating an agreed framework in this way was considered important, as Parties often had different understandings of the concept of technology transfer, making it difficult to make progress on the issue. The consultative process, which included several regional workshops, culminated in agreement, as part of the Marrakesh Accords, on a *"framework for meaningful and effective actions"* to improve the implementation of the Convention's technology commitments.

The framework covers five key themes, including the assessment of technology needs, the establishment of an efficient technology information system, the promotion of enabling environments to facilitate and remove barriers to technology transfer, and capacity building. Funding to implement the framework is to be provided through the GEF climate change focal area and the special climate change fund.

A new **Expert Group on Technology Transfer** was established to oversee the implementation of the framework and to identify ways of advancing technology transfer activities. Composed of 20 members, the expert group meets twice a year and reports to the SBSTA. Its work will be reviewed by COP-12 in 2006.

## **The Capacity Building**

The need for capacity building to help Parties, especially developing countries, to respond to climate change has long been recognized in the climate change process, in the context of such issues as the development and transfer of technology, the preparation of national communications and the financial mechanism. It was only during COP-5 in 1999, however, that it was first considered as a separate agenda item.

As part of the Marrakesh Accords, governments agreed on two frameworks for capacity building in developing countries and in EITs. These frameworks are intended to guide capacity-building activities for the implementation of the Convention and effective participation in the Kyoto Protocol process in both groups of countries. The frameworks also provide guidance to the GEF and other multilateral and bilateral organizations for their work in this area.

The frameworks include a set of guiding principles and approaches – for example, that capacity building should be country-driven, involve learning by doing, and build on existing activities – and provide an initial list of priority areas for both developing countries and EITs, also covering the specific needs of LDCs. The frameworks call on developing countries and EITs to continue to provide information on their specific needs and priorities, while promoting cooperation among themselves and stakeholder participation. Annex-II Parties, for their part, should provide additional financial and technical resources for capacity building through the GEF and other channels, while all Parties should improve the coordination and effectiveness of existing activities. Progress in implementing the frameworks will be monitored by the SBI, and a comprehensive review would be conducted by COP-9.

## **Vulnerability of Developing Countries**

How to address the vulnerability of developing countries – to both climate change impacts and response measures, along with the specific concerns of LDCs – first appeared on the COP agenda as a separate item when Parties launched a process, together with the adoption of the Protocol, to consider what action should be taken. This process, involving several information-gathering workshops, culminated in agreement as part of the Marrakesh Accords. The agreement includes the establishment of new funds (see “Funding” above), along with a separate decision on the impacts of climate change and response measures, and the specific concerns of LDCs.

## **Impacts of climate change and response measures**

The Marrakesh Accords emphasize the need to exchange information on the impacts of climate change and response measures, calling on non-Annex-I Parties to provide information on their needs and priorities, and on Annex-II Parties to report on the policies they have in place to help vulnerable developing countries.

The Accords also identify a number of activities to be supported by the GEF, the special climate change fund and other bilateral and multilateral sources (plus the Kyoto Protocol’s adaptation fund), to help vulnerable developing countries:

- Regarding vulnerability to the **impacts of climate change**, these activities include: data collection; research and monitoring of climate change impacts; assessment of vulnerability and adaptation options; capacity building; improving early warning systems for rapid response to extreme weather events; and starting to implement adaptation activities where appropriate.
- Concerning vulnerability to **response measures**, the activities cover: promoting investment for economic diversification; development and transfer of more climate-friendly technologies, including non-energy uses of fossil fuels, advanced fossil fuel technologies and carbon capture/storage; the expansion of climate-friendly energy sources (e.g. natural gas and renewable); and capacity building.

Looking ahead, the Marrakesh Accords set out a programme of continuing analytical work on the impacts of climate change and response measures, involving a series of regional and issue-specific workshops, including on the topic of possible insurance measures. These workshops will form the basis for further discussion at COP-8.

### **Least Developed countries (LDCs)**

The Marrakesh Accords also established a separate work programme for LDCs. This work programme is centered on the preparation of **National Adaptation Programmes of Action (NAPAs)**, which open up a simplified channel for LDCs to inform donors of their vulnerability to climate change and their urgent adaptation needs. This responds to the fact that many LDCs already need support to help them adapt to climate change, but lack the capacity to prepare full national communications detailing those needs in the near future. The preparation of NAPAs would be funded by the newly-created least developed countries fund.

In order to support LDCs in their preparation and implementation of NAPAs, the Marrakesh Accords launched a **least developed country expert group** with a mandate to provide technical guidance and advice to LDCs and to facilitate information exchange with other multilateral environmental treaties. The expert group, which is composed of 12 experts, will convene twice a year until COP-9 and would cooperate closely with the Consultative Group of Experts on National Communications from Non-Annex-I Parties.

### **Research and Public Outreach**

Two important commitments that apply to all Parties under the Convention concern cooperation in **research and systematic observation** of the climate system, and promotion of **education, training and public awareness** on climate change.

The Convention's work on research and systematic observation is carried out in collaboration with the Global Climate Observing System (GCOS) of the World Meteorological Organization (WMO), along with other agencies participating in WMO's Climate Agenda. Key concerns surrounding this topic include addressing the deterioration of climate observing systems in many regions, and increasing the participation of developing countries in climate observation. GCOS has a number of activities underway to advance these aims (such as regional workshops), and reports regularly to the SBSTA on its work. An important step forwards was taken at COP-5, when Parties adopted guidelines for reporting on their global climate observation activities as part of their national communications.

Education, training and public awareness are all critical to harnessing public support for measures to combat climate change. While the secretariat has long been active in public outreach, the issue was first discussed by the SBSTA only in 1998. A work programme on education, training and public awareness is currently under development, including workshops, the expansion of the secretariat's web site to serve as an information clearing-house, and improved dissemination of information products and reports (including those of the IPCC). Additional financial resources will be needed for these activities. As part of the Marrakesh Accords, guidance was given to the GEF stating that funding should be provided for public awareness and education activities in developing countries.

## Activities Implemented Jointly( AIJ )

The Convention allows Annex-I Parties to implement policies and measures jointly with other Parties to help them return their emissions to 1990 levels. This clause underpinned the decision, at COP-1, to launch a pilot phase of so-called “*activities implemented jointly*” (AIJ). Under AIJ, an Annex-I Party may implement a project that reduces emissions (e.g. energy conservation) or increases the removal of greenhouse gases by *carbon sinks* (e.g. reforestation) in the territory of another Party, including a developing country, but without gaining credit for the resulting emission reductions or removals. The pilot phase is intended to build experience through learning by doing, for example in establishing baselines and calculating the environmental benefits of projects. Although the pilot phase was due to conclude by 2000, COP-5 decided to prolong it beyond that date to continue the learning process. This was important for some of the developing countries like those of Africa, whose experience with AIJ had so far been limited.

The secretariat compiles an annual synthesis report on the AIJ projects reported to it, which must have been endorsed by both host and investing countries. In reporting on their AIJ projects, Parties are expected to use a Uniform Reporting Format (URF), in order to maximize the comparability of information. The COP reviews the progress of the pilot phase every year, based on this synthesis report.

By June 2001, more than 150 AIJ projects had been communicated to the secretariat, engaging around one quarter of Parties to the Convention, either as investors or as hosts. Interest in the AIJ pilot phase has steadily grown, especially since the adoption of the Kyoto Protocol, with an almost 50% increase in the number of projects since 1997. While 70% of host Parties are non-Annex-I Parties, EITs still host the majority of AIJ projects, although the balance is gradually shifting towards the developing countries. Most projects are in the renewable energy and energy efficiency sectors, although the largest projects involve forest preservation or reforestation.

## Linkages with Other International Organizations

The issue of climate change is so wide-ranging that the work of the Convention is interlinked with that of many other international organizations that share the common objective of sustainable development. An effective response to climate change, and progress towards sustainable development, thus requires that areas of possible conflict or overlap be properly managed, and that opportunities for synergies be exploited. The Convention recognizes this, authorizing the COP to work with other international organizations, and calling on the secretariat to ensure the necessary coordination.

A Joint Liaison Group (JLG) was established in 2001 between the secretariats of the UNFCCC, the Convention on Biological Diversity (CBD) and the UN Convention to Combat Desertification (UNCCD), in order to enhance cooperation between these so-called “*Rio Conventions*” (the origins of all three Conventions are associated with the 1992 Rio de Janeiro “*Earth Summit*”). Through the JLG, the three secretariats share information on the work of their conventions, and identify possible joint activities and any potential conflicts. One of the first activities of the JLG, for example, will be to hold a joint workshop on forests and forestry, an area of common interest to the three conventions.

The SBSTA regularly hears reports from international organizations whose work is linked to climate change, such as the World Health Organization (WHO) and the Ramsar Convention. The secretariat in turn attends, and makes statements at, related international meetings. Input from other organizations is also sought on specific issues, such as collaboration with GCOS on research and systematic observation and UNEP on education, training and public awareness. In addition, the SBSTA has worked with the bodies of the Montreal Protocol on Substances That Deplete the Ozone Layer on linkages between efforts to combat climate change and ozone depletion; this is an issue that involves synergies as well as potential conflicts, given that both ozone-depleting substances and some of their replacements are also greenhouse gases.

## The Kyoto Protocol

### The Framework for action

The Kyoto Protocol supplements and strengthens the Convention. Only countries that are already Parties to the Convention can ratify (or accept, approve, or accede to) the Protocol, and thereby become Parties to it. Conversely, only Parties to the Protocol will be subject to its commitments, once it has been ratified by enough countries to enter into force ( Please refer “The road ahead” below).

The Kyoto Protocol is based on the general framework established by the Convention, sharing its ultimate objective and principles, as well as its grouping of countries into Annex-I, Annex-II (the OECD members of Annex-I), and non-Annex-I Parties.

The Kyoto Protocol will share the Convention’s institutions, including its two subsidiary bodies and secretariat, while the Convention’s Conference of the Parties would serve as the “Meeting of the Parties” to the Protocol, forming a body known as the **COP/MOP**.

The GEF, operating as the Convention’s financial mechanism, will also channel funding to developing countries under the Kyoto Protocol, while the IPCC is expected to play a similarly important role in support of the Protocol as it does for the Convention through its continued scientific, technical and methodological work. The Kyoto Protocol and its rulebook set out in the Marrakesh Accords consist of five main elements:

- **Commitments:** At the heart of the Protocol lie its legally-binding emissions targets for Annex-I Parties. All Parties are also subject to a set of general commitments.
- **Implementation:** To meet their targets, Annex-I Parties must put in place domestic policies and measures that cut their greenhouse gas emissions. They may also offset their emissions by increasing the removal of greenhouse gases by carbon sinks. Supplementary to domestic actions, Parties may also use the three mechanisms – joint implementation, the Clean Development Mechanism (CDM) and Emissions Trading (ET) – to gain credit for emissions reduced (or greenhouse gases removed) at lower cost abroad than at home.
- **Minimizing impacts on Developing Countries:** The Protocol and its rulebook include provisions to address the specific needs and concerns of developing countries, especially those most vulnerable to the adverse effects of climate change and to the economic impact of response measures. These include the establishment of a new Adaptation Fund.



- Accounting, Reporting and Review: Rigorous monitoring procedures are in place to safeguard the Kyoto Protocol's integrity, including an accounting system, regular reporting by Parties and in-depth review of those reports by expert review teams.
- Compliance: A Compliance Committee, consisting of a facilitative and an enforcement branch, will assess and deal with any cases of non-compliance. These five main elements are discussed in more detail below.

### Commitment Details

At the heart of the Kyoto Protocol lies its set of legally-binding emissions targets for industrialized countries. *These amount to a total reduction among all Annex-I Parties of at least 5.2% of emission from 1990 levels by 2008-2012.*

The total reduction is shared out so that each Annex-I Party has its own individual emissions target. These individual targets, which are listed in the Protocol's Annex- B, were decided upon in Kyoto through intense negotiation. The 15 member States of the European Union will take advantage of a scheme under the Protocol, known as a "bubble", to redistribute their –8% reduction targets among themselves.

**Table 1(d)**

#### Countries included in Annex-B and their emission targets

Country	Target (1990* 2008/2012)
EU-15, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
US**	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

\* Some economies in transition (EITs) have a baseline other than 1990.

\*\* The US has indicated its intention not to ratify the Kyoto Protocol.

Note: Although they are listed in the Convention's Annex-I, *Belarus* and *Turkey* are not included in the Protocol's Annex- B as they were not Parties to the Convention when the Protocol was adopted.

Upon entry into force, *Kazakhstan*, which has declared that it wishes to be bound by the commitments of Annex-I Parties under the Convention, will become an Annex-I Party under the Protocol. As it had not made this declaration when the Protocol was adopted, Kazakhstan does not have an emissions target listed for it in Annex- B.

The Protocol's emissions targets cover the six main greenhouse gases:

- Carbon dioxide (CO<sub>2</sub>);
- Methane (CH<sub>4</sub>);

- Nitrous oxide (N<sub>2</sub>O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF<sub>6</sub>)

Parties may offset their emissions by increasing the amount of greenhouse gases removed from the atmosphere by carbon sinks in the land use, land-use change and forestry (LULUCF) sector. However, only certain activities that remove greenhouse gases are eligible, and subject to defined rules. Specific rules also govern the extent to which removals from the LULUCF sector can be used to help meet emissions targets.

All six greenhouse gases, including emissions and removals from the LULUCF sector, are put together in the same basket for accounting purposes, according to their respective Global Warming Potentials (GWPs); which is defined by the IPCC, as the measure of the relative effect of a substance in warming the atmosphere over a given time period (100 years in the case of the Kyoto Protocol), compared against a value of one for carbon dioxide. Methane's GWP over 100 years, for example, is 23, while that of SF<sub>6</sub> is 22,200.

Generally, Parties must reduce or limit their emissions from their 1990 levels (the baseline). The EITs, however, may choose a different baseline, as they can do under the convention. In addition, any Party may choose a baseline of either 1990 or 1995 for its emissions of HFCs, PFCs and SF<sub>6</sub>, to take account of the increased use of these gases in the early 1990s as replacements for ozone-depleting substances (such as chlorofluorocarbons – CFCs) being phased out under the 1987 Montreal Protocol.

Emissions targets must be achieved by the so-called **commitment period** of 2008-2012. However, in order to encourage early action, Parties must have already made “*demonstrable progress*” in meeting their commitments under the Kyoto Protocol by 2005, and must submit a report, by 1 January 2006, providing evidence of that progress.

A five-year commitment period was chosen rather than single target year, in order to smooth out annual fluctuations in emissions due to uncontrollable factors, such as the weather or economic cycles. The total emissions that an Annex-I Party may emit over the commitment period and still meet its emissions target is known as its **assigned amount**. Prior to the start of the commitment period, each Annex-I Party must submit a report providing emissions data for its baseline in order to formally establish its assigned amount. In doing so, Annex-I Parties need to make a number of choices, for example, whether to use 1990 or 1995 as a baseline for their emissions of HFCs, PFCs and SF<sub>6</sub>.

If a Party achieves more substantial cuts in its emissions than is required by its target, it may carry over the difference to the next commitment period, subject to certain limits. Credits earned from increased removals by sinks cannot be carried over, while credits from joint implementation projects and the clean development mechanism can only be carried over up to 2.5% of the assigned amount.

The Kyoto Protocol's targets may appear modest but, if they are met, this will mark a historic turnaround in the persistent upward trend in the emissions of many industrialized countries since the industrial revolution. As noted above, the emissions of many industrialized countries –

except for the EITs and only a handful of OECD members – have continued to rise since 1990. This makes achieving the Protocol targets tougher than it may sound; for some, reducing their emissions below 1990 levels would in fact represent a reduction of over 20% compared to predicted emissions in 2012. In practice, the job is made easier by the Protocol's mechanisms and the possibility of using GHG removals by sinks to offset emissions.

In addition to its emissions targets for Annex-I Parties, the Kyoto Protocol also contains a set of more general commitments (mirroring those in the Convention) that reinforce the fundamental obligation of all Parties – both industrialized and developing – to tackle climate change. These commitments include preparing national climate change mitigation and adaptation programmes, taking steps to improve the quality of emissions data, promoting environmentally-friendly technology transfer, cooperating in scientific research and international climate observation networks, and supporting climate change education, training, public awareness and capacity-building initiatives.

Annex-II Parties (the OECD countries) are committed to providing financial resources, through the GEF as the Convention and Protocol's financial mechanism, to help non-Annex-I Parties meet their general commitments under the Protocol.

## **Policies and Measures**

To achieve the Protocol's targets, Annex-I Parties will need to implement climate change policies and measures at home. The Protocol does not oblige governments to implement any particular policy, but rather gives an indicative list of policies and measures that might help mitigate climate change and promote sustainable development. This list includes:

- Enhancing energy efficiency;
- Protecting and enhancing greenhouse gas sinks;
- Promoting sustainable agriculture;
- Promoting renewable energy, carbon sequestration and other environmentally-friendly technologies;
- Removing subsidies and other market imperfections for environmentally-damaging activities;
- Encouraging reforms in relevant sectors to promote emission reductions;
- Tackling transport sector emissions; and
- Controlling Methane emissions through recovery and use in waste management.

Emissions from aviation and marine bunker fuels (used in international transport), which are reported separately from the overall emission totals of Parties under the Convention, are treated differently. The Protocol requires Parties to work with the International Civil Aviation Organization (ICAO) and the International Maritime Organisation (IMO) to control their emissions from these sources. A separate decision taken on adoption of the Kyoto Protocol urges the SBSTA to continue its ongoing work on how to include bunker fuel emissions into overall GHG inventories.

The Protocol paves the way for greater intergovernmental cooperation to help improve the effectiveness of climate policy, calling on Parties to share their experiences and exchange information on their mitigation measures. Work on "good practices" in policies and measures is currently underway in the SBSTA in preparation for the Protocol's entry into force. As part of the Marrakesh

Accords, Parties decided that this work should aim at improving transparency, effectiveness and comparability of policies and measures (e.g. through specific criteria and quantitative parameters). It should also aim at identifying further options for cooperation, in order to enhance the individual and combined effectiveness of policies and measures. A participatory process is envisaged, with workshops and other activities also involving non-governmental organizations (NGOs) from the business and environmental communities, along with interested international organizations.

Since the adoption of the Protocol, many businesses have increased their investments in climate-friendly technologies and activities at the domestic level, such as fuel cell cars, renewable energy and underground carbon dioxide storage. The IPCC, in its 2001 Third Assessment Report, confirms that recent technical progress in greenhouse gas emission reduction has been faster than anticipated, and that “no regrets” opportunities exist to cut emissions from some sources at low cost or even no net cost (with efficiency savings, for example, outweighing implementation costs). Many political, economic and cultural barriers must be overcome, however, to fully exploit this potential. While meeting the Protocol’s targets cannot be done for free, a smart mix of policy instruments, integrated with wider sustainable development and societal goals, can help keep costs down.

### **The Land Use, Land Use Change and Forestry ( LULUCF ) sector**

The LULUCF sector can provide relatively low cost opportunities to combat climate change, either by increasing the removal of greenhouse gases from the atmosphere through carbon sinks (e.g. by planting trees), or by reducing emissions from this sector (e.g. by curbing deforestation). Uncertainties abound, however, and it is often difficult to calculate emissions and removals from this sector. GHG may also be unintentionally re-released if a sink is damaged or destroyed, through forest fire or disease, for example. The negotiators of the Kyoto Protocol and the Marrakesh Accords wanted to make sure that these potential problems were addressed, and that no credit would be given for natural GHG removals that would have occurred anyway.

The rules governing the LULUCF sector, as set out in the Kyoto Protocol and the Marrakesh Accords, include four main elements:

- A set of principles to guide activities in the LULUCF sector;
- A list of eligible activities;
- Common definitions; and
- A four-tier capping system limiting the use of LULUCF activities to meet emissions targets.

The principles respond to concerns that activities to enhance sinks or reduce emissions in the LULUCF sector should not undermine the environmental integrity of the Protocol. The principles underscore, for example, the need for sound science and consistent methodologies, as well as the importance of conserving biodiversity. They specify that naturally-occurring removals should be excluded from the system, along with increased removals due to faster forest growth caused by the higher carbon dioxide concentrations and indirect nitrogen deposition associated with climate change. Any re-release of greenhouse gases from sinks due to human activities (e.g. forest fires started deliberately) must also be promptly accounted for.

The Kyoto Protocol establishes that emissions and removals from the following activities in the LULUCF sector shall be accounted for to help meet emissions targets:

- Afforestation;
- Reforestation; and
- Deforestation.

The Marrakesh Accords designate four additional eligible activities in the LULUCF sector. Parties must choose which of these activities they will use to help meet their emissions targets, and the choice is then fixed. These additional activities are:

- Forest management;
- Cropland management;
- Grazing land management; and
- Revegetation.

In order to ensure consistency and comparability among Parties, common definitions are established for the term “forest” and for each of the eligible activities. Some flexibility is allowed to take account of national circumstances, so that a Party may choose, for example, to select a minimum tree height of between 2 to 5 metres for its definition of a forest. Once the values are chosen, however, they remain fixed. Removals of GHGs from sinks generate so-called **removal units** (RMUs) that an Annex-I Party can use to help meet its emissions target. RMUs are only deemed valid, only if, the experts of the review teams under the Protocol verify the removals and report the procedures. Any emissions from eligible activities in the LULUCF sector, in turn, must be offset by greater emission cuts or removals elsewhere.

The extent to which Parties can account for emissions and removals in this way, for the first commitment period, is limited by the following four tier capping system:

**Tier 1:** If a Party’s afforestation, reforestation and deforestation activities result in more emissions than removals, then the Party may offset these emissions through removals from forest management activities, up to a total level of 9 megatons of carbon per year for the five year commitment period.

**Tier 2:** The extent to which removals from forest management activities can be accounted for to help meet emissions targets beyond 9 megatons of carbon per year is subject to an individual cap for each Party, listed in the Marrakesh Accords. This cap includes joint implementation projects.

**Tier 3:** Emissions and removals from cropland management, grazing land management and re-vegetation can be used to help meet emissions targets on a net-net basis. That is, net changes in carbon stocks (emissions minus removals) during 1990, multiplied by five, will be subtracted from the net changes in carbon stocks (emissions minus removals) during the first commitment period in the lands where these activities take place.

**Tier 4:** For projects under the clean development mechanism, only afforestation and reforestation activities are eligible, and greenhouse gas removals from such projects may only be used to help meet emissions targets up to 1% of a Party’s baseline for each year of the commitment period. Work is continuing in the SBSTA on methodologies to reduce uncertainties and improve the calculation, monitoring and reporting of emissions and removals from the LULUCF sector. The IPCC is providing important input to the SBSTA’s work, including through the development of “*good practice guidance*” for the LULUCF sector.

## The Kyoto Mechanisms

The Protocol broke new ground with its three innovative mechanisms: joint implementation, the clean development mechanism (CDM) and emissions trading. These aim to maximize the cost-effectiveness of climate change mitigation by allowing Parties to pursue opportunities to cut emissions, or enhance carbon sinks, more cheaply abroad than at home. The cost of curbing emissions varies considerably from region to region as a result of differences in, for example, energy sources, energy efficiency and waste management. It therefore makes economic sense to cut emissions, or increase removals, where it is cheapest to do so, given that the impact on the atmosphere is the same. However, there have been concerns that the mechanisms could allow Parties to avoid taking climate change mitigation action at home, confer a “right to emit” on certain Parties, or lead to exchanges of fictitious credits, which would undermine the Protocol’s environmental goals. The negotiators of the Kyoto Protocol and Marrakesh Accords therefore sought to design a system that fulfilled the cost-effectiveness promise of the mechanisms, while addressing concerns about environmental integrity and equity.

The Marrakesh Accords thus recognize that the Kyoto Protocol has not created any “right, title or entitlement” to emit, and call on Annex-I Parties to implement domestic action to reduce emissions, in a manner conducive to narrowing per capita differences between developed and developing countries, while working toward achievement of the ultimate objective of the Convention.

The Marrakesh Accords do not impose any concrete limits on the extent to which the mechanisms may be used to meet emissions targets. However, Annex-I Parties must provide information in their national communications submitted under the Protocol demonstrating that their use of the mechanisms is “supplemental to domestic action”, which must constitute “a significant element” of their efforts in meeting their commitments. This information is to be assessed by the facilitative branch of the Compliance Committee.

To be eligible to participate in the mechanisms, Annex-I Parties must have ratified the Kyoto Protocol and be in compliance with their methodological and reporting commitments under the Protocol (for the first commitment period, some leeway is allowed for reporting on the LULUCF sector). Any questions over a Party’s eligibility will be dealt with by the Compliance Committee’s enforcement branch, through an expedited procedure.

The operational rules of the mechanisms are based on openness and transparency. The proceedings of the CDM executive board and the Article-6 (joint implementation) supervisory committee will be open to observers, while all non-confidential information is to be made publicly accessible, including through the Internet. (There are safeguards in place to limit what type of information may be designated as confidential.) In addition, the Marrakesh Accords allow businesses, environmental NGOs and other “legal entities”, to participate in the three mechanisms, albeit under the responsibility of their governments.

The three mechanisms operate on the basis of accounting units, which are tracked and recorded through **National Registries** to be established and maintained by Annex-I Parties. Joint implementation projects result in **Emission Reduction Units (ERUs)**, CDM projects generate **Certified Emission Reductions (CERs)** and, under emissions trading, Annex-I Parties may exchange **Assigned Amount Units (AAUs)**, that is, some of the emissions included in their assigned amounts. They may also exchange CERs and ERUs, as well as RMUs generated through sink activities in the LULUCF sector. These units are all equal to one metric tonne of carbon dioxide equivalent (calculated using GWPs), and will all have their own unique serial number.

## Joint Implementation (JI)

Joint implementation allows Annex-I Parties to implement projects that reduce emissions, or increase removals by sinks, in the territories of other Annex-I Parties. Emission reduction units (ERUs) generated by such projects can then be used by investing Annex-I Parties to help meet their emissions targets. To avoid double-counting, a corresponding subtraction is made from the host Party's assigned amount. While the term "joint implementation" does not appear in Article 6 of the Protocol where this mechanism is defined, it is often used as convenient shorthand.

A joint implementation project might involve, for example, replacing a coal-fired power plant with a more efficient combined heat and power plant, or reforesting land. In practice, joint implementation projects are most likely to take place in EITs, where there tends to be more scope for cutting emissions at low cost.

Joint implementation projects must have the approval of all Parties involved, and must lead to emission reductions or removals that are additional to any that would have occurred without the project. Projects involving activities in the LULUCF sector (e.g. reforestation) must conform to the Protocol's wider rules on this sector, and Annex-I Parties are to refrain from using ERUs generated from nuclear energy to meet their targets. Projects starting from the year 2000 that meet the above rules may be listed as joint implementation projects. However, ERUs may only be issued after 2008.

There are two possible procedures for carrying out a joint implementation project. The first procedure (often called **track one**) applies when the host Party fully meets all the eligibility requirements related to the Protocol's methodological and reporting obligations. In this situation, the host Party may apply its own procedures to projects, issue ERUs and transfer them to the investing Party.

The second procedure (**track two**) applies if the host Party does not meet all the eligibility requirements. In such cases, the amount of ERUs generated by a project must be verified under a procedure supervised by the 10-member **Article 6 supervisory committee**, which is to be set up by the COP/MOP at its first meeting. This allows joint implementation projects to begin operation before the host Party meets all the eligibility requirements. However, the host Party must meet several of the requirements before it may issue and transfer ERUs (it must, for example, have established its assigned amount and have submitted its most recent required emission inventory).

Under track two, project participants must prepare a project design document for a proposed joint implementation project. This document is then evaluated by an independent organization—known as an **independent entity**—that has been accredited to carry out this work by the Article 6 supervisory committee. The aim of the evaluation, which includes an opportunity for public comment on the proposed project, is to make sure that the project has an appropriate project-specific, transparent and conservative **baseline** (the starting point for measuring emission reductions or removals), along with a **monitoring plan** to ensure that emissions and removals can be accurately estimated. The baseline and monitoring plan must be devised according to standard criteria, and the project design document should also include an assessment of the project's environmental impacts.

Based on its evaluation, the independent entity would determine whether the project should proceed. Unless a project participant or at least three supervisory committee members request a review of the project, it can then go ahead after 45 days. Once a project is underway, project participants must submit a report to the independent entity on the estimated emission reductions or removals generated by the project. The independent entity will review this report and determine the emission reductions or removals that may be issued as ERUs by the host Party. Unless a project participant or at least three supervisory committee members request a review, these will be deemed valid after 15 days. Subject to it having met the necessary eligibility requirements, the host Party may then issue the ERUs and transfer them to the investing Party.

### **Clean Development Mechanism (CDM)**

The CDM allows Annex-I Parties to implement projects that reduce emissions in the territories of non-Annex-I Parties. The certified emission reductions – CERs – generated by such projects can be used by Annex-I Parties to help meet their emissions targets, while the projects also help non-Annex-I Parties to achieve sustainable development and contribute to the ultimate objective of the Convention.

The rulebook for the CDM set forth in the Marrakesh Accords focuses on projects that reduce emissions. Rules are being developed, however, for adoption at COP-9, for including afforestation and reforestation activities in the CDM for the first commitment period. Annex-I Parties would be limited in how much they may use CERs from such sink projects towards their targets, up to 1% of the Party's emissions in its base year, for each of the five years of the commitment period.

A CDM project might then involve, for example, a rural electrification project using solar panels, or the reforestation of degraded land. As with joint implementation projects, Annex-I Parties are to refrain from using CERs generated through nuclear energy to meet their emissions targets.

The CDM is expected to generate investment in developing countries, especially from the private sector, and promote the transfer of environmentally sound technologies in that direction. However, the finance and technology transfer commitments of Annex-II Parties under the Convention and the Kyoto Protocol are separate and remain valid. Furthermore, public funding for CDM projects must not result in the diversion of official development assistance.

CDM projects must have the approval of all Parties involved, and this may be gained from **Designated National Authorities** (to be set up by each Annex-I and non-Annex-I Party). Projects must lead to real, measurable and long-term benefits related to the mitigation of climate change, in the form of emission reductions or greenhouse gas removals that are additional to any that would have occurred without the project.

The Protocol envisages a prompt start to the CDM, allowing CERs to accrue from projects from the year 2000 onwards. The election of the CDM executive board at COP-7, and the beginning of its work, has already put this prompt start into effect.

The 10-member **Executive Board** supervises the CDM, operating under the authority of the COP/MOP (a role being performed by the COP until the COP/MOP meets). Key initial tasks of



the executive board are to develop simplified procedures to encourage small-scale projects, notably for renewable energy and energy efficiency activities, and to accredit independent organizations, known as **Operational Entities**, pending their formal designation by the COP or COP/MOP. These operational entities play an important role in the CDM project cycle, which is described below.

CDM projects must be based on a project-specific, transparent and conservative **Baseline** (the starting point for measuring emission reductions or removals), and must have in place a rigorous **Monitoring Plan** to collect accurate emissions data. The baseline and monitoring plan must be devised according to an approved methodology. If the project participants wish to use a new methodology, it must be authorized and registered by the executive board.

In order to implement a CDM project, the project participants must prepare a project design document, including a description of the baseline and monitoring plan to be used, an analysis of environmental impacts, comments received from local stakeholders and a description of the additional environmental benefits that the project will generate. An operational entity will then review the project design document and, after providing an opportunity for public comment, decide whether or not to **validate** it. If a project is duly validated, the operational entity will forward it to the executive board for formal **registration**. Unless a project participant or at least three executive board members request a review of the project, its registration will be deemed final after eight weeks.

Once a project is up and running, participants would **monitor** the project. They would prepare a monitoring report including an estimate of CERs generated by the project and would submit it for **verification** by an operational entity. (To avoid conflict of interest, this will usually be a different operational entity to that which validated the project design document.) Following a detailed review of the project, which may include an on-site inspection, the operational entity will produce a verification report and, if all is well, it would then **certify** the CERs as legitimate. Unless a project participant or three executive board members request a review within 15 days, the executive board will **issue** the CERs and distribute them to project participants as requested. These six steps – validation, registration, monitoring, verification, certification and issuance – make up the CDM project cycle. Finally, the CERs generated by projects would be subject to a levy, termed the “share of the proceeds”. Two percent of the CERs of each project will be paid into a newly-created **Adaptation Fund** to help particularly vulnerable developing countries adapt to the adverse effects of climate change (projects in least developed countries are exempt from this part of the levy in order to promote the equitable distribution of projects). Another percentage, yet to be determined, is to cover the CDM’s administrative costs.

## **Emissions Trading (ET)**

Through emissions trading, Annex-I Parties may acquire assigned amount units (AAUs) from other Annex-I Parties that find it easier, relatively speaking, to meet their emissions targets. This enables Parties to utilize lower cost opportunities to curb emissions or increase removals, irrespective of where those opportunities exist, in order to reduce the overall cost of mitigating climate change. Similarly, Annex-I Parties may also acquire CERs (from CDM projects), ERUs (from joint implementation projects), or RMUs (from sink activities) from other Annex-I Parties.

In order to address the concern that some Parties could “over-sell” and then be unable to meet their own targets, each Annex-I Party is required to hold a minimum level of AAUs, CERs, ERUs and/or RMUs. This is known as the **commitment period reserve** and cannot be traded. It is calculated as 90% of the Party’s assigned amount, or as the amount of emissions reported in the Party’s most recent emission inventory (multiplied by five, for the five years of the commitment period), whichever is the lower figure. If an Annex-I Party goes below its commitment period reserve, it is given 30 days to restore the reserve to its required level. (ERUs verified through the Article 6 supervisory committee, however, can be freely transferred, irrespective of the level of the commitment period reserve.)

## **The Registry system**

A computerized system of registries would keep track of transactions in AAUs, CERs, ERUs and RMUs. There are three components to the registry system:

Each Annex-I Party must establish and maintain a **National Registry**. This would contain accounts for holding AAUs, CERs, ERUs and RMUs by the Party, as well as by any legal entities authorized by the Party to hold them. It will also contain accounts for setting units aside to comply with emissions targets at the end of the commitment period and for removing units from the system. Transactions between Parties or between account holding legal entities would take place through these national registries.

The executive board of the CDM will establish and maintain a **CDM Registry**. This will contain CER accounts for non-Annex-I Parties participating in the CDM.

In addition, the secretariat will establish and maintain a **transaction log**. This will verify transactions of AAUs, CERs, ERUs and RMUs as they are proposed, including their issuance, transfers and acquisitions between registries, cancellation and retirement. If any transaction is found not to be in order, the registry is required to stop the transaction.

## **Minimizing Impacts on Developing Countries**

The Protocol echoes the Convention in paying special attention to the concerns of developing countries, especially those particularly vulnerable either to the adverse impacts of climate change or to the implementation of response measures, along with the specific needs of least developed countries. The Protocol therefore commits Annex-I Parties to strive to implement their emissions targets through policies that will minimize adverse impacts on developing countries.

The Marrakesh Accords require Annex-I Parties to report on an annual basis on the actions they are taking to meet this commitment. The information reported may be considered by the facilitative branch of the Compliance Committee. Non-Annex-I Parties, in turn, are invited to provide information on their specific needs and concerns. The Marrakesh Accords also call attention to certain actions that should be prioritized in order to minimize adverse impacts on developing countries. These include:

- Removal of subsidies for environmentally-unfriendly technologies;
- Development of non-energy uses of fossil fuels, advanced fossil-fuel technologies and carbon capture/storage technologies;
- Capacity building to improve efficiency; and

- Assisting developing countries that are highly dependent on fossil fuels to diversify their economies

In addition, as noted above in the discussion on the CDM, the Marrakesh Accords established an **Adaptation Fund**. The fund, which will be managed by the GEF is to be funded not only by the adaptation levy on CDM projects, but also by additional contributions from Annex-I Parties. The adaptation fund will finance concrete adaptation projects and programmes in developing countries, along with such activities as supporting capacity building. Annex-I Parties that intend to ratify the Kyoto Protocol are required to report on their contributions to the fund on an annual basis, and these reports will be reviewed by the COP/MOP.

## Accounting, Reporting and Review

In order to assess compliance with the Kyoto Protocol, reliable information will be needed on the emissions of Parties over the commitment period, the actions they have taken to implement the Protocol, and transactions under the mechanisms. Recognizing this, the Kyoto Protocol and the Marrakesh Accords include rigorous accounting, reporting and review procedures, which build on experience gained in the climate change process over the past decade.

### Accounting

In addition to its **National Registry** for recording transactions in AAUs, CERs, ERUs and RMUs each Annex-I Party must have in place a **national system** to estimate its greenhouse gas emissions and removals. Prior to the start of the commitment period, each Annex-I Party must submit a report describing its national system and registry, as well as providing the emissions data needed to formally establish its assigned amount.

Expert review teams would assess this information. Assuming no questions are raised, the assigned amount of each Annex-I Party is then recorded in a **compilation and accounting database** held with the secretariat. This database will record the annual emissions of Parties, as reported in their annual inventories, along with their total annual transactions in AAUs, CERs, ERUs and RMUs.

Every year, the secretariat will publish a **compilation and accounting report** for each Annex-I Party, based on the information contained in its database. This report would be forwarded to the COP/MOP, the Compliance Committee and the Party concerned. The final secretariat report published at the end of the commitment period would form the basis for assessing whether Annex-I Parties have complied with their emissions targets. This would be done by comparing each Party's emissions during the commitment period with its holdings of AAUs, CERs, ERUs and RMUs in its national registry.

### Reporting and Review

Each Annex-I Party must submit an **Annual Inventory** of its greenhouse gas emissions and removals to the secretariat, calculated using standard guidelines based on IPCC methodologies. The annual inventory would also include other information that must be submitted annually, for example, on any changes to national registries or national systems, on transfers and acquisitions of AAUs, CERs, ERUs and RMUs, and on actions taken to minimize adverse impacts on developing countries. Because they would be more detailed, annual inventories under the Kyoto Protocol would supersede those currently required under the Convention.

**Expert review teams** would check the annual inventories, to make sure they are complete, accurate and conform to the guidelines. The work of the expert review teams would be conducted through desk reviews and centralized reviews, and would involve at least one country visit during the commitment period. If any problems are found, the expert review team may recommend adjusting the data to make sure that emissions are not over or underestimated, as far as can be judged. If there is disagreement between a Party and the expert review team about the data adjustment that should be made, the Compliance Committee would intervene. Aside from recommending data adjustments, the expert review team has the mandate to raise any apparent implementation problems – known as **questions of implementation** – with the Compliance Committee. Once any problems or questions of implementation have been resolved, the compilation and accounting database would be updated with a record of the Party's emissions for that year.

Annex-I Parties must also submit regular **National Communications** that would include information on the actions they are taking to implement the Protocol (these would be merged with national communications submitted under the Convention). Although no fixed timetable has yet been set, they would probably be required every three to five years. Information to be reported in national communications includes:

- Details of a Party's national system and *National Registry*;
- How a Party's use of the mechanisms is supplemental to domestic action;
- Details of the policies and measures implemented by Parties to meet their emissions targets; and
- For Annex-I Parties, information on new and additional financial resources provided to non-Annex-I Parties to help them meet their commitments under the Protocol.

Each national communication submitted under the Kyoto Protocol would be subject to an in-depth review by an expert review team, including an in-country visit. The expert review team will prepare a report on its review, identifying any potential implementation problems that have emerged. Expert review teams for both annual inventories and national communications will be coordinated by the secretariat. They will be composed of experts selected by the secretariat from a roster of individuals nominated by Parties. Two lead reviewers, one each from an Annex-I and a non-Annex-I Party would lead the team. Expert reviewers would have to undergo training, to ensure that they possess the necessary competence to carry out reviews.

## Compliance

The compliance regime for the Kyoto Protocol, as elaborated by the Marrakesh Accords, is among the most comprehensive and rigorous in the international arena. It makes up the “teeth” of the Kyoto Protocol, facilitating, promoting and enforcing adherence to the Protocol's commitments.

The compliance regime consists of a **Compliance Committee** made up of two branches: a **facilitative branch** and an **enforcement branch**, both of which are composed of 10 members. As their names suggest, the facilitative branch aims to provide advice and assistance to Parties in order to promote compliance, whereas the enforcement branch has the power to apply certain consequences on Parties not meeting their commitments.

Decisions of the facilitative branch may be taken by three-quarters of majority, but decisions of the enforcement branch require, in addition, a double majority of both Annex-I and non-Annex-I

Parties. The Committee also meets in a **plenary** composed of members of both branches, and a **bureau** made up of the Chairperson and vice-Chairperson of each branch, supports its work.

Certain commitments fall under the remit of one or the other branch. The requirement that use of the mechanisms be “supplemental” to domestic action, for example, is under the purview of the facilitative branch, as is the commitment of Annex-I Parties to strive to minimize adverse impacts on developing countries. The facilitative branch also provides “early-warning” of cases where a Party is in danger of not complying with its emissions targets. In response to problems, the facilitative branch can make recommendations and also mobilize financial and technical resources to help Parties comply.

The enforcement branch, for its part, is responsible for determining whether an Annex-I Party is not complying with its emissions target or reporting requirements, or has lost its eligibility to participate in the mechanisms. It can also decide whether to adjust a Party’s inventory or correct the compilation and accounting database, in the event of a dispute between a Party and the expert review team.

In the case of non-compliance with emissions targets, Annex-I Parties are granted 100 days after the completion of the expert review of their final emission inventory for the commitment period to make up any shortfall in compliance (e.g. by acquiring AAUs, CERs, ERUs or RMUs). If, at the end of this period, a Party has still missed its emissions target, it must make up the difference in the second commitment period, plus a penalty of 30%. It would also be barred from “selling” under emissions trading and, within three months, it must develop a **Compliance Action Plan** detailing the action it would take to make sure that its target is met in the second commitment period.

Any Party not complying with reporting requirements must develop a similar plan and Parties that are found not to meet the criteria for participating in the mechanisms would have their eligibility withdrawn. In all cases, the enforcement branch would make a public declaration that the Party is in non-compliance and would also make public the consequences to be applied.

A potential compliance problem – a question of implementation – can be raised either by an expert review team, or by a Party about its own compliance (for example, if it wishes to seek help from the facilitative branch), or by a Party raising concerns about another Party. After a preliminary examination, the question of implementation would be considered in the relevant branch of the Compliance Committee. The Compliance Committee would base its deliberations on reports from expert review teams, the subsidiary bodies, Parties and other official sources. Competent intergovernmental and non-governmental organizations may also submit relevant factual and technical information to the relevant branch.

The Marrakesh Accords set out more detailed additional procedures with specific timeframes for the enforcement branch, including the opportunity for a Party facing the Compliance Committee to make formal written submissions and request a hearing where it can present its views and call on expert testimony. In the case of non-compliance with emissions targets, the Party can also lodge an appeal to the COP if that Party believes it has been denied due process.

An expedited procedure with shorter timeframes applies to questions on eligibility to participate in the mechanisms. A Party may request, either through an expert review team or directly to the enforcement branch, to have its eligibility restored if it believes it has rectified the problem and is again meeting the relevant criteria.

## The Road Ahead

The climate change process has evolved rapidly since the Convention was adopted a decade ago. The most high profile development has undoubtedly been the adoption of the Kyoto Protocol, with its legally-binding emissions targets for industrialized countries. However, progress in implementing the Convention has also been of critical importance to forging an effective response to climate change.

The adoption of the Marrakesh Accords, setting out the details of the Kyoto Protocol's rulebook, should now enable widespread ratification of the Protocol, including by most Annex-I Parties, and its entry into force.

The rules for entry into force of the Kyoto Protocol require 55 Parties to the Convention to ratify (or approve, accept, or accede to) the Protocol, including Annex-I Parties accounting for 55% of that group's Carbon Dioxide Emissions in 1990. These criteria ensure that no single Party can veto the Protocol's entry into force. The table below, which shows the shares of Annex-I Party emissions, would serve as the basis for calculating when the threshold has been passed.

When the Kyoto Protocol enters into force, attention would shift to the implementation of its legally-binding emissions targets. The hope is that these targets, accompanied by the mechanisms and rigorous compliance procedures, would help to finally rein in the persistently rising emissions of many industrialized countries. For its part, the Convention – including its fundamental obligation on all its 186 Parties to respond to climate change – would continue to serve as the focus for intergovernmental action to combat climate change for both developing countries and Annex-I Parties who do not ratify the Protocol. It would also continue to provide the basis for the critical work on reporting, finance, technology transfer and other key issues that make up the backbone of the climate change process.

The Marrakesh Accords have launched a new implementation phase for both the Convention and the Kyoto Protocol, based on an architecture of institutions, rules, procedures and mechanisms that is without doubt among the most elaborate of any international environmental agreement. A focus on implementation, however, does not mean the end of negotiations in the climate change process. Talks would resume on further developing both the Convention and Kyoto Protocol rulebooks. New rounds of negotiations would also be launched to strengthen and extend commitments, in order to move closer to achieving the ultimate objective of the Convention. The Kyoto Protocol was never intended to solve the problem of climate change by the end of the first commitment period in 2012. Instead, it envisages a long-term process of five-year commitment periods, with negotiations on targets for the second commitment period i.e presumably for 2013-2017, due to start in 2005. The whole Protocol is also scheduled for review at COP, which, depending on the date of entry into force of the Protocol, may take place around the same time.

The stage is thus set for the continuous development of the climate change process, with implementation and negotiation going hand in hand. The intergovernmental process on climate change would continue to evolve as scientific knowledge improves and political will increases.

Table 1 (e)

**Party's Carbon Dioxide (CO<sub>2</sub>) emissions in 1990 and their share of the total for the purpose of determining entry into force of the Kyoto Protocol**

<b>Party</b>	<b>1990 CO<sub>2</sub> emissions (Gg)</b>	<b>%</b>
Australia	288,965	2.1
Austria*	59,200	0.4
Belgium*	113,405	0.8
Bulgaria	82,990	0.6
Canada	457,441	3.3
Czech Republic	169,514	1.2
Denmark*	52,100	0.4
Estonia	37,797	0.3
Finland*	53,900	0.4
France*	366,536	2.7
Germany*	1,012,443	7.4
Greece*	82,100	0.6
Hungary	71,673	0.5
Iceland	2,172	0.0
Ireland*	30,719	0.2
Italy*	428,941	3.1
Japan	1,173,360	8.5
Latvia	22,976	0.2
Liechtenstein	208	0.0
Luxembourg*	11,343	0.1
Monaco	71	0.0
Nether land	167,600	1.2
New Zealand	25,530	0.2
Norway	35,533	0.3
Poland	414,930	3.0
Portugal*	42,148	0.3
Romania	171,103	1.2
Russian Federation	2,388,720	17.4
Slovakia	58,278	0.4
Spain*	260,654	1.9
Sweden*	61,256	0.4
Switzerland	43,600	0.3
United Kingdom*	584,078	4.3
USA	4,957,022	36.1
<b>* 15 EU member states</b>		

The table does not include Annex-I Parties that had not yet submitted a national communication under the Convention when the Protocol was adopted. The emissions of these Parties (Croatia, Lithuania, Slovenia and Ukraine) would not be counted towards the entry into force threshold. Figures exclude the land-use change and forestry sector.

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# Chapter–2

## CDM – The Process and Stakeholders Concerns

### Background of CDM

Concerns about Green House Gas (GHG) emissions and consequent Global Warming and other climate change problems have prompted the world community to think of viable solutions to the problem. The United Nations Framework Convention on Climate Change (UNFCCC) provided the required platform to discuss the issues and to identify mechanisms to address the global problem. One of the products of this initiative was the Kyoto Protocol, which sets legally binding targets for cutting developed country's emissions.

Within the Kyoto Protocol, the Clean Development Mechanism (CDM) is a Cooperative Mechanism between the Kyoto Protocol signatory developed countries (Annex-1 countries) and signatory developing countries (Non Annex-1 countries). It is a flexible mechanism that allows the Annex-I countries to achieve their GHG emission reduction targets by investing in projects in non Annex-I countries. CDM is designed to assist the signatory developed countries to meet their emission reduction targets while also contributing to the sustainable development of the signatory developing country and ultimately achieving the goals of the UNFCCC. The purpose and process of CDM is defined in **Article 12 of the Kyoto Protocol**, a copy of which is provided in *Annexure-II*.

### Objective of CDM

The CDM has the following three stated objectives:

- To assist Parties not included in Annex-I i.e. Developing Countries in achieving Sustainable Development;
- To contribute to the ultimate objective of the Convention (i.e. stabilize Green House Gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system); and
- To assist Parties included in Annex-I (Developed Countries) in achieving compliance with their quantified emission limitation and reduction commitments under Article 3 of the Kyoto Protocol.

CDM activities are to be hosted in developing countries, and can be financed through a variety of sources, excluding Official Development Assistance (ODA)<sup>1</sup>. If a project is financed using public funds from Annex-I Parties, project developers must list information on these sources of funding. According to Decision 17/CP.7, this list would be considered an affirmation that the funding does not result in a diversion of ODA and is not counted towards the financial obligations of those Annex-I Parties providing the funding.

### Requirements to participate in CDM

In order to participate in the CDM, a country must be a Party to the Kyoto Protocol.<sup>2</sup> Annex-

<sup>1</sup>Public funding from Annex - I, Parties is not to result in the diversion of ODA and is to be separate from and not counted towards, the financial obligation of Parties included in Annex-I.

<sup>2</sup>Decision 17/CP. 7 Article 12 Section F paragraph 30.



A to this report sets out all Annex-I and non-Annex-I countries that have either signed or ratified the Kyoto Protocol.<sup>3</sup> A more up to date list can be found at the UNFCCC website at <http://www.unfccc.int/resource/kpstats.pdf>.

CDM project activities must comply with the requirements of the Kyoto Protocol, the guidelines set out in the CDM rules<sup>4</sup> and the requirements of the host country, including its sustainable development priorities. A key criterion for project eligibility under the CDM is additionality of emissions reductions.<sup>5</sup> This means that the project must reduce GHG emissions beyond what would have happened without the project activity. The emission reductions, once verified and certified, become Certified Emission Reduction units (CERs), which have a market value and can be used by industrialised countries to comply with their commitments under the Protocol. However, Annex-I Parties can only use a limited amount of CERs generated from CDM projects to fulfil their commitments. Further information on the modalities and procedures involved in CDM is provided at below.

### **CDM Modalities and Procedures**

The following rules and modalities governing the implementation of the CDM were adopted as part of the Marrakech Accord at the seventh Conference of Parties to the UNFCCC.

- Participation by all parties involved must be voluntary. Both the host and investor countries should have ratified the Kyoto Protocol, and the host country must establish a National Authority for CDM.
- Project activities starting after January 1, 2000 are eligible to earn CERS.
- Projects should lead to “real, measurable, and long-term” GHG reductions, which are additional to any that would occur in the absence of the CDM project. A project is considered additional if the project emissions are lower than the emissions of a reasonable reference case, identified as the baseline.
- Public funding from Annex-1 countries for CDM projects should be additional to official development assistance and financial obligations under the UNFCCC/Kyoto Protocol.
- CDM project activities should lead to the transfer of environmentally safe and sound technology and know-how. However, it is the host country’s prerogative to ascertain whether a proposed CDM project assists it in achieving its sustainable development goals.
- Emission reductions resulting from CDM projects have to be certified by independent third parties known as designated operational entities.
- Small-scale project categories have been defined which are eligible for fast-track procedures (including simplified baselines and monitoring requirements)
- Renewable energy projects with output capacity up to 15 MW
- Energy efficiency improvement projects, which reduce energy consumption on the supply and/or, demand side by up to 15 GWh annually

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<sup>3</sup>A country cannot be a ‘Party’ to the Protocol until it has entered into force and the country has ratified the Protocol. It is unlikely that the Protocol will enter into force before 2004. Subsequently, the earliest that a country can officially be considered to be a ‘Party’ to the Protocol is not before 2004. However, this does not prevent the development of JI and CDM projects. Until the KP enters into force,, countries that have signed or ratified the Protocol are considered eligible to host JI or CDM projects.

<sup>4</sup> Decision 17/CP. 7 Article 12 and any subsequent Decisions related to the CDM, as well as any guidance adopted by executive board.

<sup>5</sup>See Article 12.5c of the Kyoto Protocol

- other project activities that both reduce emissions by sources and directly emit less than 15 thousand tonnes CO<sub>2</sub> equivalent annually
- In the forestry sector, afforestation and reforestation projects are included under CDM, but limited use of CERs from such projects is allowed in the first commitment period.
- Nuclear power projects are not allowed.

### **Current Status of CDM**

The CDM modalities and procedures were adopted in COP-7 at Marrakech. This process would involve the validation, registration, monitoring, reporting, verification and certification of CDM projects and their emission reductions. At present, the CDM rules contain only minimal information required to begin CDM projects. There are many technical details that have not yet been addressed by the CDM's executive board and/or the COP. These include issues relating to forestry projects and methodologies for establishing baselines and monitoring.

The Executive Board is also addressing the issue of transaction costs and the extent to which they may create a financial barrier to the implementation of small-scale projects. In the COP-8 hosted in New Delhi, the Executive Board has adopted the separate procedures and modalities for small scale projects to reduce transaction costs and make such projects comparatively more viable.

Small-scale CDM projects are believed to be particularly well suited to developing countries, in terms of improving socio-economic, as well as environmental conditions. For example, the installation of small off-grid electricity generation plant in rural areas, without access to grid electricity, can significantly enhance the socio-economic and environmental conditions of local communities. Numerous small projects can also accelerate the use of GHG-friendly and sustainable development-friendly technologies, particularly renewable energy technology. As the demand for these technologies grows, the capital cost should reduce, therefore making them more attractive to potential investors.

### **CDM Project Participants & Project Cycle**

#### **CDM Participants**

The CDM would be administered through three principal bodies, namely, the Conference of the Parties serving as the Meeting of the Parties, or COP/MOP, (prior to the establishment of the COP/MOP the COP will act in its place), the CDM Executive Board and Designated Operational Entities (DOEs). In addition, countries participating in the CDM must designate a national authority for the CDM. Project developers will need to consult with and report to these administrative entities during the project approval and implementation process.

The primary responsibilities of key players in the CDM process are outlined as follows.

#### **The Conference of Parties (COP)**

The Conference of the Parties (COP), serving as the Meeting of the Parties (MOP) to the Kyoto Protocol provides guidance to the Executive Board on CDM procedures, modalities and the designation of Operational Entities. Until the Protocol enters into force, the COP would act in its place.

## Executive Board

The CDM Executive Board (EB) is comprised of members with relevant technical ability and expertise, nominated by Parties to the Protocol.<sup>6</sup> There are ten members and ten alternate members (alternate members function as full members of the EB, but lack voting rights). The EB will provide guidance to the COP on the following key issues:

- Methodologies regarding baselines (including standardised baseline setting) and monitoring, to ensure that such methodologies are explicit, consistent, transparent and predictable;
- Determination of appropriate project boundaries for accounting of GHG to be included in project baselines;
- Provision of simplified modalities and procedures for small scale project activities; and
- Accreditation of operational entities (first step in becoming a DOE).

Moreover, the EB will be responsible for registering CDM projects and issuing Certified Emission Reduction (CER) Units.

## Designated Operational Entities( DOE)

Legal entities that have requisite skills to carry out validation, verification and certification tasks and that meet the standards for accreditation of operational entities<sup>7</sup>, can apply to the executive board to become 'Designated Operational entities' (DOEs) under the CDM. The executive board would accredit operational entities using internationally agreed rules and procedures to ensure common and consistent standards are applied. These entities would be acting under the guidance of the COP and will be supervised by the EB. Project proponents are expected to have flexibility and choice as to where they prefer to have their projects assessed and by which accredited organisation<sup>8</sup>.

The primary tasks of the Designated Operational Entities (DOEs) would be to:

- Validate proposed CDM projects on the basis of set criteria and guidelines;
- Verify and certify reductions in anthropogenic GHG emissions from CDM projects. This will involve auditing the Project Operator and his management systems to ensure credibility and transparency of the projects, reported CERs and other performance indicators;
- Maintain a publicly available list of all CDM projects for which it has carried out validation, verification and certification.

## CDM National Authorities

Parties participating in the CDM of a country must designate a national Authority (DNA). It is likely that the National Authorities would act as a focal point for the CDM. The activities that the National Authority undertakes is likely to differ from country to country, but in general they are likely to function as "one stop shops" for project developers and other interested in developing

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<sup>6</sup>The Executive Board shall comprise ten members from Parties to the Kyoto Protocol, as follows: one member from each of the five United Nations regional group; two other members from the Parties included in Annex -I; two other members from the Parties not included in Annex-I, and one representative of the small inland developing States, taking into account the current practice in the Bureau of the Conference of the Parties.

<sup>7</sup>The standards for accreditation of DOEs are set out at Appendix-A of Decision 17/CP.7.

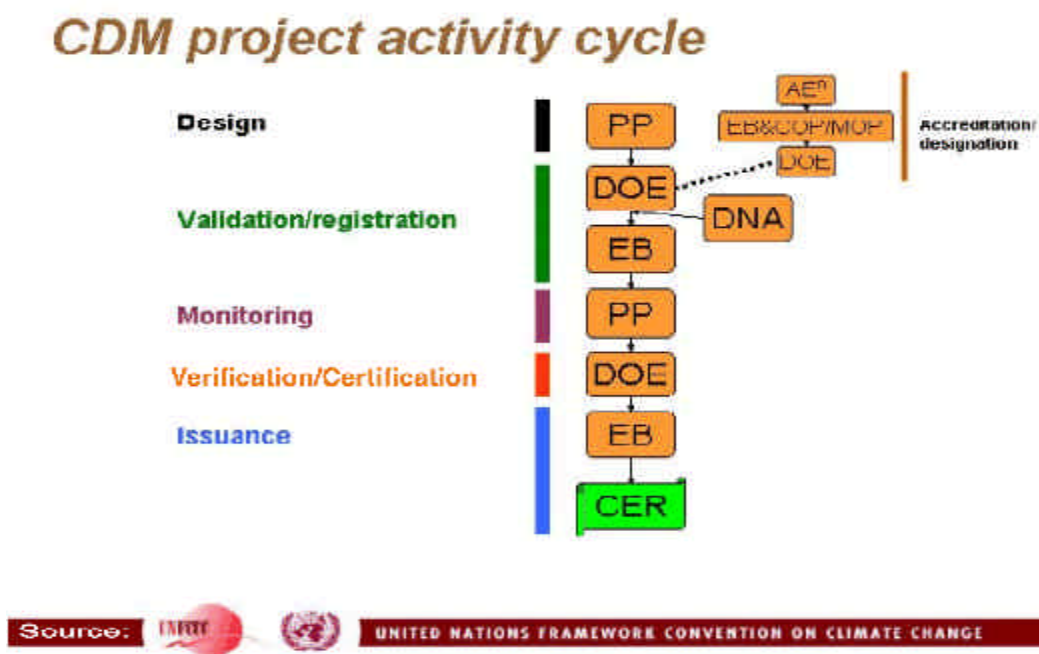
<sup>8</sup>Two DOEs will need to be contracted, unless permission is granted by the EB. One DOE would carry out project validation while the second would verify and certify the emission reductions generated by the project.

CDM projects within a host country.<sup>9</sup> The principal functions of national CDM authorities could include:

- Ensuring that all stakeholders have a clear point of contact that is familiar with national policies and procedures relating to the CDM;
- Developing rules and procedures for approval of CDM projects, including national sustainable development criteria;
- Negotiating MOUs and CER agreements with project participants;
- Reporting on national CDM programme and provide recommendations on changes or additions that should be made to CDM procedures;
- Developing a portfolio of priority CDM projects and networking information that can be used for marketing CDM project activities.

**Figure-2 (a)**

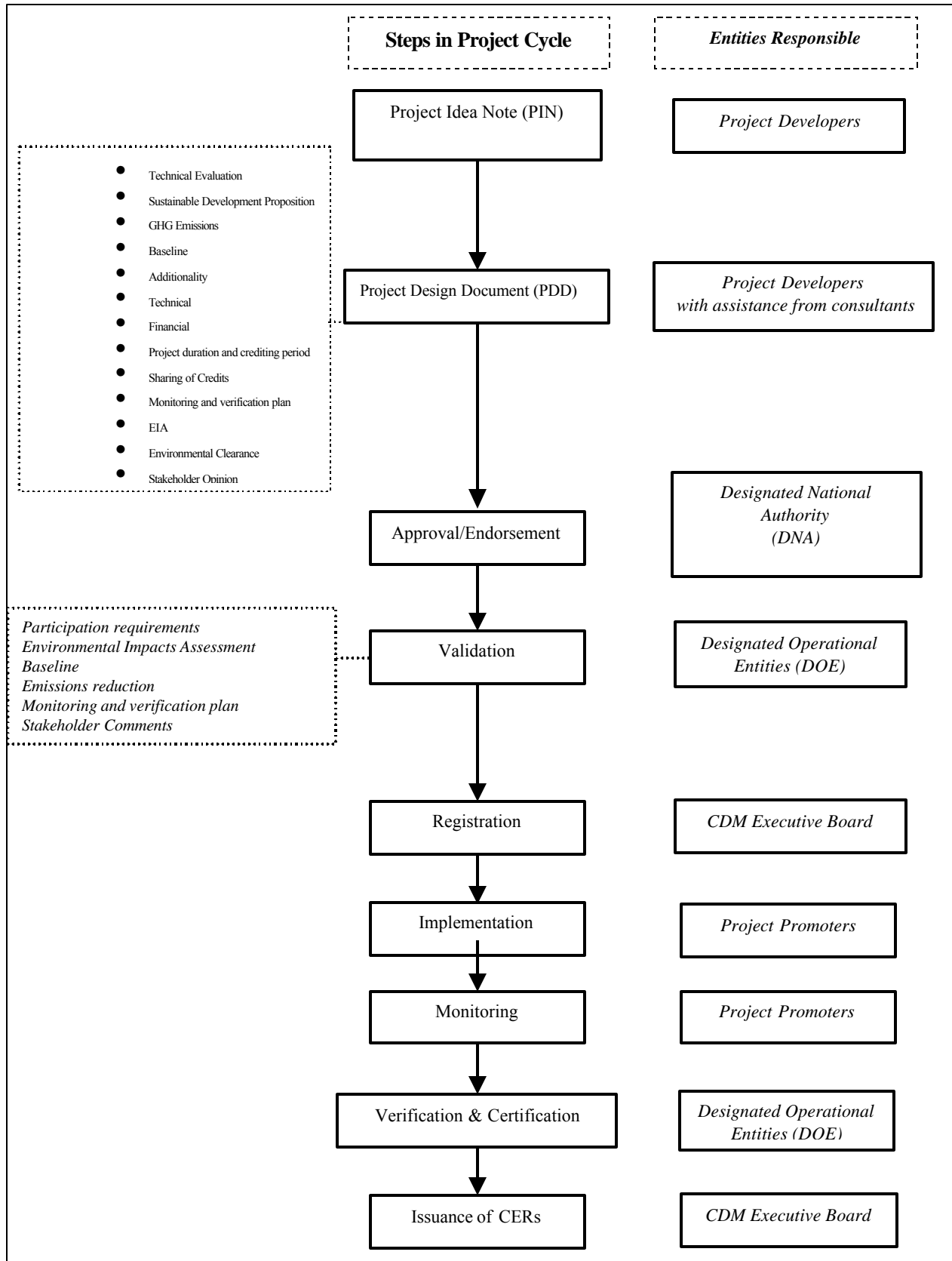
The CDM Project activity cycle as furnished by UNFCCC is provided below:



CER	Certified Emission Reductions
DNA	Designated National Authority (Host Country)
DOE	Designated Operational Entity
EB	Executive Board
PP	Project Proponents

<sup>9</sup> The establishment of a National CDM Authority is an international requirement. Please refer FCCC/CP/2000/CRP.2/Add.1, paragraph 43 of the Annex to Decision 17/CP.7.

**Figure-2 (b)**  
**CDM Project Cycle**



## CDM Project Cycle

All CDM projects must go through a project cycle. Although some steps in this cycle are the same as those applied by project financiers and investors, there are several aspects of the CDM process that are unique to emission reduction activities pursued under the CDM. The four stages of the CDM project cycle are: (1) Project Development, (2) Project Validation and Registration, (3) Project Monitoring, and (4) Verification, Certification, Issuance of CERs. These procedures apply to all CDM projects, excluding those that fall within the 'small-scale' project categories. Small-scale projects would be 'fast tracked' through more simplified and streamlined procedures.

### Stage 1: Project Development

Project developers must design the project and obtain financing: A Project Design Document (PDD) must be completed, providing comprehensive and accurate information on the project, including the calculation of emission baselines, monitoring plans, and the project crediting period.

### Stage 2: Validation and Registration

Projects must be validated by DOEs and registered by the CDM executive board in accordance with the CDM rules. Validation provides assurance that the projects comply with all CDM and host country requirements. DOEs would need to determine the credibility of baseline methodologies and projected emission reductions, before the project is validated and registered. If a positive validation report is made by the DOE and accepted by the executive board, the project would be registered as a CDM project activity.

The DOE conducting the validation would at a minimum, take account of the following project characteristics and the risks relating to them:

- Comments invited and received from local stakeholders, and how due account was taken of any comments received;
- Analysis of the environmental impacts of the project activity, including trans-boundary impacts, and whether the project participants or the host country considers those impacts 'serious or significant'.
- The Project Baseline and monitoring procedures;
- The quantity of emission reductions expected to be achieved by the Project during the crediting lifetime of the project, taking account of possible indirect emission effects of the Project (in particular, any compensatory GHG increase, commonly known as "leakage" effects);
- Any relevant UNFCCC and Kyoto Protocol criteria as well as host country requirements, such as sustainable development priorities.

If a positive validation report is made by the DOE and accepted by the executive board, the project will be automatically registered as a CDM project activity

### Stage 3: Project Monitoring

Monitoring describes the systematic surveillance of a project's performance by measuring and recording performance-related indicators relevant to the project. The monitoring and verification protocol (MVP) should be described in the Project Design Document. The DOE would use the

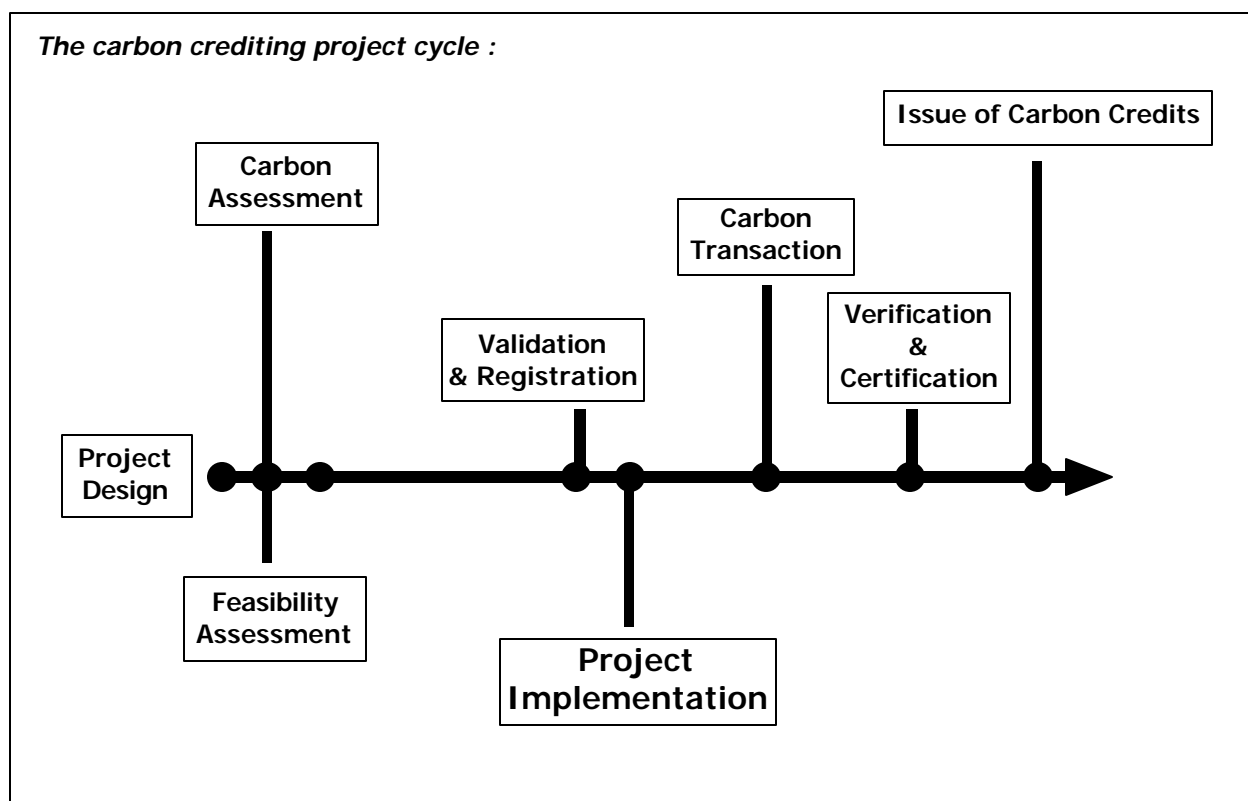
information and data collected through the MVP to verify a project's emission reductions. The monitoring system should be capable of producing records on reported GHG emission reductions, social and environmental impacts and on project management, including monitoring, data collection and management systems.

#### Stage 4: Verification, Certification and Issuance of CERs

Emission reductions must be verified and certified by a DOE before the executive board can issue CERs. The verification process involves periodic auditing of monitoring results, the assessment of achieved certified emission reductions and checking the Project's continued compliance with all relevant criteria. The monitoring and verification process is therefore the basis for the production and delivery of CERs to the Project Operator (or other buyers) and for any related revenue stream that the operator expects to receive. The audit process during verification is expected to be interactive, iterative and participatory. The DOEs may use spot checks of data measurement and collection systems and interviews with the key project participants to determine the credibility and accuracy of the reported performance. It is very important to understand the "Carbon Crediting Project Cycle" i.e. the process through which the project promoter has to undergo.

Figure-2 (c)

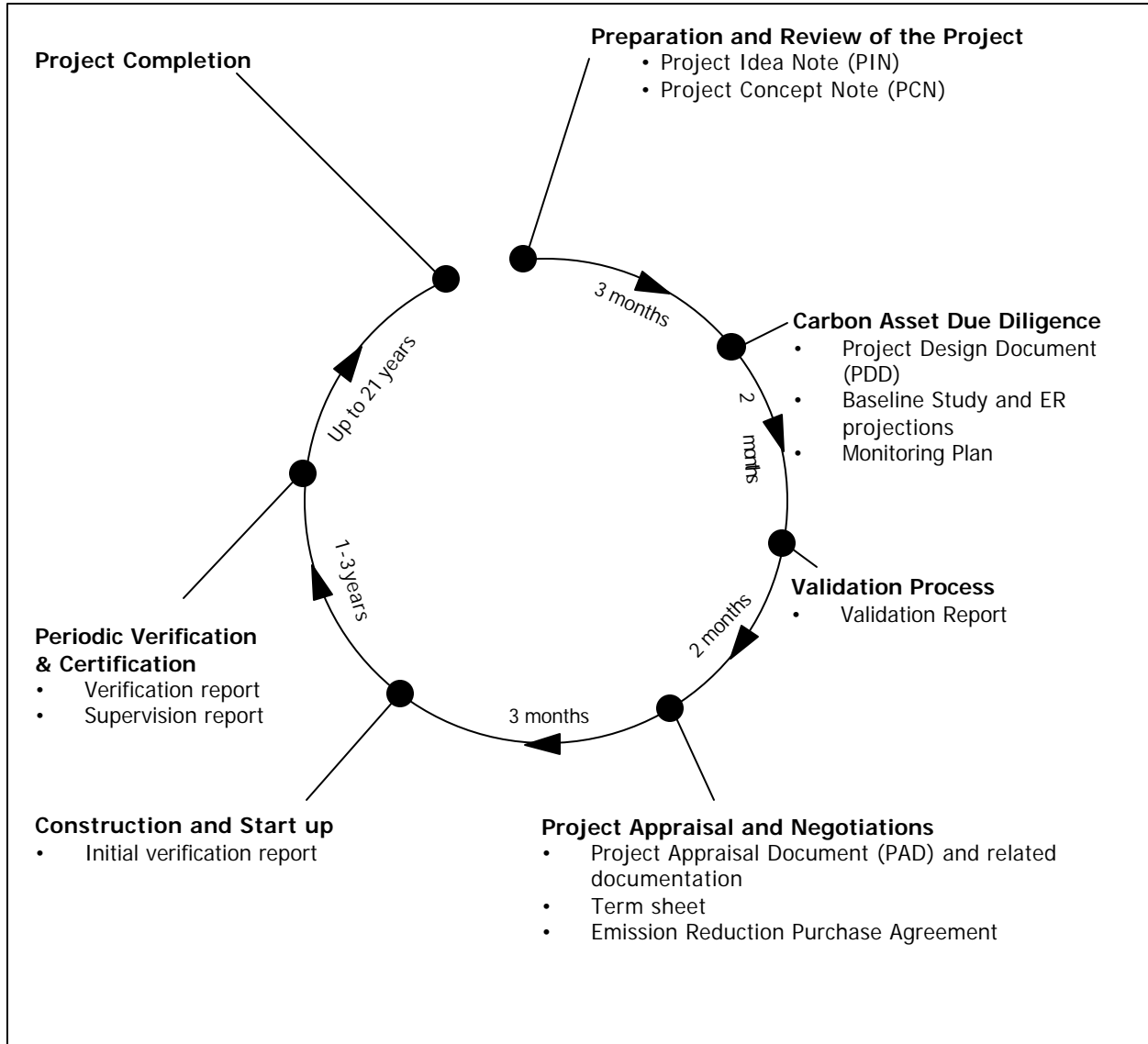
#### The Sequence of a Carbon Crediting Project Cycle



Certification is the written assurance by the DOE that, during the specified time period, the project achieved the reductions in anthropogenic emissions by sources of greenhouse gases that were verified. If the executive board is satisfied with the certification report, it would issue CERs to the project developers or other nominated parties.

Figure 2 (d)

## PCF's CDM Project Cycle



Source : Prototype Carbon Fund (PCF), World Bank, 2003



## ILLUSTRATION OF THE *PROJECT DEVELOPMENT PROCESS WITH EN EXAMPLE*

In Andhra Pradesh, some renewable energy projects have been successfully implemented. The Development Alternatives provides the following road map involving various stages of implementation as climate change mitigation projects, which is furnished below as a showcase.

### **Project Conceptualisation Stage**

Main role – Project Developers

- Step1 Assess the availability & sustainability of raw materials
- Step2 Assess the financial resources
- Step3 Determine the optimum size and technology to be utilised
- Step4 Techno-economic feasibility report preparation – DPR

### **Technical Approval of the Project Stage**

Main Role – Non-conventional energy Development Corporation of Andhra Pradesh (NEDCAP)

- Step5 Registration of application by submitting DPR to NEDCAP
- Step6 Visit of technical site by NEDCAP
- Step7 Acceptance of DPR by NEDCAP – Indicating technical acceptance
- Step8 MOU between NEDCAP and Project Developer
  - Service Charge-Rs.1 lakh/MW to NEDCAP
  - Bank Guarantee of Rs. 25000/MW towards financial closer within 6 months, which get usual extension up to minimum 18 months.

### **General Approval of the Project Stage**

Main Role – Different Government Departments like Pollution Control Board, Land Revenue Department, Commissioner ate of Industries etc.

- Step9 Application for common approval through prescribes format of Centralised Documentation and Clearance Centre of Commissionerate of Industries OR independently to different department as
  - Land use clearance/land use conversion
  - Clearance from APPCB
  - Ground water/Surface Water utilisation clearance
  - Power Purchase Agreement with APT Transco
  - Financing Arrangement/Incentives
    - 100% Depreciation
    - Exempted from excise
    - Import duty concession

### **Approval as a Climate Change Project**

Main role – Nodal Ministry (MNES for renewable Energy Project), MoEF and Climate Change Facilitation Centre

- Step10 Incorporation Climate Change Supplement in the Detailed Project Report with the help of Climate Change Facilitation Centre (Development Alternatives)
- Step11 Submission of DPR to the Nodal Ministry in GOI (Ministry of Non-conventional Energy Sources)
- Step12 Prepare and submit the PIN/PDD to DNA. (DNA will issue a “Letter of Endorsement”)
- Step13 Submission of the project to DOE/EB for validation/methodology approval.
- Step 14 Submit the approved project to different carbon investors.

### **Financial Closure of the Project (in parallel with the above stage)**

Main role – Different Financial Institution and Government Development Agencies

- Step 15 Before commissioning, the project has to take approval from Andhra Pradesh Electricity Regulatory Commission (APERC) who will provide the clearance to the Power Purchase Agreement (PPA).
  - License for Power sale
  - Power
- Step 16 Financial Closure

## **Key Issues in CDM - Stakeholder Concerns**

There have been wide range of concerns among various stake holders in the country pertaining to CDM. These concerns have ranged from baseline assessment to high transaction costs to uncertainty associated with actual price of CERs. The concerns of the various stake holders are described in the following sections.

### **Project Developers**

The project developers view CDM as a source of investments and revenues that can enhance the viability and business potential of its projects. The uncertainties associated with the Kyoto Protocol and limited understanding of sustainable development criteria has led to apprehensions. The project developers are of the view that high transaction costs associated with CDM process will nullify any benefits arising out of sale of CERs. Some of the specific concerns are described in the following subsections.

### **Approval Process for CDM Projects**

Earlier approval process required the project to establish emission, technology and financial additionality for it to qualify as a CDM project. However, in view of concerns related with technology additionality especially since it is not a requirement of the CDM Executive Board. It is felt that such stringent requirements should not be stressed. Also, it is not clear what would be the cutting edge technology for various areas such as wind, hydel etc. Further newer and better technologies might require higher investment, which may not be commercially viable and may also lead to risks related to technology, and the CDM benefits may not be sufficient to make them viable in all cases.

There is also apprehension that focus on newer and advanced technology in the initial years might influence the future baseline and reduce the CDM benefits in future.

Other concerns that projects have with the process are:

### **Timelines for the process**

- Will the government charge some processing fee for CDM projects?
- What will be sustainable development criteria against which projects will be evaluated?
- How do these sustainable development criteria relate with existing environment procedures in the country for instance EIA, public hearing, etc?

### **Entitlement of CDM Benefits**

Another concern among the business community is related to the entitlement of CDM benefits, i.e. who gets the benefits – the Government, the project promoters or are they passed down to the consumers/public. CDM is designed to be a project based transaction with Government approving such projects in line with the UNFCCC's requirements. The project developers may show reduced interest in CDM projects if they have to share the CDM benefits with the government.

### **Transaction Cost**

Given the potential monitoring, verification, and certification activities that are required to obtain CERs for a CDM project, transaction costs could be prohibitive especially for small projects.

Industry expects the Government (DNA) to reduce some of the formalities and make the process efficient, which would reduce the transaction cost of such CDM projects. This could be possible if some of the sectoral baselines can be frozen so that each project need not have a separate baseline study.

### **Cost associated with penalty for non-delivery of contracted CERs**

CERs are transacted as per the contract between the buyer and the seller. The seller is obliged to produce the contracted amount of CERs annually. Limited experience with such contracts show that the seller may have to pay heavy penalty for failing to deliver the contracted amount of CERs. This can happen both due to natural as well as man-made causes. Whether the Govt. should step in to protect such unusual events is one of the issues being discussed among the business community and whether the government can encourage insurance companies to create products to hedge such risk.

### **Taxing CDM benefits**

It is not clear as to how the revenues arising from sale of CERs would be treated and what kind of taxation it would be subjected to. There is an apprehension that the taxation might reduce the benefit to the project and may not even justify the transaction.

### **Capacity Building related issues**

Emission trading, CDM and sustainable development are new concepts for the Indian project developers. Better knowledge of the process and complexities involved can empower them to explore and compete in the international market.

### **Government**

The CDM under Kyoto Protocol requires the governments of the host country to set up a DNA for CDM projects. At present, there is no DNA\* in India and for the interim MoEF has been working as the nodal agency for CDM activities in India. The government is expected to play facilitative and regulatory role for CDM activities.

### **Low hanging fruit**

India today has many low cost opportunities to save GHG emissions. Under the protocol, there is no obligation on India to reduce its GHG emissions. However, the possibility of legally binding obligation on India in the future is not ruled out. In this context, if the project developers in the beginning exploit low cost opportunities, then India will be left with all high cost options for meeting its obligation if arises, in future. This could be an area of concern for the government and accordingly, the CDM strategy needs to recognize future obligations that India might have under the protocol.

### **Easing the Approval Process**

With vast potential for CDM in India, the number of projects that the government is expected to approve will be high. Having and running an efficient, effective and transparent process would require clear definition of roles, administrative procedures & responsibilities and resources. The national CDM strategy should discuss these issues and suggest a mechanism having the above

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\* In India, Government has already Setup a DNA in December-2003, which is operating from MoEF.

mentioned attributes. It should specifically seek to answer the following:

- How can the Govt. simplify the approval procedure?
- Should the Govt. outsource the appraisal of such projects from an independent agency by specifying the terms and retain the authority to issue approval letters?
- Can private sector participation be secured for registry, etc?

## **Country Risk**

In the absence of clear policy and procedures from India on CDM the buyers are not clear about the timelines involved in getting projects cleared. If the situation remains so, the buyers might shift their focus to other nations with better clarity on policy and procedural matters. In such a scenario, India might lose out the CDM benefits to other countries.

## **Financiers**

The financial community expects to play an important role in the CDM market in India. However, given the unusual risks associated with the CDM projects, the financial institutions have been cautious in their approach. Today, the financial institutions are of the view that CDM benefits do not make unviable projects viable but CDM revenues can help push projects from marginal investment grades to investment grade category. Some of the specific concerns of the financial institutions are:

- Whether the projected CERs will materialize or not?
- FIs do not have the skills to evaluate CDM projects especially with respect to baseline assessment, sustainable development criteria, etc
- How much time will it take for projects to enter into CER purchase agreement? This is crucial as FIs would like the agreement to be in place for its appraisal.

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# Chapter-3

## CDM Market – The Present & Future Potentials

### The Present State of CDM Market and its Trends

The buyers of CDM credits are primarily Governments of developed countries, multilateral agencies, and private facilities. Although the Kyoto Protocol is yet to come to force legally, several Governments and Multilateral Agencies have already started the process of procuring carbon credits from projects expecting them to qualify under CDM as and when the registration under CDM starts. Some recent initiatives are discussed in this section.

The World Bank has established a Prototype Carbon Fund (PCF) in 1999 with the intention of buying Emission Reductions from potential CDM projects. Several private firms and developed countries' governments have invested about US\$ 180 million in the Fund. According to PCF estimate, during the First Commitment Period there will be a requirement of 620 MtC emission reduction. With the withdrawal of United States of America (USA) the emission reduction requirement has further reduced to 196 MtC. Moreover, CDM will account for about one-fourth of total expected emission reduction estimate and the rest of the emission reduction, would be taken care of Emission Trading (ET). Unfortunately, with EU's strong focus on domestic action and internal carbon trading scheme, the CDM market has further shrunk. According to one estimate, 125MtC of emission reduction is expected to come from ET & CDM - of which CDM will account for only 33 MtC; in addition, at present, the CER price is in the range of US \$ 3-5, which is quite low, compared to the mitigation costs in Annex-I countries. This is essentially because of market failure on account of the non-retification of the Kyoto Protocol by the USA and Russia.

The PCF has already executed Emission Reduction Purchase Agreements (ERPA) with 7 such projects from various countries. The fund at present offers a price of US\$ 2.5-3.5 per tonne of CO<sub>2</sub>. As per PCF estimates, the impact of revenue from CDM on renewable energy projects in terms of IRR is given below:

#### World Bank's Carbon Finance Business

- 40 Carbon Purchases, agreed and under negotiation: involving **~US \$ 250 million**.
- Value of PCF and Netherlands Projects approved for carbon purchase: **US \$ 440 million**
- Carbon Asset portfolio: **~50 million tCO<sub>2</sub>e**
- Underlying CDM/JI project finance : **~US \$ 3 bn**

Source : [www.carbonfinance.org](http://www.carbonfinance.org)

#### Bank Carbon Finance Business Family of Products

- PCF as "Flagship" : **US \$ 180 million by end of investment phase**
- Netherlands Clean Development Facility: **CDM only, US \$ 140 million over 2002-2005 – ahead of investment schedule.**
- Community Development Carbon Fund (CDCF): started **July 15, 2003** with **US \$ 30 million initial capital.**
- Bio-Carbon Fund (Bio-CF) : To start **March 2004** at **~US \$ 30 million.**
- Additional OECD "Country Funds" under negotiation : **(Dutch JI - US \$ 25 million, Italian CF– US \$ 15 million).**

Source : [www. Carbonfinance.org](http://www.Carbonfinance.org)

**Table 3 (a)**

**Impact of CDM Revenue on the Renewable Energy Project cost**

Technology	IRR
Energy efficiency (heating by solar panels)	<1.0
Wind	0.9-1.3
Hydro	1.2-2.6
Bagasse	0.5-3.5
Biomass	<5.2
Solid Waste Management (Methane Recovery)	>5.0

Source : Prototype carbon Fund, (PCF) world bank, 2003

**The Carbon Tenders and present Buyers**

Many Annex-I countries have initiated action of acquiring CERs from CDM project developers. The CER market has been based so far on calls for project idea notes (PINS)/project concept notes (PCNs), project design documents (PCNS) and tenders issued by Governments in developed countries, multilateral institutions and a few private firms. These include the *Carbon Emission Reduction Unit Procurement Tender (CERUPT)* programme of the Dutch Government, *CDM Pilot Programme* of the Government of Finland, *Climate and Energy Programme* of the Swedish Government, the *Prototype Carbon Fund* of the World Bank), *IFC Netherlands Carbon Facility* (INCaF-IFC & Dutch Government) and BC Hydro-Canada. Based on the buyer's terms, the documents need to be prepared by project developers, although most of them are mandate projects.

The Government of Netherlands launched the Certified Emission Reduction Unit Procurement Tender (CERUPT) to purchase 3 million tonnes CO<sub>2</sub> to meet its Kyoto target. The tender period was between November 2001 - January 2002, and the prices offered ranged from £ Euro 5.5 per tonne of CO<sub>2</sub> for Renewable Energy (excluding Biomass) to £ 3.3 Euro per tonne of CO<sub>2</sub> for fossil fuel switch and Methane recovery. Under CERUPT, five renewable energy project proposals from India have been selected by the Government of Netherlands. These projects are expected to generate about 1.7 lakh CERs per year, resulting in an estimated additional revenue of US \$ 9 lakh per year.

Swedish Climate Investment Program (SICLIP), implemented by the Swedish Energy Agency, launched a tender between May - June 2002. Eligible projects included new and expanded renewable energy, switching from fossil to biofuel, expanded use of biofuel resources in energy-efficient Combined Heat and Power (CHP) plants, fuel switching and/or energy efficiency and recovery and use of Methane from Landfill deposits.

Government of Finland through its JI/CDM Pilot Programme is interested in small-scale CDM projects. This tender, which closed on 31 March 2003, aimed at 3-4 contracts purchasing a total amount of 500,000 t CO<sub>2</sub>eq. In

Who are in Carbon finance Business?
<ul style="list-style-type: none"> <li>• Netherlands</li> <li>• Canada</li> <li>• Japan (2 Funds &amp; other initiatives)</li> <li>• Denmark</li> <li>• Italy (In co-operation with the World Bank)</li> <li>• Spain</li> <li>• Rabo Bank</li> <li>• Brokers and intermediaries:               <ul style="list-style-type: none"> <li>- Carbon Trade</li> <li>- CO2e.com</li> <li>- Eco Securities</li> <li>- MGM</li> <li>- Others</li> </ul> </li> </ul>
<p>Source : <a href="http://www.carbonfinance.org">www.carbonfinance.org</a></p>

response to this Government of Finland's CDM/JI Pilot Programme for procuring CERs under the CDM; 13 renewable energy project proposals from India also have been submitted by project developers in march 2003. At current price levels, it is estimated that not more than around 3-4 percent of the project cost would come through the sale of CERs.

Under the International Finance Corporation (IFC), Netherlands Carbon Facility (INCaF), IFC has entered into an arrangement under which it would purchase CDM credits for the Government of Netherlands. About US\$ 40 million has been allocated under this facility for the next three years. Eligible projects include renewable energy, fuel switching, energy- efficiency, recovery and use of methane from landfill deposits & coal mines. INCaF is understood to have already shown deep interest in bagasse-based cogen projects in India also.



The World Bank and International Emissions Trading Association (IETA) launched the Community Development Carbon Fund (CDCF) at the World Summit on Sustainable Development (WSSD) in 2002. The CDCF would provide carbon finance to small-scale projects in the poorer rural areas of the developing world. Its target size is US\$ 100 million, and it plans to offer higher prices than the World Bank's PCF for projects with developmental benefits.

The World Bank launched a new fund in last November 2002 called the Bio-carbon Fund. Its target size is US\$ 100 million, and is expected to be operational by *mid 2004*. This new fund is meant to demonstrate projects that sequester or conserve carbon in forest and agro-ecosystems.

Moreover, Denmark, United Kingdom, and other countries of the European Union have also initiated the process of implementing national or regional GHG trading schemes, which would be linked with CDM markets.

AS CDM is a project based activity and additionality is a major criterion, it is most unlikely that CDM projects would have a substantial share in the midterm goals set for 2012, which happen to be the end of first commitment period. Further, in view of the international scenario and Annex-I countries' policies, there may not much scope for a large CDM project portfolio. However, after the year 2005 when EU trading scheme becomes operational and if by that time the Kyoto Protocol enters into force,

<b>Community Development Carbon Fund CDCF Portfolio Criteria</b>
<ul style="list-style-type: none"> <li>• Only Small Project by Kyoto Protocol definition: <b>&gt;15MW, 15MW thermal, 50,000 t/CO<sub>2</sub>e/yr</b></li> <li>• Only in <b>Developing Countries</b> (CDM)</li> <li>• Not more than <b>10% of capital</b> to be invested in one Country</li> <li>• <b>25% of portfolio in IDA countries</b> (perference for LDCs and smaller poorer Developing Countries)</li> <li>• Must Certify <b>Local Community Development Benefit</b> as Emissions Reductions e.g. provision of health, education services, clean water, improved local environment etc.</li> </ul>
<i>Source : www.carbonfinance.org</i>

<b>Bio-Carbon Fund</b>	
 	<ul style="list-style-type: none"> <li>• Fund Life – <b>18 years</b></li> <li>• Minimum contributions – <b>US \$ 2.5 million, drawn down over 15 years; ~ \$ 200,000 per year</b></li> <li>• Contracted Prices -- Bio-CF: <b>US \$3–\$4/t CO<sub>2</sub>e</b></li> </ul>
<i>Source : www.carbonfinance.org</i>	

<b>Kfw Carbon Fund</b>
<p><i><b>This fund is designed to contribute to climate protection by encouraging the implementation of climate protection projects; which is largely Privately funded in stoument with the political support from German Government.</b></i></p> <ul style="list-style-type: none"> <li>– Would come in existence by mid-2004</li> <li>– Intends that purchase agreements will initially be signed for deliveries of emission credits upto the year 2004</li> <li>– Offers easy access to potential supplies of emission credits.</li> </ul>
<i>Source : www.carbonfinance.org</i>

CDM projects could start getting materialized in renewable energy as CER prices may rise by that time.

### **Emerging Global CDM Market**

Many researchers have arrived at different anticipated sizes of the CDM market, and so far no globally acceptable number is available. However, there is a likelihood of an increase in the market size and in the price of the CERs when the Kyoto Protocol comes into force with the Russian ratification, by COP-9 at Milan, Italy.

A second spurt in CDM related activities is likely to be introduced as soon as the matters relating to the inclusion of forestry activities under CDM are clarified. In case, some of the Annex-1 countries decide not to have any records to the CERs generated out of forestry activities, it is likely to improve the size of the CDM market. Another major uncertainty could be removed as soon as the doubts about eligibility of CERs under the so-called "hot air" are clarified.

There is a feeling in some quarters that some of the Annex-1 countries may take a position that they will not meet their targets through purchase of non-existent hot air but would much rather go in for the harder mitigation options, most likely under pressure from activist NGO pressure groups. All these put together could increase the size of the CDM market substantially. And lastly, one cannot discount the fact that the United States could also be persuaded to join whether as a result of internal and public pressures or because of a change of their policy position in the response to the threat of climate change.

### **EXAMPLES IN CDM IMPLEMENTATION - Some International Experience**

The Latin American experience in AIJ/CDM institutional development is exemplary and will contribute to future worldwide institutional progress. Costa Rica was the first developing country to develop the concept of a national AIJ/CDM entity. In 1994, Costa Rica legally consolidated the Costa Rican Office for Joint Implementation (OCIC) by Executive Decree. Since OCIC's inception, a total of nine AIJ projects have been approved. At a time when most countries were still trying to understand the more basic concepts of climate change, OCIC forged ahead with both effective institutional developments as well as innovative financial instruments.

Since the establishment of a National Authority for the CDM was not compulsory until November 2000, the national AIJ entities, which were created during 1994–2000, were all of experimental nature. They varied widely in three main features: legal structure, sources of technical and financial support, and responsibilities with which they were entrusted.

Costa Rica has a mixed entity where private, public and NGO sectors participate equally. El Salvador, Argentina, Bolivia and Paraguay have entities that are fully governmental, in fact, simply a specialized section of the respective Environment Ministry. Guatemala has a private sector institution under the governance of a multi-sectoral board, Honduras a non-governmental organization and Panama a non-profit private organization. Finally, Ecuador has one private sector entity and one public sector entity.

The sources of funding also vary. El Salvador and Argentina seem to be the only entities fully funded by their national government. Bolivia, Colombia and Paraguay have supplemented government support with funding from multilateral institutions such as the World Bank, UNDP as well as from bilateral development agencies of the United States and Germany. Honduras is fully



funded by official development aid from abroad. Costa Rica and Guatemala have received funding from their local private sectors. Finally, there are differences in the purposes for which the entities were created.

In some countries the entities created with the responsibility of promoting, evaluating and approving projects are at the same time charged with the development of national climate change policy as well. Such is the case of Costa Rica, Argentina, Guatemala, El Salvador and Panama. In other cases, the normative role has been separated from the evaluative role, by creating a multi-sectoral body to develop overall policy and oversee the project related entity. Examples can be found in Colombia, Paraguay and Bolivia. Ecuador is a unique case, in which the project related roles have been split into two entities of different legal nature.

No one approach is better than the other. Each country must design according to national needs and possibilities. Each Latin American country experimented with an approach that seemed appropriate and beneficial to the national circumstances.

As during the AIJ pilot phase there was no guidance from the UNFCCC, each country created an entity that best suited their national needs and under the conditions that were prevalent at the moment. Each one was able to learn from previous experiences in neighbouring countries, each one innovated the concept in order to maximize their potential.

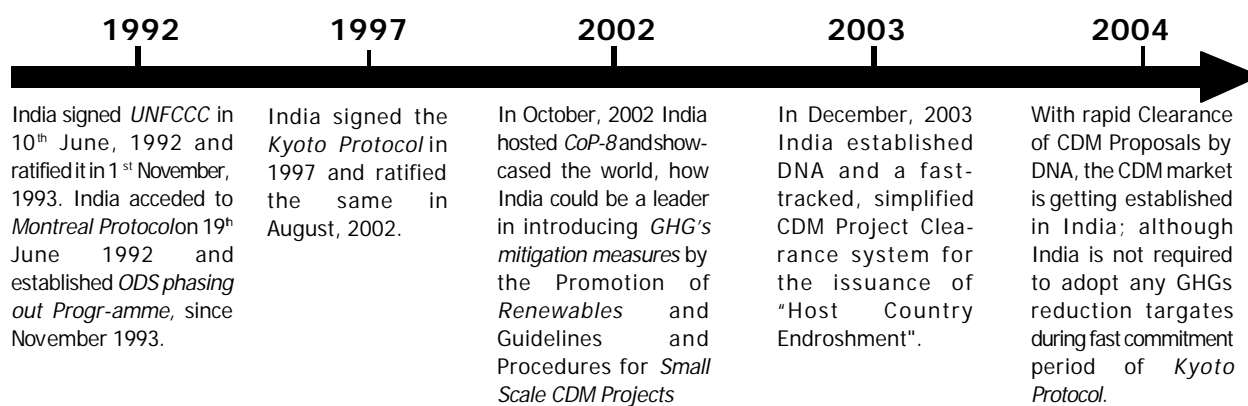
So far Argentina, Bolivia, Brazil, Colombia, Cuba, El Salvador, Germany, Morocco, The Netherlands, Nicaragua, Peru, Uruguay have set up Designated National Authorities in their country. Although, in India, we did not go for a DNA, for considering the projects under AIJ for the approval; we had a numbers of the AIJ and GEF projects distributed in the country. For statewise distribution of AIJ and GEF projects as of July 2002, please refer figure 3 (b).

### The Cronology in Evolution of CDM in India

The capacity building of CDM, has always been integrated in the Process of understanding and appreciating the climate change mechanism. If anybody refers the recent past, then the time line of such Capacity Building Measures in India would be:

Figure 3 (a)

### The Cronology in Evolution of CDM in India



## CDM Opportunities / Potentials in India

CDM provides a unique opportunity to India to catalyze sustainable development and to leverage the *transfer of technology* and financial resources for making our development process more *efficient* and environmentally clean. Such a process has the potential of addressing to poverty eradication and promoting a better *quality of life* to communities around the CDM project activity sites.

Per capita CO<sub>2</sub> emissions in India is one of the least compared to other developing and developed countries of the world, which can be seen from Table 3 (b). Also please refer figure 3 (c) to see the level per capita CO<sub>2</sub> Emission in India, against china, Germany, Japan and USA (1997), and for district wise CO<sub>2</sub> emissions in India (1995), figure 3 (e) may be referred.

As it can be seen, India's carbon emissions per capita rank among the lowest in the world. averaging only one-quarter of the global average and one-twentieth the U.S. rate. While India places a higher priority on development needs, policies driven by economic and environmental challenge have reduced growth in Greenhouse Gas emissions. The greatest challenge has been economic liberalization and restructuring to improve living standards. Pressure from citizen activists to reduce air pollution has also led to court decisions mandating strong clean air measures that affect energy systems. India ratified the United Nations Framework Convention on climate change in 1993 and the Kyoto Protocol in 2002. The state of India Energy Demand in Carbon Emission can be referred in figure 3 (d).

The Key Socio-Economic Indicators for India is also provided in Table below:

**Table 3 (b)**  
**Key Socio-Economic Indicators for India**

<b>Annual Carbon emissions (Energy &amp; cement), 1998</b>	<b>290 million tons</b>
Population, 2001	1.027 billion
Population growth rate	1.5% per year
Per capita GDP, 2000 Based on <i>exchange rate</i> <i>Purchasing power parity</i>	US \$472 US \$2,358
GDP growth rate	5.1% per year in constant local currency units
Primary energy consumption, 1998	12 Giga joules per capita
Electric power consumption	413 kilowatt-hours per capita
Persons below poverty line	350 million
Persons without Electricity	440 million

**Source :** India Census, 2002; US DOE Energy information Administration, 2002; Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, USA, 2002; World Bank Development Indicators, 2002.

There are varying estimates of the potential of CDM prospects in India with the total amount of emission reductions being in the range of about 500 million MT of CO<sub>2</sub> equivalent, including 90 million MT from Renewable energy sources alone, during first commitment period. Earlier studies expected annual flows of as much as US\$ 1 billion into India. However, the United State's refusal to ratify the Kyoto Protocol has reduced the demand for CDM considerably. If India can capture a 10% share of the global CDM market, annual CER revenues to the country could range from US\$ 10 million to 300 million (assuming that CDM is used to meet 10-50% of the global demand

for GHG emission reduction of roughly 1 billion tonnes CO<sub>2</sub>, and prices range from US\$ 3.5-5.5 per tonne of CO<sub>2</sub>). As the deadline for meeting the Kyoto Protocol targets draws nearer, prices can be expected to rise, as countries/companies save carbon credits to meet stricter targets in the future.

All CDM projects must result in a net GHG reduction, as in the case of energy efficiency improvement, renewable energy generation, or carbon sequestration through afforestation and reforestation. Typical project types include:

- Renewable Energy
- Switching to Alternate Fuels (in industry, transport, residential sector etc.)
- Advanced coal-based power generation technologies such as Coal Bed Methane (CBM) recovery, Coal Benefication, Control of Mine fires
- Renovation and modernization
- Demand side management
- Industrial Energy efficiency Improvement or Energy conservation
- Afforestation and other carbon sequestration ( Sink ) projects
- Abatement Of Methane Emission in Paddy field (Agriculture)
- Replacement Of fossil based Oils to LPG / CNG
- Energy Recovery from Waste Management

Considering that the cost-effectiveness of emissions reductions generated is a key variable, the leading sectors that have the potential for CDM projects include energy efficiency (approx market share of 45%), Renewable energy (35%), Methane emissions abatement (15%), and improvements in the Thermal energy generation sector (10%).

In India, total CO<sub>2</sub>-equivalent emissions in 1990 were 10,01,352 Gg, which was approximately 3% of global emissions. The energy sector was the largest emitter of CO<sub>2</sub>, contributing 55% of national emissions.

These also include emissions from road transport, coal mining, and fugitive emissions from oil and natural gas. Agriculture was the second largest source of GHGs in India; methane emissions from enteric fermentation in domestic animals, manure management, rice cultivation, and burning of agricultural residues constituted 34% of national GHGs. Please refer figure 3 (f) for sector-wise GHG emissions in India. However, for International comparison of CO<sub>2</sub> emissions from fossil fuel of GDP in 2000, figure 3 (g) may be referred.

<b>National Strategy Study on CDM in India</b>
<p>TERI has been assigned to carry out the World Bank National Strategy Study on CDM in India. This major initiative, launched in May 2003, focuses on the following themes.</p> <ul style="list-style-type: none"> <li>• Strategic overview of CDM opportunities for India and international demand for GHG offsets.</li> <li>• Identification of pipelines of CDM projects in key sectors</li> <li>• Key institutional, legal, financial, and regulatory prerequisites to facilitate CDM project development and implementation</li> <li>• Human and institutional capacity building to identify, develop, implement, and process CDM projects in India, and to exploit global opportunities.</li> </ul> <p style="text-align: right;"><i>Source : The World Bank, New Delhi, 2003</i></p>

The net uptake and emissions from the land use change and forestry sector were almost equal, resulting in negligible emissions from this sector (ADB-GEF-UNDP 1998). The national GHG inventory was prepared as part of the ALGAS (Asia Least-cost Greenhouse Gas Abatement Strategy) project for India. This study also identified GHG abatement options for India, focusing on carbon dioxide emissions reduction in the energy and forestry sectors and methane emissions reduction in the agriculture sector.

Two types of mitigation options were highlighted for the energy sector:

- Improvement in energy efficiency through the upgradation of currently employed technologies.
- Introduction of advanced technologies that are more efficient or are based on renewable energy sources

TERI, identified potential CDM projects for India that would be technically feasible, consistent with the country's priorities, and yield high sustainable development benefits. A preliminary analysis was carried out for representative options in conventional power generation, renewable energy, and industrial efficiency in Table 3 (c) below:

**Table 3 (c)**  
**Potential CDM Projects for India**

GHG Mitigation Options	Abatement Cost Range <sup>10</sup>	National Mitigation Potential (000 tons of CO <sub>2</sub> )
<b>Power generation</b>		
Pulverized fluidized bed combustion	Low	8166
Integrated gasification combined cycle	High	14610
<b>Renewable energy</b>		
Wind power (grid-connected)	High	526
Wind-based water pumps	Medium	<1
Solar thermal power (grid-connected)	High	300
<b>Industrial efficiency</b>		
iron and steel - dry coke quenching	Low	950
Pulp and paper – continuous digester	Medium	904
Replacement of industrial motors	Medium	36

Source:- Tata Energy Research Institute, 2002

Shukla et al (2002) estimated the CDM potential for renewable energy technologies in the power sector, under different global mitigation scenarios. The net contribution of renewables varied from 11 million tonnes carbon reduction and US\$ 14 million revenue earning under a low mitigation scenario to 58 million tonnes carbon reduction and US\$ 434 million revenue earning under a high mitigation scenario. Moreover, according to IIMA Sources, there is a mitigation Potentials of about 500 million MT of CO<sub>2</sub> including 10 million MT from renewable energy sources in India, during the first commitment period. However, renewable are expected to have the largest portfolio of CDM Project. The mitigation potential of some interventions in the power and industry sectors has also been assessed by the CII, which is furnished at the above Table 3 (d).

The programmes on solar photovoltaic cells capable of powering 100-watt bulb, home and street lighting systems, water pumps, and stand-alone power plants etc; for which subsidies by Govt. of India are provided. These days, solar water heating systems have found a very good market for necessary installment, in urban buildings. Similarly Indian states have also led to high initial penetration of wind, small-hydro, biomass, and industrial waste-based electricity generation technologies. While the quantitative impact of these systems may appear small, Indian analysts argue that the most significant achievement of the renewable energy program is the creation of domestic capacity that could sustain renewable energy markets in the future.(figure 3 (i), illustrating Emission Mitigation in India's Energy Sector).

### CDM for Non-Carbon Greenhouse Gases

Of non-carbon greenhouse gases, the principal areas for CDM operation are CH<sub>4</sub>. Emission of NO<sub>2</sub> is low and even though its GWP is large, it can best be a minor target. There are three major sources of CH<sub>4</sub> emission.

<sup>10</sup> **Low** : upto US \$ 10/tonne of CO<sub>2</sub>; **Medium** : US \$ 10-20/tonne of CO<sub>2</sub>; **High** : Above US \$ 20/tonne of CO<sub>2</sub>

- Paddy fields
- Enteric fermentation from cattle and buffaloes.
- Solid waste

While there is some scope in decreasing emission from paddy fields through special irrigation strategy and appropriate choice of cultivars, the main target initially could be enteric fermentation. Its emission at  $8 \pm 1$  Tg/yr can be reduced through proper feed management. Since dairy cattle and buffaloes are the principal animal population of relevance in India, reductions should ensure that milk yield is not affected and in fact should be increased. A reduction of 1 Tg/yr in this category means 21 Tg/yr of CO<sub>2</sub> equivalent – an appreciable reduction.

The first priority, therefore, could be animal fermentation area. Institution involved at present include : National Physical Laboratory at New Delhi, the National Dairy Research Institute at Karnal and the Central Leather Research Institute at Chennai. Major Dairy Corporations would have to be involved.

The Area of CH<sub>4</sub> emission from paddy fields could also figure as a priority, if effects of changing CO<sub>2</sub> concentrations are considered. The current national emission in India is around  $4 \pm 0.5$  Tg/yr. This is low, but changes in emission as CO<sub>2</sub> increases can be positive, although not adequately known. With the recently established FACE facility (a joint operation by the IARI and NPL) some initial values have been obtained. CDM support for reduction strategy for future high CO<sub>2</sub> values (including management of water stress) could be useful.

Although the numbers vary, the estimations made by various sources do reveal that there is a huge potential for CDM projects in India. India, however, to realize its CDM potential, needs to create an environment that promotes low-risk carbon emissions reduction opportunities, while optimizing transaction costs. Creation of such an environment requires an understanding of the concerns and apprehensions that various stakeholders have with the existing and proposed regulatory, institutional and financing mechanisms.

**Table 3 (d)**

**Carbon Mitigation Potential in Power generation and Industry**

Project type	Size of Mitigation Opportunity	Investment Potential (billion US\$)	Expected carbon reduction (million tonnes per year)
Coal washing	5000-6000 MW	1.8	11
Fuel switching	3800 MW	3.1	4
Conventional efficiency Integrated gasification	6500 MW	0.15	4
combined cycle	10000 MW	10	5
Renewable Energy	35000 MW annually	25	60
Conversion of Mercury Cell process to membrane Cell process in caustic soda production	0.9 Mt of capacity	8.4	0.12
Upgradation from wet to dry process in cement production	45 Mt of capacity	4	1.1
Upgradation to Hall-Herault process in aluminum production	BALCO & INDAL plants	8.4	NA

Source : Raghuraman, CII (2002).

**Table 3 (e)**  
**Mitigation Potentials in Carbon, Methane and Nitrous Oxide of India**

Greenhouse Gases	Mitigation Options	Mitigation Potential 2002-2012 (million tons)	Long-term Marginal Cost (\$/ton of carbon equivalent)
<b>Carbon</b>	Demand-side energy efficiency	45	015
	Supply-side Energy efficiency	32	0-12
	Electricity transmission & distribution	12	5-30
	Renewable electricity technologies	23	3-15
	Fuel switching (gas for coal)	8	5-20
	Forestry	18	5-10
<b>Methane</b>	Enhanced cattle feed	0.66	5-30
	Anaerobic manure digesters	0.38	3-10
	Low methane rice varieties	Marginal	5-20
	Cultivation practices	Marginal	0-20
<b>Nitrous Oxide</b>	Improved fertilizer application	Marginal	0-20
	Nitrification inhibitors	marginal	20-40

**Source :** Based on modeling exercises reported in Rana, A. and Shukla, P.R. (2001), Ghosh et al. (2001); Garg A. and Shukla, P.R. (2002); and ALGAS (1998).

Further, in the Renewable energy sector, it could be categorized as '*off-grid power*' or '*off-grid non power*'. Though estimation of potential is not available, this sector offers substantial promise in India. '*Off-grid power*' covers stand alone applications for household use as well as *mini power plants* based on *renewables* and examples are given in Table below.

**Table 3 (f)**  
**Off-grid power**

Category	Typical range/ capacity	Application/ Systems
Stand alone applications for household use category I	10-500W	1. Solar Lanterns 2. Solar home systems
Stand alone applications for household use category II	0.5-5KW	1. Solar Generators 2. Pico hydro power 3. Wind battery chargers 4. Water mills
Mini power plants or minigrids based on 100% renewables with or without storage	5-500KW	1. SPV based mini-grid 2. Portable micro-hydro (run of the river) 3. PV-wind hybrids
Mini power plants or minigrids based on renewable-diesel dual fuel	100-100 KW	1. Biomass gasified based power plant 2. wind-diesel hybrid

**Source :** MNES, GOI, 2003.

As for '*off-grid non power application*', these would actually replace the requirement of electrical power and this category can be further divided into two types depending upon application:

**Production of Mechanical energy:** This category comprises renewable energy technologies that supply users with mechanical energy. These technologies include wind-powered pumps, solar water pumps, water mills and wind mills.

**Production of Thermal Energy:** This category comprises renewable energy technologies that supply thermal energy that displaces fossil fuel or non-renewable sources of biomass. Examples include solar thermal water heaters and dryers, solar cookers, energy derived from biomass for water heating, and space heating. Biomass-based co-generating systems that produce heat and electricity for use on-site are included in this category.

## Energy and Emission Profile

After climbing steadily for at least two decades, India's energy, power and carbon intensities all began to decline rapidly after 1995. This shift suggests the start of a decoupling of energy and economic growth, as has historically occurred in industrialized nations at higher per capita income levels.

Industrial development has contributed significantly to economic growth in India, through not without an environmental price. With coal accounting for over half of total primary energy consumption, this industrial development has been fueled by a relatively high-polluting energy source. Please refer figure 3 (h) which is explaining how Industrial pollution is increasing public health risks, and abatement efforts are consuming a significant portion of India's GDP. Please refer figure 3 (k) illustrating the state of CO<sub>2</sub> Emission from fossil fuel combustion of GDP in India and figure 3 (j) for the International comparison of total and per capita CO<sub>2</sub> Emission in 2000. Energy consumption by the industrial sector accounted for 41 percent of total energy consumption in 1998.

Industrial energy intensity has declined gradually over the past decade, mainly due to the adoption of new and efficient technologies and rapid expansion of non-energy-intensive industries. Because Indian industry is still highly energy intensive compared to industrialized countries, there is considerable room for improvement.

Non-commercial biomass energy meets the cooking needs of most rural Indian households and nearly half of urban households. Although commercial forms of energy are penetrating rural and traditional sectors, biomass still accounts for roughly one-third of total Indian energy use.

India's carbon emissions have grown by 63 percent over the last decade, despite the decline in carbon intensity later in the decade. This emissions growth results primarily from energy use associated with economic development and heavy dependence on coal. Methane, originating primarily from rice paddies and ruminant cattle, contributed one-third of India's total GHG emissions, although its share decreased rapidly with the rise in energy-related carbon emissions.

## Mitigating Measures

Growth of energy-related carbon dioxide emissions in India was reduced over the last decade by an estimated 111 million tons. The key factors in these reductions have been economic restructuring, local environmental protection, and technological change. These drivers have been mediated through economic reform, enforcement of existing clean air laws by the nation's highest court, and renewable energy incentives and development programmes funded by the national government and foreign donors. In 2000 alone, energy policy initiatives reduced carbon emissions growth by 18 million tons i.e about 6 per cent of India's gross energy-related carbon emissions.

Market reform driven by domestic policy and international dynamics over the past decade has improved India's fuel quality, technology standards, infrastructure, and operating practices. A key example is power sector restructuring and reform. The Electricity Supply Act of 1905 designated electricity as essentially a human right in India. The advent of market-based pricing for both power and liquid fuels is replacing the administered-price system of the old planned economy. Current prices and bill collections now cover about two-thirds of the cost of power; various forms of subsidies cover the rest. In some cities such as Ahmedabad, power costs more than the U.S. average. Many people still do not pay for power, meaning that the high price reflects a large cross subsidy for the poor and free riders. Liquefied petroleum gas, which is used widely for cooking, is modestly subsidized, but prices are headed toward international levels. Other market reforms have allowed the import of foreign cars and appliances, which generally are more energy-efficient than those they replace.

Restructuring of the coal sector has been encouraged through privatization, price reform, and technological improvements. Historically, subsidies for coal production encouraged coal use and therefore increased carbon dioxide emissions. Price reforms have reduced subsidies, bringing the coal price close to world levels. The private sector still accounts for less than 10 per cent of coal production, and the shift from state ownership of mines is proceeding slowly because of political resistance by unions and vested interests. Moreover, mineral rights belong to the states, ensuring a public-sector role in coal development.

Technology development measures in the energy sector have contributed a series of small but notable reductions in emissions growth. Improvements in stoves, reduction of gas flaring in fossil-fuel production, improvements in demand-and supply-side efficiency, and the introduction of modern renewable energy systems now mitigate about 18 million tons of carbon per year. None of these measures has been exploited to its full potential, and many could lead to further reductions in emissions growth in the future.

There has been sweeping change in India's vehicle stock over the past decade. Economic reforms enlarged the vehicle market and prompted rapid penetration by foreign brands. Rising concern about air quality prompted the introduction of emissions-limiting performance standards in 2000. European-level emission norms for new cars and passenger vehicles were introduced in 2002 in Delhi, Mumbai, Chennai and Kolkata. Apart from mitigating local pollutants, vehicles meeting these norms are more energy efficient and emit fewer GHGs for the same level of service.

In Delhi, 84,000 public vehicles—all buses, taxis, and three-wheelers—were converted from gasoline and diesel to *Compressed Natural Gas* (CNG). This rapid achievement, accomplished in about one year, was mandated by the Indian Supreme Court in response to a lawsuit filed by a non-governmental organization seeking enforcement of clean air laws. Though the compliance cost per vehicle was relatively high—up to \$300 for a three-wheel vehicle and \$1,000 for a car—the policy has been applied uniformly and effectively. The resulting reduction in carbon emissions is not yet certain and the CNG mandate is unlikely to be replicated in other cities due to its cost. However, vehicle emissions limits are likely to be enforced elsewhere, requiring other solutions that may also reduce carbon emissions.

The Indian electricity sector has long been carbon intensive and the largest source of carbon dioxide emissions. In 2000, the sector emitted 115 million tons of carbon, about 42 percent of India's carbon emissions. Natural gas has penetrated this market in recent years and helped to



reduce the carbon intensity of electric power generation. Improvement in the combustion efficiency of conventional coal technologies along with strong promotion of renewable technologies has made measurable contributions to mitigation. Improved combustion in coal-fired power plants slowed the growth of carbon emissions by 2.5 million tons between 1990 and 2000. The Indian government has set a goal of using renewable for 10 percent of new power generating capacity of 2010.

Lower carbon emissions also have resulted from important technological advancements in coal washing. Indian coal averages approximately one-third ash, wreaking havoc with boilers and their efficiency, driving up transportation costs, and creating serious air pollution. One recent government policy restricts the transportation of unwashed coal to less than 1,000 kilometers. As Poland experienced after the collapse of Communism, the appearance of market competition and consumer choice made it possible to buy higher quality coal. Customers are motivated to reduce ash content to improve efficiency, reduce local pollution, and cut freight costs. New combustion technologies, including supercritical coal-fired power plants, are being introduced, and the capture of coal-bed methane is being promoted.

Government policy has included public investment to develop the natural gas infrastructure for long-distance and local distribution. One example is the HBJ 1,500-kilometer high-pressure gas pipeline from near Mumbai to the north of Delhi, which carries 4 billion to 5 billion cubic meters of gas from off-shore production. The share of gas in power generating capacity has risen to 8 percent from only 2 percent ten years ago. Liquefied petroleum gas has significantly replaced commercial coal and kerosene in urban households. Public vehicles have been converted to compressed natural gas.

India has instituted a sizeable renewable energy programme over the past 20 years, including the creation of the Ministry of Non-Conventional Energy Sources in 1992. About 3.3 million household biomass gasification systems have been built. These systems produce 3-4 cubic meters of biogas per unit per day, enough to supply cooking fuel for a large percentage of rural homes. A larger scale programme has improved the efficiency of wood stoves in 34 million homes, reducing deforestation in areas where wood fuels were unsustainably harvested.

On the demand side, rationalization of power rates has been slow due to political resistance, but has nevertheless been the most significant action. The resulting carbon mitigation is small and difficult to measure, but the policy has prepared the way for future efficiency improvements through consumer response to prices. Transmission and distribution reforms to minimize the theft of electricity, coupled with consumer education, have produced some carbon emissions reductions.

Forests cover nearly one-fifth of India's land mass. The per capita deforestation rate has been among the lowest of the major tropical countries. In recent years, closed forests have actually increased in total areas. Forest conservation measures include prohibiting the use of forest land for non-forestry purposes, encouraging agro forestry and private plantations to meet industrial wood needs, and expanding areas under protection. During the last decade, over 14 million hectares were protected under Indian forestry programs. These efforts have led to a steady increase in the rate of forestation, infact is also significantly contributing to the removal of atmospheric carbon.

The country recognizes the critical need to minimize environmental problems arising from the production and use of coal, the single most important source of energy in India. More efficient use of coal is being encouraged through legislative, financial, managerial, and technological interventions, thereby contributing to GHG mitigation. Key technological interventions being promoted in the country include the following.

- CBM (coal-bed methane) recovery and commercial utilization
- New methods for coal beneficiation
- Advanced technologies for power generation
- Control of mine fires
- Energy conservation

The development of CBM recovery started in India almost at the same time as in China and Australia. Methane is a highly potent GHG compared to CO<sub>2</sub>, but is a remarkably clean fuel when burnt. Its combustion produces no sulphur dioxide or particulates, and only about half the CO<sub>2</sub> associated with coal combustion. For harnessing CBM, a pilot-scale demonstration project has been undertaken by the Ministry of Coal with funding from the UNDP (United Nations Development Programme) and GEF at two mines in the Jharia coalfield. In addition, seven blocks have been awarded for development through competitive bidding by the Ministry of Petroleum and Natural Gas. It is estimated that exploitation of CDM from the awarded blocks can yield around 20 million cubic metres of methane for 25 years, which is equivalent to approximately 4600 MW of power generation capacity.

Considerable attention has also been given to coal beneficiation for power generation. Indian coal is characterized by high ash content and low sulphur content. An MoEF notification requires the use of beneficiated/blended coal (with ash content not exceeding 34%) in power plants located beyond 1000 km from pit heads, and those located in critically polluted areas, urban areas, and ecologically sensitive areas. The reduction of ash content from 41% to 34% is estimated to result in the following benefits:

- Reduction in diesel fuel demand for rail transport of coal and 15% reduction in CO<sub>2</sub> emissions annually.
- Reduction in stack emission of 131 000 tonnes of CO<sub>2</sub> annually for a 1000-MW Thermal Power Plant.

Use of beneficiated coal leads to various improvements in the performance of thermal power plants, which contribute towards reduced CO<sub>2</sub> emissions per unit of power generated. For every 10% reduction in feed coal ash content, the following benefits can be expected.

- 10% reduction in auxiliary power consumption for every 10% reduction in feed coal ash content.
- 50% reduction in support fuel requirement.
- 1.5% improvement in thermal efficiency.
- 5%-10% increase in plant load factor.
- 20% reduction in Operation and Maintenance (*O & M*) costs.

The Indian government has taken a number of steps for controlling fires and subsidence in coalfields. Environmental Monitoring and Subsidence Control Schemes have been taken up in Raniganj and Jharia coalfields for controlling fires (MoEF 2002). Energy conservation measures in mines include the following.

- Introduction of in-pit crusher and conveyor technology in opencast mines to reduce consumption of diesel oil.
- Proper design of underground roadways and ventilation circuit to minimize overall resistance.
- Re-organisation of pumping layout in mines with high-efficiency pumps.

The use of fly ash generated by thermal power plants for bricks, cement, roads, etc. is being encouraged. In addition, preservation and generation of forest cover is also undertaken in mining areas.

The Indian government's accelerated Power Development and Reform Programme provided assistance to states for R&M (Renovation and Modernization) of old stations and upgradation of sub-transmission and distribution networks. An extensive R&M programme for 163 thermal-power-generating units has been implemented successfully, resulting in improved fuel efficiencies (MoEF 2002). All these steps are complemented by the introduction of demand-side management measures like time of day tariffs and metering.

Over the last three decades, the share of natural-gas-based power in the thermal mix has increased from 2% to 14.5%. The country has also been actively exploring the possibilities of strengthening international and regional cooperation for cleaner energy. It is providing technical and financial assistance for hydropower projects to Nepal and Bhutan.

Under the Energy Conservation Act, 2001, the BEE (Bureau of Energy Efficiency) has been set up to facilitate and enforce efficient use of energy. The mission of the BEE is to institutionalize energy efficiency services, enable delivery mechanism in the country, and provide leadership to energy is to reduce energy intensity by the following means (BEE 2002).

- Providing leadership and a policy framework to national energy conservation and efficiency efforts
- Taking energy efficiency and conservation policies and programmes to stakeholders in a coordinated manner
- Establishing systems and procedures to measure, monitor, and verify energy efficiency results in individual sectors as well as at the macro level
- Leveraging multilateral, bilateral, and private sector support in implementing the Energy Conservation Act and energy efficiency and conservation programmes
- Demonstrating delivery of energy-efficient services through private-public partnerships
- Interpreting, planning, and managing energy conservation programmes as envisaged in the Energy Conservation Act.

In the Indian refining industry, the following energy conservation measures have been adopted to reduce fuel consumption and GHG emissions.

- Increasing efficiency of furnaces and boilers.
- Increasing recovery of heat.
- Using co-generative captive power plants, IGCC technology, and energy-efficient equipment.
- Reducing hydrocarbon losses through emission control equipment to control fugitive emission and conversion from fixed to floating rood tanks.
- Reducing steam/utility consumption.
- Using natural gas, hydrogen-rich fuel gas, and low sulphur crude oil.
- Using low- $\text{NO}_x$  burners, hydro-cracker, and thermal de- $\text{NO}_x$  technologies.
- Installing sulphur and flare gas recovery units.

The use of such measures has improved the overall energy efficiency in the Indian refining industry, equivalent to annual fuel savings of about 2 million tones.

Extensive work on energy efficiency and technology up-gradation in the oil and gas industry is carried out by the R&D centers set up by the Indian Oil Corporation Ltd, the Oil and Natural Gas Corporation Ltd, and the Centre for High Technology under the Ministry of Petroleum and Natural Gas. The Petroleum Conservation Research Association (PCRA) a society funded by the Oil Companies, undertakes conservation programmes, including adoption of efficient engines and spreading awareness about fuel-efficient driving habits, energy audits and oil diagnostic studies in industries, standardization of fuel-efficient irrigation pump sets, development of fuel-efficient domestic appliances, etc. (MoEF 2002)

Measures to improve energy efficiency in industry, include promotion of fuel-efficient practices and equipment, replacement of old and inefficient boilers and other oil-operated equipment, and fuel switching and technology up-gradation. Fuel-efficient equipment/appliances such as kerosene and liquefied petroleum gas stoves, compact fluorescent lamps, and pumps for lifting water in high-rise buildings are also being promoted in the residential sector. Significant measures in the agriculture sector include increase in agricultural tariffs in many states, move towards metering of energy consumption by agricultural consumers, and programmes to support rectification of pump-sets.

Since the introduction of economic reforms in 1991, the administrative pricing system for coal has been dismantled in phases, and prices of all grades of coal have now been deregulated. Similarly for the oil industry, the phased dismantling of the administered pricing mechanism began in 1998, with complete deregulation of the sector in 2002. A number of states in the country have embarked on the process of electricity sector reform with transfer of tariff-fixing powers form the government to an independent regulator, and rationalization of the tariff system. All these policy changes, along with increased private sector participation in the energy sector, provide the right signals for discouraging inefficiencies in the generation and use of power, promoting technological innovations, and encouraging the use of non-conventional energy sources.

These efforts to improve energy efficiency in various sectors, along with shifts to cleaner forms of energy, have helped contribute towards a decline in India's CO<sub>2</sub> intensity of GDP in recent years. (figure 3 (g))

### **Future Mitigation Opportunities**

*Business-as-Usual* projections, assuming sustained economic growth and continued dependence on domestic coal resources, suggest sharply rising energy use and GHG emissions in India. The Asia Least-Cost Greenhouse Gas Abatement Strategy (ALGAS) Study, projected energy-sector carbon emissions of at least 688 million tons in 2030, nearly three times the current level. Forestry-related emissions would reach 21 million tons of carbon by 2020 and about 29 million tons by 2030. More recent studies have given lower energy-related estimates, one projecting 572 million tons in 2020.

The Government of India has been very active in the climate change negotiations, since the inception of the Convention. Although it does not have GHG reduction targets, it has actively taken steps to address the climate change issue. This is demonstrated by the fact that India has one of the largest renewable energy programmes in the world. The Ministry of Environment & Forest (MoEF), has also been supporting a number of programmes and projects at the regional and the national level, which would have a mitigating impact on GHG emissions. These include the **ALGAS project**. Table 3(g) in the next page, lists potential mitigation options that have been identified for various sectors in India, along with their costs.

Table 3(g)

## Cost of various Carbon Dioxide Mitigation Options for India

Technology	GHG Emission Reduction	Investment cost	Cost effectiveness (dollar/tonne carbon dioxide)
<b>Transport sector</b>			
CNG (compressed natural gas) car	0.017 kg/P-km	10,965 dollar/unit	4500
CNG bus	0.41 kg/P-km	31,000 dollar/unit	12
Mass rapid transport system	0	1.4 Billion dollar	0
0 BOV (battery-operated vehicle)-three wheeler	0	2444 dollar/unit	0
Two-wheeler (four-stroke)	0.0014 kg/P-km	1156 dollar/unit	30,000
<b>Renewable energy for power</b>			
Small hydro	1.3 kg/kWh	1950 dollar/KW	88
Wind farms	1.3 kg/kWh	1405 dollar/KW	257
Biomass	1.3 kg/kWh	710 dollar/KW	102
Solar thermal	1.3 kg/kWh	3730 dollar/KW	592
Solar photovoltaic (PV)	1.6 kg/kWh	5952 dollar/KWp	541
<b>Agriculture sector</b>			
Agro-based gasifier	1.6 kg/kWh	760 dollar/KW	119
Wood-based gasifier	1.6 kg/kWh	694 dollar/KW	115
Wind-based shallow pumping	1.6 kg/kWh	1157 dollar/KW	173
Wind-based deep wells	1.6 kg/kWh	2149 dollar/KW	176
PV pump	1.6 kg/kWh	8598 dollar/KWp	1602
<b>Power generation</b>			
Cogeneration	1.50 kg/kWh	900 dollar/KW	10
Combined cycle	0.96 kg/kWh	818 dollar/KW	54
Inter-cooled steam injected gas turbine	0.76 kg/kWh	947 dollar/KW	77
Pressurized fluidized bed combustion	0.18 kg/kWh	1894 dollar/KW	503
Integrated gasification combined cycle	0.23 kg/kWh	1578 dollar/KW	340
Pulverized coal super-critical boilers	0.18 kg/kWh	1202 dollar/KW	342
Coal washing	0.125 kg/kWh	11 dollar tonnes a year	179
<b>Domestic lighting</b>			
Compact fluorescent lamps	6.49 teragram/year	8 dollar/unit	0
36 W fluorescent	0.09 teragram/year	0.9 dollar/unit	0

Source: ADB-GEF-UNDP. 1998

The present, India's Tenth Five Year Plan (2002-2007) states the objectives and strategies for promoting Sustainable Development, through a series of the Environment Action Programmes and also have been implemented; including those deal with various aspects of climate change and GHGs reduction strategies on a regional or country-specific basis. The funding for most of these programmes comes through the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), the World Bank and the Asian Development Bank (ADB). Moreover, Some studies are also being undertaken with support from various Ministries of the Government of India (GOI). Moreover, the Tenth Plan has considered *Climate Change Issues* as one of the priority areas of concern and hence Government Of India, is undertaking numbers of measures for reducing GHG's; which include:

- Develop, periodically update and publish national inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases according to agreed methodologies;
- Formulate, implement, publish and update programmes containing measures to mitigate climate change as well as measures for adaptation to climate change;
- Promote and cooperate in the development, application and diffusion of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases including transfer of technologies;
- Promote and cooperate in sustainable management, conservation and enhancement of sinks and reservoirs of greenhouse gases including bio-mass, forests and oceans as well as terrestrial, coastal and marine eco-system;
- Cooperate in preparing for adaptation to the impacts of the climate change;
- Take climate change consideration into account in the relevant social, economic and environmental policies;
- Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data related to climate system;
- Exchange of scientific, technological, socio-economic and legal information related to climate system;
- Promote and cooperate in education, training and public awareness related to climate change and encourage widest participation in the process.

The discussion in this section, which is essentially a compilation of information from various sources on on-going and future efforts on GHG emission mitigation in the country, clearly indicates that there is substantial potential in Indian industry, to achieve emission reduction and thus carbon credits generated in India, can contribute significantly in meeting the demands in the international market. At this stage, though adequate data is not available, it may be prudent to assume that substantial share of this would be through CDM route. Discussion in the subsequent chapters, on the outline of the National Action Plan is based on this significance of CDM for the country.

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# Chapter-4

## Operationalizing CDM in India

Followings below would be necessary for operationalizing CDM in India:

### Regulatory Aspects of CDM

Regardless of whether a CDM project is implemented through a bilateral, multilateral or unilateral approach, it must be subjected to a common regulatory framework. Projects validation, registration, verification and certification make up for this basic regulatory process. A critical and overarching component of this framework is an accreditation process for entities that will validate projects and verify emission reduction. The key institutions involved in this regulatory framework are the Conference of Parties serving the meeting of the parties to the Kyoto Protocol (COP / MOP), the Executive Board of the CDM, accredited Operational Entities (OEs), Designated National Authority (DNA) of the host country and the Project Promoter.

As already discussed, for Operationalization of CDM in the country, UNFCCC requires creation of a National CDM Authority also referred to as Designated National Authority (DNA). The key roles of the DNA are the following:

- Develop/Modify "*Host Country Endorsement*" criteria, based on its Sustainable Development objectives
- Approval/ Endorsement of the projects on behalf of the country for submission by respective project proponents /DOEs to the CDM Executive Board.
- Formation of Committees to look into specific aspects of CDM.
- Verifying the financial and technical additionality of the project.
- Creation of a national 'CDM Funds'; to make DNA self sufficient in 'B' operation.
- Monitoring of projects for Sustainability.
- Annual reporting of its activities to the CDM Executive Board.
- Though not mandatory for Non Annex-I countries, maintaining a Registry of projects and CERs transaction involved.

From the viewpoint of proponents, the DNA serves as a primary focal point of contact throughout a project life cycle. It is therefore desirable that the DNA, beyond its regulatory role, may also perform the following roles:

- Identify key sectors on the basis of national development objectives
- Develop CDM Guidelines for the key sectors.
- Facilitate bringing together potential CDM partners
- Promote and Market CDM, so that the nation can generate maximum CERs
- Coordinate with other government/regulatory bodies so as to ensure that their *Decision Making* does not impact the CER potential of the country (e.g. while issuing notifications/



DOs the concerned agency may inadvertently be creating a baseline definition, which might convert a set of projects as “Business-as-Usual”.

## Structure of the DNA

Looking at both the mandatory and desirable roles of the DNA as discussed above, the working Group recommends the formation of the DNA, with members drawn from Ministries, such as MoEF, MEA, Finance, Power Industry & Commerce, MNES and Planning Commission. Since MoEF is the nodal Ministry for coordinating and implementing the CDM, Secretary, MoEF; may act as the chairman of the DNA and concerned Joint Secretary as a Member and a Director level Officer as the Member Secretary of this National Authority. The Authority shall have powers to co-opt additional Members or invite officials from other Ministries of the Government of India and experts from Financial Institutions, Consultancy Organizations, NGO's, Civil Society, legal profession, industry and commerce as it may deem necessary for technical and professional inputs. The Authority may recommend guidelines to the Ministries for consideration of projects and principles to be followed for according “*Host country Endorsement*”. The Authority should meet as often as required. The DNA should carry out functions described above.

The Member-Secretary of the DNA shall be responsible for day-to-day activities of the CDM Cell and coordinating CDM Promotion Agency and the decisions of the DNA. He shall carry out preliminary examination of projects, arrange for meetings of the Authority, and submit reports regarding CDM to the Executive Board of UNFCCC as per requirements. Moreover, He shall also get detailed examination of the project proposals conducted through experts/consulting organizations for consideration by the DNA in accordance with guidelines established for the purpose. The DNA shall have autonomy and approval authority. This would allow transparent and speedy decision-making. If necessary consultants may be hired on contractual basis as and when required.

For exercising DNA's role effectively, it may be necessary to constitute the followings:

- An *expert panel* consisting of members, from the *Institutions/ Organisations* already engaged in the climate change and CDM activities; those who would guide DNA on *sectoral technical issues*, including Baselines.
- Another experts panel of *Financial Institutions* for attracting investors for *Foreign Direct Investment (FDIs)* in investing in CDM projects in India from the proactive Annex-I countries such as Germany, Netherlands, Sweden, Norway, Canada, Japan etc., which would help in promoting an *aggressive marketing policy* for CDM.
- The *Third expert panel* for assisting in setting up mechanisms for *promoting investments within the country* through *India's Financial Institution (FIs)* particularly to encourage unilateral CDM, in parallel with country's effort to *market CDM projects* in Annex-1 countries.

These three above expert panels would provide technical, marketing and promotional support to the Designated National Authority (DNA). Care must be exercised in selecting members of these panels, to ensure that they are not connected with projects under review under any capacity such as proponents, consultants, advisors or operational entities. These panels may have a few permanent members and provision of co-opting additional members depending on specific need from time to time.

The respective *roles* of these panels, to *minimize bias* and *conflicts of interest*, *promote environmental integrity*, *transparency* and *investor's confidence*, would help DNA to take independent

decisions by *streamlining procedures* so that *transaction cost* could be kept minimum. In addition, Keeping this in mind, the Working Group recommends the followings, which would facilitate DNA to carry out its role and responsibility:

- A CDM Cell
- A CDM Promotion Agency

The administrative and regulatory roles pertaining to CDM would be played by the *CDM Cell*, while the other facilitating roles such as promotion and marketing are envisaged to be played by the CDM Promotion Agency, which could include private sector/NGO.

## **CDM Cell**

*CDM Cell* is intended to be the secretarial wing of the DNA. It is suggested that Ministry of Environment & Forests can host the *CDM Cell*. Head of the *CDM Cell* would be the Member Secretary of the DNA. The *CDM Cell* would work like a small full time secretariat staffed by professionals drawn from fields of energy, environment, finance and urban sectors. The key roles of the CDM Cell would be the following:

- Co-ordination of activities of the DNA
- Dissemination of the information on DNA and CDM process
- Maintenance of Project Records under considerations for CDM benefit
- Act as an Interface between the DNA and the Project Promoters
- Communication with the CDM Executive Board
- Keeping track of various baseline methodologies approved by EB and provide further guidance on how such baselines can be adapted in the context of India.
- Other Administrative roles such as collection of processing fees etc.

Additionally, the *CDM Cell* will also host a web-site where the Cell would make the following information available.

- General information on CDM.
- Status of projects received, approved, rejected and other relevant details.
- CDM Endorsment process being followed the DNA and intimating any modifications to public time to time .
- PIN format for CDM Endorsement.
- Links to other relevant CDM sites.
- Maintain relevant data in the form necessary for baselines and maintain links to relevant domestic organizations that collect authentic data like relevant state/central authorities.
- Information on domestic organizations working in the filed of CDM.
- Link to Financial Institution (FI) websites, Insurance Sector Contacts etc.

## **CDM Promotion Agency**

To take maximum advantage of the opportunities, created by CDM, there is a need for aggressive international promotion particularly exhibiting India's potential for CDM. It is suggested that execution of promotional programs be given to a *NGO* or an *industry association* for a fixed period of say 2 years. DNA itself could be empowered to appoint such an agency. The key

objectives of the *CDM promotion agency* would be to bring CDM investors to India and also to facilitate development of in-house CDM projects in India. The principal roles envisaged for the agency are the following:

- Preparation of a CDM Investor's Guide
- Development/Execution of International CDM Marketing Programs for India
- Development/Execution CDM Awareness and Capacity Building programs in Indian States and Union Territories through various Initiatives.

### **CDM Endorsement Criteria**

As per the rules of the UNFCCC, it is the host country's prerogative to decide whether an applicant project activity assists in achieving sustainable development and accordingly approve projects. Hence, the two aspects that need to be looked into while evaluating CDM proposals by the DNA are the following:

- Whether the project meets national priorities, set by the five year planning process.
- Whether it contributes to Sustainable Development of the country.

There has been a great deal of debate in the country as to whether factors such as technical additionality and financial additionality etc. be considered for the necessary endorsement by the DNA. In this regard the Working Group felt that the *CDM Executive Board* has laid down rigorous processes to address this concern. Hence DNA should focus on the above two aspects plus some additional considerations for projects involving the following:

- Projects involving *ODA* and *Subsidies*.
- Projects involving *Technology Transfer*.
- Projects involving *FDI* under the management control of the foreign partner.

While details of procedures and criteria of approval may be finalized by the *CDM Cell*, this report provides the broad recommendations of this Working Group as follows:

### **National Priorities**

After, Stockholm Conference on Human Environment and Development in 1972, various regulatory and promotional measures have been taken by the Government of India for protecting environment and promoting sustainable development in the country. The sustainability aspects are already integrated to the overall development planning. Therefore, the Working Group felt that while deciding whether a project falls in line with the national priorities or not, appropriate reference should be made to the plan/programme of the Govt. of India.

For example, The Government of India's Ninth Five-Year Plan envisaged adequate and reliable power for all, with coal being the main source of energy in future. The Ministry of Power has stressed *Clean Coal Technologies* for addressing various environmental issues, and has identified priority areas for developing CDM projects in the Power Sector, including new Power Generation Technologies, Renovation and Modernization of Power Plants, Transmission and Distribution Loss reduction, Agricultural Demand Side Management, and Load Management. The *Ministry of Non Conventional Energy Sources* (MNES) has ambitious plans of adding 10% of the additional capacity installed in the power sector from renewables, it provides financial and fiscal support for commercialization of renewables in order to remove financial barriers in implementation

of these projects. In spite of existence of these policies for over a decade, the RE sector has yet to be mainstreamed in the Indian power sector. MNES has, therefore, indicated that CDM options need to be explored in the areas of Wind energy, Solar energy, Small Hydro, Biomass and Waste energy. The Ministry of Non-Conventional Energy Sources aims to electrify around 18,000 remote villages those, which are not likely to be connected to the grid by 2012 through renewable energy and provide 10 percent new power generating capacity addition through renewables, i.e. 3 million family biogas plants and 7 million solar lighting systems by 2012. However, as one of the choices among the different priority sectors under consideration, in the investment portfolio, renewables would have to compete with other options, e.g., energy efficiency, clean coal technologies, fuel switching and carbon sequestration, while the host country would like to ensure that the project is in line with its national priorities, especially from the point of view of sustainable development, the investor would like to look at the most cost-effective option.

### **Sustainable Development**

Sustainable development comprises of 4 main attributes: (a) Economic Efficiency and Growth; (b) Sound Environmental Management; and (c) minimizing adverse social impacts (d) Involves up to date Scientific Innovations. In this context, the Working Group considers Sustainable Development as the prime requirement for granting " Endorsement " to a CDM proposal. For verifying whether the proposed project meets the sustainable development criteria, the DNA should evaluate it against the Economic, Social, Environmental and Technological Indicators determined in national interest. Currently, in case of private sector and PSU projects, financial appraisal is organised by the investors and FIs in their own interest, and there is no requirement of economic appraisal. Further, there is a well-established system of preparation of Environmental Impact Assessments (EIAs) of both private and public/ Government projects, as well as their Environmental Clearance, if applicable. The social policy for the project, which ensures equity in resource generation and gender, takes care of basic health and education facilities etc. The DNA may refer the economic, social, environmental and technological indicators, (some are listed below), to examine whether the project is contributing to the Sustainable Development of the nation. The details regarding the indicators of Sustainable Development, are also available at *Interim Approval Criteria* in *Annexure-VI*.

### **Economic Sustainability Indicators**

- Contribution Of the project in increasing per capita GDP
- Total Energy Consumption per unit of production of industries
- Ratio of fossil fuel based energy resource consumption to renewables
- Percentage of Foreign Direct Investments (FDI)
- Increase in per capita income Of the Workers at the end of the project
- Increase in purchasing capacity Of the Workers at the end of the project

### **Social Sustainability Indicators**

- Total Employment potential of the project
- The percentage of women employed
- If the project is promoting better health facilities such as safe Sanitation and Drinking Water.
- Percentage of expenditure in building the basic human infrastructure

### **Environmental Sustainability Indicators**

- If it involves use of fertilizer or pesticides
- Source of Energy and the percentage of GHG Emission Reduction

- Percentage of total Waste Recycled
- Percentage of Waste Water Treated
- Improvement of Environmental quality of region

### **Technological Indicators**

- If the project meets Environmental Impact Assessment (EIA) criteria
- If applicable, whether Environmental Clearance is obtained or not
- If the project involves Technology Transfer from a Developed Country
- If the project promotes Cleaner Technology

### **Projects involving ODA**

Overseas Development Assistance (ODA) is a grant/loan provided by Developed Countries to Developing Countries to address issues of critical importance like poverty alleviation programme etc. Projects under CDM also take place in developing countries with the cooperation of developed countries. Under the CDM, the relevant definition of ODA is one provided by OECD.

Using ODA by developed countries in acquiring CERs would mean:

- High priority issues like poverty alleviation would be neglected to sectors like transport or energy.
- May lead to trade disputes on grounds of unfair subsidization.
- May force the developing country to tend to lose the ODA benefit

Kyoto Protocol already stipulates that no funds under ODA scheme can be diverted for CDM project realization. The flow of funds to the CDM project should be additional to ODA support. The Donor Country (Annex-I countries) should make arrangement for transfer of funds for CDM project over and above ODA.

The DNA needs to ensure that ODA is not used either in part or in full to procure CERs from projects in India. The applicant for CDM benefit therefore needs to demonstrate this aspect.

It is felt that the government should continue interacting one to one with the Annex-I countries to secure ODA and simultaneously bargain for additional ODA equivalent support for undertaking CDM projects.

### **The CDM Project's approving process for Issuance of " *Host Country Endorsement* "**

The key approval criteria and other considerations that need to be assessed by the DNA while approving projects under CDM is discussed earlier. The WG recommends for using the existing legal framework to reduce duplication of efforts and hence the burden on the project promoters. There is therefore a need to synchronize the existing processes and the proposed CDM approval process. Moreover, the project developers also would like to get an early signal as to whether their proposed project would qualify under CDM or not. In this context, it is recommended that the rules and criteria for HC approval of CDM projects must be transparent, business like and publicly available. This would make sure, that the applicant would not incur additional expenditure to prepare a PDD for applying for the issuance of "*Host Country Endorsement*" etc.

The decision making of the DNA is expected to be time bound as in the case of FIPB. The Working Group, therefore, has suggested a simple approval system for CDM projects. An Application format, known as "*Project Idea Note (PIN)*", which has to be

filled up by the project promoter in a format, placed below. PIN provides the necessary preliminary idea about the project with basic key parameters; which makes the DNA comfortable for clearing "Host Country Endorsement". UNFCCC also has displayed a format of PIN, which is flagged at Annexure-IV. For final clearance, of course, the project promoter is also required to submit a copy of the *Project Design Document* (PDD) to DNA. Although, the detailed examination of the PDD is the responsibility of the *Operational Entity* (OE), DNA can always refer the same for its own assessment, as well. A format for submitting PDD is flagged at Annexure-V. Since, India is expected to gain maximum from the *CDM of Small Scale sector*, the *Small Scale CDM project Modalities* and *Simplified Small Scale PDD* (SSS-PDD) is also flagged at Annexure-VII at VIII respectively for necessary reference.

**Table 4 (a)**  
**Project Idea Note (PIN)**

(The Project Promoter needs to submit a PIN to DNA for host-country Endorsement which DNA should clear within a month, otherwise if DNA is not clearing the project, the PIN should be returned with the reasons for rejection)

S.No.	Project Aspects	Response
1	<b>Project Proponent</b>	
1.1	Name of Organization	
1.2	Organizational category (Government/Government Agency/ Municipality/ Company/NGO)	
1.3	Detailed address	
1.4	Contact person	
1.5	Phone/Fax	
1.6	E. Mail	
1.7	Function of Proponent in the Project (Sponsor/ Operational Entity/ Intermediary/ Technical Advisor)	
1.8	Project Sponsors (please list all)	
2	<b>Type of Project</b>	
2.1	Greenhouse Gases Targeted (CO <sub>2</sub> /CH <sub>4</sub> /N <sub>2</sub> O/HFCs/PFCs/SF <sub>6</sub> )	
2.2	Type of Activities (abatement/ CO <sub>2</sub> Sequestration)	
2.3	Field of Activities (Renewable Energy/ Alternative Energy/Energy Efficiency/ Demand Side Management/ Fuel Switching/ Land Use, Land Use Change and Forestry)	
3	<b>Location of Project</b>	
3.1	Name of Project Proposed	
3.2	Location of Project to be implemented (Village/District/State)	
3.3	Brief of the Project	
4	<b>Expected Schedule</b>	
4.1	Earliest Project Start Date	

S.No.	Project Aspects	Response
4.2	Current Status (under Discussion/ Planning/ In Preparation/ Advance in Preparation, i.e. already discussed with Government.)	
4.3	Time Required Before Becoming Operational	
4.4	Project Completion Date	
4.5	Project Lifetime	
4.6	Expected date of first CER delivery	
5	<b>Investment &amp; Funding Details</b>	
5.1	Name of Project Sponsor(s) & Contact details	
5.2	Experience of the Project Promoters	
5.3	Total Project Cost & Proposed Funding Structure	
5.4	Financing Pattern of the Project (Depth enquiry)	
5.5	Lenders	
5.6	Whether any ODA is flowing to the Project (If yes, provide details of the ODA and state how the project would earn additional CDM investment over and above ODA.)	
5.7	Subsidy element if any, in the project & its source	
5.8	Proposed CER sharing arrangements amongst Project Sponsors	
6	<b>Technical Summary of Project</b> (Please provide a brief paragraph of maximum 10 lines for each of the below.)	
6.1	Objective	
6.2	Brief Description of Project	
6.3	Technology to be Employed (Whether state of art/ Technological innovation, if any)	
6.4	Brief Description of Technology	
6.5	Terms of Reference (ToR) of Technology Transfer (if being sourced from abroad)	
6.6	Is the Project from a "Priority Sector" (i.e. Renewable energy, Energy Efficiency, Energy from Waste ( MSW))	
7	<b>Sustainability Aspects</b>	
7.1	Does the Project need Environmental Clearance? (If yes, provide a copy of the Environmental Clearance. Host Country Approval will be granted only after submission of the said clearance.)  (If no, then describe what the potential environmental issues are and how they will be addressed in the project.)	
7.2	Does the project require any techno-economic clearance from any Competent Authority (If yes, provide copy of the clearance. Host country approval will be issued only after submission of the said clearance.) (If no, then substantiate the technical viability of the project.)	
7.3	What are the social issues involved the project and how are they being addressed?	
7.4	What are the concerns of the Local stake holders and how are they being addressed?	

S.No.	Project Aspects	Response
8	<b>Expected Environmental Benefits</b> (Please provide a brief paragraph of maximum 10 lines for each of the below.)	
8.1	Estimate of Greenhouse Gases Abated/CO <sub>2</sub> Sequestered	
8.2	Baseline (or reference) Scenario	
8.3	Specific Global & Local Environment Benefits Expected	
8.4	Relevance for Host Country Socio-economic and Environmental Priorities	
9	<b>Green House Gas (GHG) Reduction Aspects</b>	
9.1	Sources of GHG reduction	
9.2	Proposed Crediting Period	
9.3	CERs Potential of the Project (over the crediting period)	
9.4	Indicative CER Price, or Range	
9.5	Total CDM Revenue expected (over the crediting period)	
9.6	NPV of the total CDM Revenue (mention the Discount Rate assumed)	
10	<b>Baseline Aspects</b>	
10.1	Approved Methodology or New Methodology being proposed?	
10.2	What are the conditions for replication of the baseline for other projects?	

(NB : Applicants seeking "Host Country's Endorsement" under CDM from Government of India are required to fill the above PIN and submit the same to at DNA, Ministry of Environment & Forests (MoEF). In case any reference is made to any specific documents etc. the same needs to be annexed to the PIN. For projects, where environmental clearance/consents or NOC's are applicable as per law, the final endorsement may be issued only after such clearances/NOCs/Consents are obtained and submitted to the DNA.)

It is further clarified that the "Host Country Endroshment" should only be issued in case of projects which meet all the CDM Endorsement criteria/considerations as set forth except few pertaining to sustainable development criteria of DNA and also needs to obtain other clearances such as environmental or techno-economic clearance etc. Final approval as host country Endorsement can be issued only after such clearances (for example Environment Impact Assessment and Environment and Forest Clearences) are submitted to the DNA.

### Processing Fees for CDM Projects

The Working Group proposes the establishment of a CDM Fund, so that the activities of DNA, CDM Cell and CDM Promotion Agency can be supported from this and the DNA could be made self-sustained. With a view to reduce the transaction cost of the project the Working Group has recommended a very nominal up-front processing fee to be paid by the project promoters, seeking CDM approval, which is linked to the size of investment. This CDM Fund would be charging a fee from projects generating CERs, in a following pattern:

- Projects generating CERs upto 50,000 per annum will be exempted from any charges.
- Projects generating CERs exceeding 50,000 but less than 1 lakh per annum will be charged @ 1% of the CER in excess of 50,000 per annum.
- Projects generating CERs in excess of 1 lakh per annum will be charged @2%.



Otherwise, if neither the *final generation of CERs* of a project, nor the *price of the same* is known, at the time of "*Host Country Endorsement*", we may charge a *fixed amount* based on the total proposed CERs in the line of *Registration Fee Structure* of the UNFCCC Executive Board, as furnished below:

**Table 4 (b)**

**REGISTRATION FEE STRUCTURE OF CDM, EXECUTIVE BOARD**

Average t CO <sub>2</sub> e per annum	US \$
Less than or equal to 15000	5000
15000 - 50000	10000
50000 - 100000	15000
100000 - 200000	20000
More than 200000	30000

Keeping the same pattern, a "*nominal fee*" for *host country endorsement* could be proposed as:

Average t CO <sub>2</sub> e per annum	INR
Less than or equal to 50,000	10,000
50,000 - 1,00,000	20,000
More than 1,00,000	30,000

**Factors affecting the market size of CDM**

We will now shift our attention to the issues related to potential size of CDM market and factors that affect it. The eventual size of the CDM market is likely to depend on a number of demand side factors. With a number of these issues shrouded in uncertainty, assessing the potential size of the CDM market is a daunting task. A handful of estimates available in the literature assess the market size under some very specific assumptions about the nature and potential of the CDM market. Before presenting some of these estimates about CDM market size, first we briefly discuss some of the factors that could potentially affect the demand for CERs.

**Domestic Emission Abatement:**

Higher the emission abatement measures that Annex-I countries are likely to undertake both in the pre budget period (2000-2008) and during the budget period (2008-2012), lower could be their demand for carbon credits from other Countries including the Developing countries. A number of studies suggest that significant potential do exist within the Annex-I countries for emission abatement through efficiency improvements and changes in consumption patterns.

**Extent of JI and ET Activities:**

The extent to which the Annex-I countries plan to use JI and ET options during the budget period would determine the flow of funds for the CDM projects. Given that both JI and ET involve Annex-I countries only, i.e., the countries with emission reduction commitments, accounting details are likely to be more straight forward in these two mechanisms compared to the CDM. Also, the monitoring costs are expected to be much lower than those associated with CDM. These factors could make the JI and ET activities more favourable compared to the CDM activities.

## **Availability of 'Hot Air':**

Higher the availability of 'Hot Air' in the market, lower would be the demand for emission credits from other sources including the CDM. Actual size and usability of 'Hot Air' is unlikely to be known till the budget period.

## **Sustainable Development Criteria:**

The projects under the CDM are expected to push the developing country economies along the sustainable development path.

Towards this, the developing countries would identify and prioritize project activities that lead to sustainable development and the Annex-I Countries will have to make investments in such project activities only. Such a criterion could lead to selection of costlier project ahead of cheaper ones and contribute towards making the CDM option less attractive compared to JI and ET.

## **Adaptation Fund**

Though in principle the adaptation fund should receive contributions from all the mechanisms and also from the non-compliance fees (if any), the Protocol stipulates that the CDM projects alone would attract an additional surcharge as contribution towards an adaptation fund. Such a surcharge is likely to make CDM a less attractive option compared to JI and ET.

## **CDM and Technology Transfer**

The reasons for linking CDM with Technology Transfer (TT) are obvious. One of the major purposes of CDM is to initiate the process of emission reduction and awareness about the climate change problem in developing countries too. The project by project approach of CDM may not lead to significant reductions compared to the large increase in emissions anticipated in the Developing Countries (DC). Thus, the fossil fuel-efficient policies and processes should be institutionalized through TT. A CER should be given if efforts are put in such that the Developing Countries (DC) can operate and even replicate the technology. In the absence of this, incentives to bring in successively new technologies will not be there. In fact, "semi-efficient" – and not the very best technologies might be repeatedly installed even in the same country but at different places. If the CDM allows profiting from technology diffusion, there will be temptation to profit as much as possible from the same technology. Technology innovation needs to be ensured by considering how much CER can be given for the same technology or up to what period so that at the end of that period even better technologies may be introduced. One way to ensure it is by suitably changing technology baselines upwards gradually. Other concerns regarding CDM could be that there will be greater demand for fossil-fuel technologies. This may increase the price of efficient technologies. Thus, "Green" technologies may be more expensive as they will be more in demand over "brown" technologies. To ensure their wide adoption, rather than making expensive – there should be incentives such that they are more in demand. If barriers are created around the project, and people are allowed to earn premium, rent-seeking behavior may occur.

For completeness, we summarize the various steps involved in the process of technological change and upgrading using a schematic diagram in Figure 4 (a). The main components are: need assessment, technology selection, technology transfer, utilizing technology to its designed performance, adapting technology to specific conditions, improving technology beyond its designed performance and developing new technologies.

With this scheme in mind, let us now examine the issues relating to TT and what kind of TT is needed. So far, to a large extent, discussions on the transfer of Environmentally Sound Technologies (ESTs) has mirrored earlier debates centering on legal, institutional and financial arrangements governing developing countries' access to the technologies developed in the industrialized ones. As a result, a whole range of questions have been downplayed or ignored such as:

- The type of needs of a Developing Country
- The requirements of appropriate or better technologies to meet those needs.
- The available expertise *i.e.* Capacity Building needed to ensure effective transfer, and,
- The factors affecting Adoption, Assimilation And Adaptation Of Imported Technology.

A key constraint facing Developing Countries is the difficulty of matching their needs with appropriate technological solutions that reduce GHG emissions. These constraints are all the more binding in new and emerging fields, where trends in technology development are uncertain, corporate secrecy prevails, and sources of supply may span several industrial branches.

In their early critiques of Technology Transfer (TT), the Developing Countries focused mainly on reducing what they considered the excessive costs of technology transactions and the many restrictive clauses imposed on recipients by the suppliers. Increasingly, focus of attention has shifted from the costs and characteristics of imported technologies to include the factors affecting the creation and maintenance of technological capabilities in the developing countries.

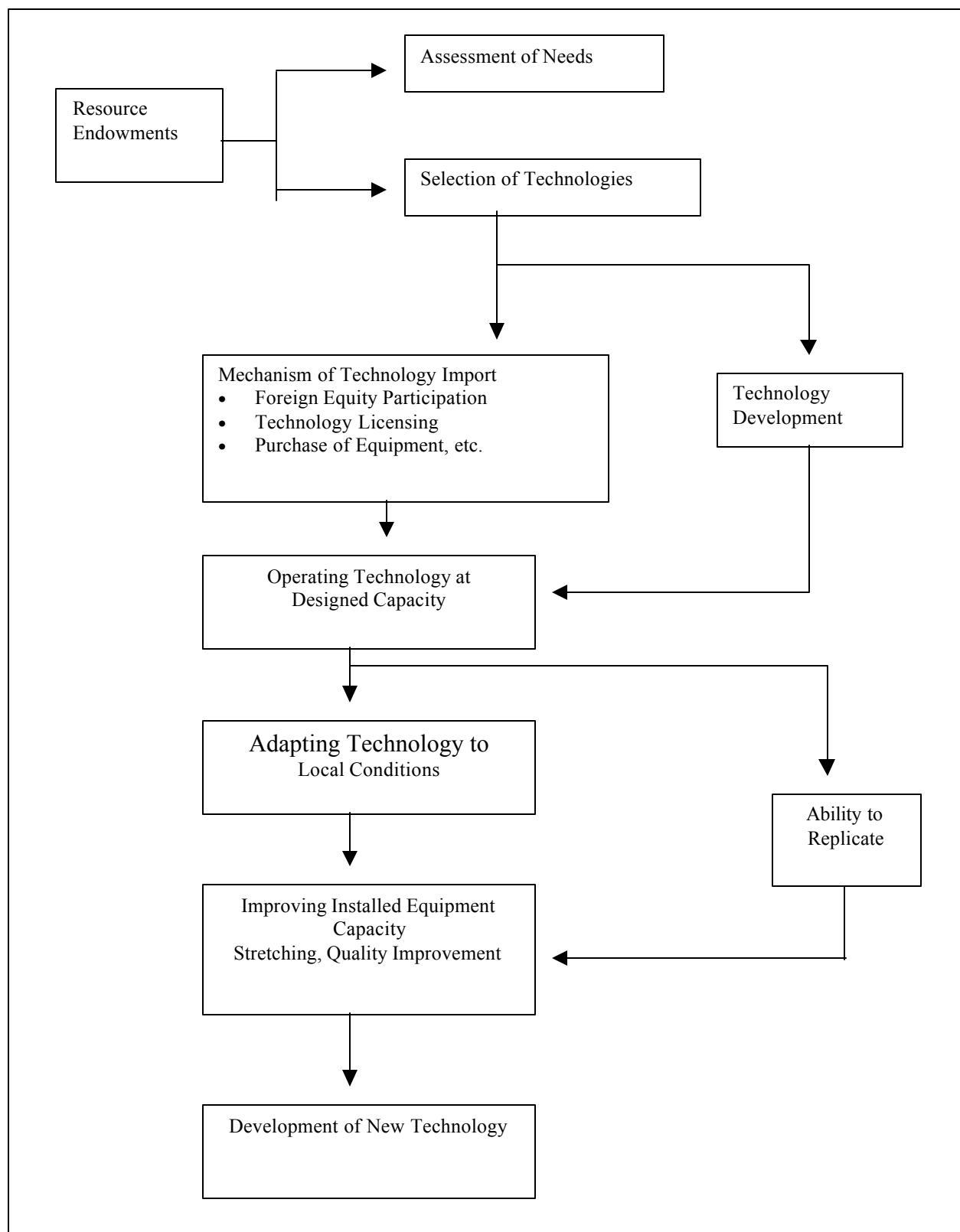
Two factors are crucial in determining the extent to which TT contributes to building indigenous technological capabilities.

- First is the intensity of contact between the supplier and the recipient. Active and ongoing contact between recipient and supplier is crucial to the effective transfer of skills and knowledge. This does not mean that direct equity involvement of suppliers is essential. Far more important than the contractual form of a transfer is the extent of knowledge acquisition and training.
- The second factor in strengthening local capabilities is the strategic orientation of the recipient enterprise. These efforts require sound knowledge before transfer, a rigorous search for sources and intensive participation at all stages of project planning and implementation.

Thus, the ultimate goal of any action in the field of transfer of EST should not be just applying particular technological solutions, but to enhance the capabilities of developing countries to assess the need, select, import, assimilate, adapt and develop the appropriate technologies. This is a matter of enhancing 'generic' technological capabilities rather than pursuing actions related to specific environmental technologies. In fact provision for capacity building in the long run should be made mandatory in any TT with crosschecks built-in for verification.

Sound technology choice is the backbone of any strategy for international TT. Unless developing countries have the proper knowledge to make informed choices among technological options, there is a risk that the efforts to promote international TT may become overwhelmingly supplier driven and geared more to transferring technologies that are available rather than technologies that are required by Developing Countries (DC). Developing Countries faces several disadvantages

**Figure 4 (a)**  
**Steps to Various Levels of Technology Transfer**



in terms of information available to them as well as its technical capacity to evaluate particular technologies.

To summarize, we need to think about potential answers to the following questions:

- What are the GHG reducing technologies, which may be useful to the developing countries ?
- What are the various steps involved in effective TT ? How can they result in capacity building in developing countries ?
- If TT has generated significant capabilities, what are the barriers/factors militating against their widespread diffusion ?

### **Sharing of CDM Benefits**

Everybody will agree that there has been a great deal of confusion w.r.t. sharing of the benefits arising out of CDM. i.e. who gets the benefits – the Government, the project promoters or are they passed down to the consumers or public. CDM is a market-based mechanism, which creates a tradable commodity from a project-based transaction. Government of the host country approving such projects in line with the UNFCCC's requirements, generally consider the sustainable development aspects. The CDM projects create a social good that benefits the society by improving the environment and through some ancillary benefits. The project developers would need to take initiative and spend considerable amount of time and resource for obtaining the carbon investments. The project developers may show reduced interest in CDM projects if they have to share the CDM benefits with the government and the country may lose the FDI through this route. On the other hand, if such benefits are allowed to be retained by the promoters, more and more promoters would be encouraged to make such effort and promote such environmentally beneficial projects.

It is therefore recommended that to start with and also with a long-term view of developing the market, the benefits may be passed to the projects directly. The carbon revenue can be treated as part of the project revenue and treated accordingly. Once the CDM market matures and the carbon offset prices increase significantly, care should be taken to ensure that the promoters do not earn significantly large amount of benefits, in which case rules could be established to allow sharing of such profits.

In this regard, the Working Group also felt that all the State Governments are required to be intimated of the CDM policy especially with regard to sharing of benefits. SERCs are one of the most important agencies at the state level in the electric power sector. Power is a concurrent subject, meaning there by that the states have the responsibilities of administering central policies as well as make policies for their states. The SERCs are mandated to ensure cheaper and reliable power to the consumers in a state. They have also the responsibility of promoting efficient and cleaner resources. It is suggested that the Central Electricity Regulatory Commission (CERC) should prepare guidelines / recommendations in respect of power purchase from the CDM projects. The SERCs should provide price preference to these projects. If the MNES' policy is not a viable option, the best possible and affordable tariff should be accorded to the RE based power. In any case under a merit order system, the SERCs must encourage the clean energy projects (RE, energy efficiency, waste to energy and fuel switch projects).

## CDM Projects involving Government Subsidies

Typical examples of such projects are the renewable energy projects. The spread of various renewable energy technologies, which include waste to energy as well as renewable energy projects, have been aided by a variety of policy and support measures by the Ministry of Non Conventional Energy Sources (MNES). These measures include provision of fiscal and financial incentives under a wide range of programmes being implemented by the Ministry and simplification of procedures for private investment, including foreign direct investment, in renewable energy projects. The various types of fiscal incentives for renewable energy sector are in the form of direct taxes -100% depreciation in the first year of the installation of the project and indirect taxes like exemption/reduction in excise duty, exemption from central sales tax, and customs duty concessions on the import of material, components and equipment used in renewable energy projects.

These incentives for RETs are based on:

- Specified guideline tariffs for electricity from renewable sources
- Capital subsidies which vary between various technologies
- Soft loans through Indian Renewable Energy Development Agency

The RET based projects exhibit generally a higher initial investment. These incentives/subsidies are provided as a part of various policies of the MNES as well as IREDA and state nodal agencies mainly to remove financial barriers in promoting RET based projects. In the context of CDM, a key question arises to the treatment of the subsidies for projects that are availing of the above mentioned subsidies as well as CDM revenues.

An approach that should be avoided is the withdrawal of subsidies to CDM projects, as this would remove the incentive for these projects to secure carbon revenues. It would also in many cases render the project unviable, as the CDM revenues alone may not sustain them, especially under the currently ruling prices of carbon.

Keeping this in mind it is suggested that the government adopt the following approach:

- The government can review its subsidy policy for RETs and other GHG mitigation projects on a periodic basis as is being done currently.
- To consider the impact of CDM on policy, the government should for each sector look at what percentage of the projects (both numbers and power equivalent) in a sector have been able to realize carbon revenues.
- If it appears that a significant majority (certainly more than 50%, recommended at 70%) have been able to realise CDM revenues, there is then a case for a change in the government subsidy policy
- The policy change should be based on simple project modeling that considers what level of subsidy would now be required (if at all) to sustain the projects, given the inflow of CDM revenues to a majority of the projects in a sector. This would be also in line with the emerging definition of "Additionality" at the CDM Executive Board.
- The advantage of policy linked subsidy is that it allows market forces to decide on the spread and project competitiveness. In such situation market forces govern the project viability
- It must be ensured that the source of fund from which subsidy is provided to the CDM project is not any country's ODA.

As and when the market evolves and develops the percentage trigger for a policy change can be lowered, as required. Thus, the key aspect to this approach is that the subsidy issue remains driven by policy changes and not based on project to project decisions.

### Baseline & Additionality Issues

A key criterion for eligibility under the CDM is the “Additionality” of the emissions reductions generated by the project. This means that the project developer must be able to reasonably show that the project will reduce GHG emissions below those that would have occurred in the absence of the registered CDM project activity. The estimated emissions from a potential CDM project must be shown to be lower than the baseline in order to demonstrate the additionality of the emission reductions.<sup>11</sup> Developing and justifying the baseline is therefore one of the key tasks in a CDM project.

Additionality is one of the major prerequisite for CDM projects. Defining additionality in renewables requires that a case be made which provides for something different from the “Business as Usual” (BAU) scenario. In this context, potential for renewable energy based CDM projects could be mainly through technological and investment additionality. Some of the technological additionality examples in renewable energy could be as follows:

**Table 4 (c)**

#### ***Technological Additionality in Indian Renewable Energy Programme***

Wind Power	MW size wind power systems, Wind machines for low wind regimes, Better designed rotor blades, gear boxes, and control systems.
Biomass power	Advanced biomass gasification technologies MW size biomass combustion systems, High pressure cogeneration systems.
Small hydro Power	Low head small hydro systems, High efficiency systems, Portable Hydro sets.
Village electrification	Advanced hybrid systems, RE based localized grid, Island electrification Innovative technology packages.
Energy recovery from wastes	High rate bio-methanation incineration, Sanitary landfills
Solar	Thermal systems for industrial applications, Solar thermal Power generation, Tandem solar PV cells, Alternate material solar PV cells.
New and alternative technologies	Fuel cell/Hydrogen Energy, Electric and hybrid electric vehicles, Ocean energy technologies.

**Sources :** MNES, 2003

The above list is indicative and as CDM is a projects based activity actual case that the projects is coming only due to CDM whould have to be built in at the PDD stage.

CDM executive board has identified the following three approaches to define baseline emissions:

- Existing actual or historical emissions, as applicable; or

<sup>11</sup> The emissions baseline has to be established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors, including relevant national and/or sectoral policies and circumstances such as sectoral reform initiatives, local fuel availability, power sector expansion plans and the economic situation in the project sector.

- 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.

The executive board, in the course of reviewing individual projects, will approve new methodologies and modifications to existing methodologies. Once a new methodology or a modification is approved, other projects may use the same.

On the base line issues, the committee felt that *CDM Executive Board* has a rigorous process for developing baselines. The board has already indicated several approaches to developing baselines. And any new methodology that is used for a project has to be approved by the CDM executive board. Under such circumstances, it is felt that the Govt. should refrain itself from establishing baselines for various sectors.

It is however recommended that the *CDM Cell* to be established would keep track of the various approved baselines and provide further guidance on how such baselines can be adapted in the context of India. Another major task for such a cell would be to collect, validate and authenticate data from the relevant state/central authorities and make it available to the project developers/consultants and Operational Entities. In addition, the issue of financial and technical additionality for the project also need to be ascertained.

The committee further clarified that the *additionality test* does not necessarily call for new technologies. For example there may be certain kinds of barriers such as financial barriers and high cost of the technology etc. that might be the cause for why a project activity may not happen in the *Business as-Usual* scenario. If the proposed CDM project uses this kind of existing technology it can still be considered as a CDM project provided positive emission reduction is possible from the project when compared to the baseline, and also the project meets the sustainability criteria of the host country.

In order to pass the 'additionality test', project developers need to demonstrate that, without the CDM, the project would not be implemented. This may be proven by reference to economic or other barriers.

It should be noted that even if a project appears to be technologically and financially viable on its own merits, even without CDM revenues, it may still be considered on additionality ground, if the project developers can:

- point to actual barriers that prevent its implementation, and
- show how some combination of the CDM itself, as an institution, the project design, and the CDM revenues, overcome these barriers. In such cases, the additionality of the project may need to be determined through a baseline study.

## **Management of Transaction Costs**

The elements that contribute to high transaction costs in developing a CDM project include preparation of the projects idea note, baseline document, project design document, development of a monitoring emission reduction and verification protocol, verification and certification cost (domestic and or international consultants), CDM-EB project registration charges and CDM-EB



proceeds for the adaptation fund. In order to minimize the transaction costs for fast track project, various measures are being suggested, viz., bundling of small projects, standardized baselines, simplified monitoring/verification and certification, unilateral CDM, longer crediting periods and a simplified project design documents. etc.

Costs are involved at every stage of CDM project cycle. The DNA should seek to find ways to minimize the transaction costs incurred during various stages so that the market can develop. The stages in the CDM project cycle are:

- PDD Preparation stage.
- Public Consultation stage.
- 'Host Country Endorsement' Issuance stage.
- Validation stage.
- Monitoring and Verification stage .
- Registration and Approval by the Executive Board, stage.

Bulk of the transaction costs are linked to the rigor of the CDM process that needs to be followed. This is expected to come down as more and more projects under CDM are executed. Adoption of following routes can reduce the transition cost:

### **By Streamlining of Processes**

More rigorous process by the host country with duplication of requirements of the CDM executive board can further add to the transaction cost. Keeping this in mind the working committee recommends that the DNA should only focus on the official requirements of CDM and try to make use the existing legislative framework to reduce burden on the projects. For example if a project has undertaken an EIA study and based on this the competent authority has already issued an environmental clearance for the project, the environmental concerns of the project would be considered to have been addressed subject to the project complying with the conditions prescribed in the clearance. In such cases, the DNA may however look at the capacity of the project to implement necessary safeguards while approving the project. The second example is that of public consultation. If a project has already undertaken public consultation as part of EIA, the same can be reused in the context of CDM as well.

### **Through the Capacity Building of Local Consultants**

Transaction cost is often high as international consultants accredited by CDM EB have to be hired for undertaking various studies pertaining to CDM. So far, none of the Indian Entities have been accredited by the EB. Capacity building of the local consultants so as to enable them getting accredited as DOEs can help reduce the transaction cost. Specific capacity building program for the consultants have therefore been recommended in the suggested Capacity Building Program on CDM.

### **By providing easy access to information**

Appropriate data for setting up the baseline, establishing additionality, preparing the environmental impact report etc. is a major requirement for developing CDM projects. Limited experience with such studies shows that while most of the cost is incurred in collecting/gathering

information from various sources than in analyzing them. Providing easy access to information can help reduce the cost. It is in this regard that it has been recommended to host a website where CDM related as well as sectoral information would be made available. As suggested earlier, the CDM cell could coordinate this including compilation and validation of data and offer services for a price.

### **By Bundling of projects**

Bundling implies uniting small, homogenous projects and doing the project cycle once. It requires an intermediary to collect information from sub-projects, deliver it to international and national authorities, and distribute CERs to project owners. Thus a benchmark-oriented baseline can be defined to simplify the determination of the amount of generated CERs.

### **By addressing the *Taxation* issue**

There has been growing concerns on the tax implication of carbon revenues. Carbon revenue is realized by way of selling of the carbon credits to the foreign buyers. The underlying projects for CDM projects are generally based on RE, energy efficiency or urban sector waste recovery/minimization concepts, except that there is additional income accrued from sale of CERs. Moreover, since the CERs have value only for investors in the developed countries, they will have to be deemed as "exported". Under the existing rules, the revenues from the categories of projects and exports are generally tax-exempt. In view of this, there is no logic for taxing the CER revenue. Therefore the working committee suggests, that the CER revenue should not be taxed, at least while the concessions to the power sector or conservation projects are available. Adopting different tax structure for income generated from CERs sale would distort the whole process of CDM and would hamper the development of carbon market.

Thus, it is suggested that the tax issues for CDM projects in India be addressed in the following aspects:

- The costs required to keep the host country process self sustaining and budget neutral
- Income tax for the additional revenues that CDM may generate as additional income being treated at par with any other export income.

The Government may, however, charge a nominal appraisal/processing fee for projects being brought for 'Host Country Endorsement'.

### **Capacity Building and Promotion**

The working group felt the need for aggressive international marketing and domestic capacity building to attract maximum CDM investments to the country. Details of these have been discussed as under :

### **The Action Plan**

It is required that time bound programs are implemented to take maximum share of the CDM market. The recommendations of the working group for a time bound Action Plan are as follows:

**Table 4 (d)**

**Time bound Action Plan**

Sl. No.	Activity	Responsibility	Target Date
1	Organising an <i>International Climate Technology Bazar</i> **	MoEF	November, 2003
2	Establishment of the <i>DNA</i> *	MoEF,	December, 2003
3	Establishment of the <i>CDM Cell</i>	MoEF	January, 2004
4	Hiring the <i>CDM Promotion Agency</i>	DNA	February, 2004
5	Execution of State-wise <i>CDM Awareness Campaign</i>	CDM Promotion Agency	April, 2004
6	Execution of <i>sector specific Capacity Building CDM Promotion programmes</i>	CDM Promotion Agency	June, 2004
7	Preparation of the <i>CDM Implementation Manual</i>	DNA	June, 2004
8	Preparation of the <i>CDM Investor's Guide</i>	MoEF	June, 2004
9	Execution of <i>International CDM Road shows</i>	MoEF	July, 2004

\* DNA has already established in December - 2003 based on the suggestion of this working Group.

\*\* International Climate Technology been Bazar has already Organised by *MoEF & CII* in November- 2003

The details of proposed initial Capacity Building for CDM in India, is suggested in tabular form below:

**Table 4 (e)**

**A. State level CDM Awareness Program**

Stakeholder	Areas to be addressed	Participants	Mode	No. of programs	Central/ Regional/ State
Govt., Promoters, Banks & Financial Institutions, Academicians, NGOs & CBOs	<ul style="list-style-type: none"> <li>• Background of CDM</li> <li>• Opportunities for the state</li> <li>• Issues in CDM</li> <li>• Identification of projects in various sectors with potential for CDM</li> <li>• How to develop CDM projects</li> <li>• Benefits to projects under CDM</li> <li>• CDM Rules &amp; Procedures</li> <li>• Host Country Requirements</li> <li>• Role of the state government in promoting Sustainable development</li> </ul>	State Govt. officials, Key promoters in the state, Banks/FIs, Consultants, NGOs, CBOs, Academicians working in the field of climate change.	Workshop	30	Each states and Union Territories of India

**Table 4 (f)**

**B. Stake-holder specific Capacity Building Program**

Stakeholder	Broad Objective	Participants	Mode	No. of programs	Central/ Regional/ State
Government/ Regulators	<ul style="list-style-type: none"> <li>• CDM approval process</li> <li>• Evaluation of CDM Projects</li> <li>• International Experience on CDM</li> <li>• International marketing for CDM</li> </ul> <p>How to reduce the Transaction Costs</p>	Director, Research Officer etc. of the line Ministries in the Center, states & UTs	Workshop	1	Central
Project Developers (Energy, Transport, Pulp & paper, Cement, Steel)	<ul style="list-style-type: none"> <li>• Identification of projects in various sectors with potential for CDM</li> <li>• Development of CDM projects CDM Rules &amp; Procedures Host Country requirements Promoter's obligations under CDM</li> <li>• International opportunities Sustainable Development</li> <li>• Where to find CDM investors</li> </ul>	Public & private sector enterprises, developmental organizations, Community based organizations and NGOs	Workshop	7	Regional (North, South, East, West, Central, North-east)
Banks & Financial Institutions	<ul style="list-style-type: none"> <li>• CDM Rules &amp; Procedures</li> <li>• Impact of CDM on Project financials</li> <li>• CDM Rules &amp; Procedures</li> <li>• Host Country requirements</li> <li>• International Opportunities</li> </ul>		Workshop	1	Central
Consultants	<ul style="list-style-type: none"> <li>• National &amp; Sectoral Strategies/policies of the Govt.</li> <li>• CDM Approval Process</li> <li>• Baseline &amp; Estimation of Emission reductions</li> <li>• Preparation of PDD</li> </ul>		Workshop	1	Central

**Table 4 (g)**

**C. Small Scale CDM Projects**

Stakeholder	Broad Objective	Participants	Mode	No. of programs	Central/ Regional/ State
Govt., Promoters, Banks & Financial Institutions, Consultants, NGOs & CBOs	<ul style="list-style-type: none"> <li>• Issues in small scale projects</li> <li>• Type of small scale projects</li> <li>• Small scale project Methodologies</li> <li>• How to develop small scale CDM projects</li> <li>• International experience on small scale projects</li> </ul>	State Govt., Key promoters in the state, Banks/FIs operating in the state, Consultants, NGOs, CBOs,	Workshop	2	At Central Level

**Table 4 (h)**

**D. LULUCF Projects in CDM**

Stakeholder	Broad Objective	Participants	Mode	No. of programs	Central/ Regional/ State
Govt, Academicians, Consultants, NGOs & CBOs	<ul style="list-style-type: none"> <li>· Background of CDM</li> <li>· Opportunities in the sector</li> <li>· Issues in the LULUCF sector</li> <li>· Identification of projects in this sectors</li> <li>· Estimation of emission Reductions in Sink Sector</li> <li>· Rules &amp; Procedures for LULUCF project</li> </ul>	Govt, Academicians, Consultants, NGOs & CBOs	Workshop	4	At State Level

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# Chapter–5

## Promoting CDM in India

### The Need

As already discussed earlier in this report, India has a huge potential to benefit from CDM. The financial return to projects because of CDM is expected to encourage private investment in CDM projects, which would contribute to sustainable development. The entry into the CDM market however is expected to be highly competitive. The market has been diminished both by the stringent requirements imposed on the CDM by the Marrakech Accords as well as by the exit of the United States from the Kyoto Protocol. The CDM market during the first commitment period may not reach volumes that were originally forecasted. Therefore countries with aggressive policy on CDM are expected to take the maximum share of the market. The National CDM Authority should, therefore, take appropriate measures for promotion of CDM and building capacity of the stakeholders on different aspects of CDM project development and implementation.

The promotional activities would mainly fall into the following categories:

- Creating CDM Awareness among various stakeholders
- Building capacities among various stakeholders
- Marketing of CDM in global Market

### The Key Stakeholders & their roles in CDM Promotion

#### Role of Government

The government is one of the key stake-holders in CDM. The various line ministries and departments can play significant role as facilitators and “enablers” for the CDM projects in their respective sectors. Therefore, they need to understand the CDM modalities and procedures and also technical issues such as CDM eligibility criteria for projects. The DNA has a significant role to play as has been already discussed earlier. They also need to understand the different kinds of risks involved for the government as well as project proponents, and the penalties for defaulters. This understanding would help not only in dispute resolution, but also help the government to take a position for India with the CDM Executive Board. It is also of great importance that the Government legally defines the “project” CER and sets up rules and procedures for the CERs to be transferred out of the country. It would be advisable that appropriate ministries pave the way for the legal definition and the transfer of CERs.

A broad perspective would help the government to assign roles and responsibilities for itself and regulate the roles and responsibilities of the other stakeholders. These include CERC, SERCs and state governments. CERC should prepare guidelines/recommendations in respect of power purchase from the CDM projects. The SERCs should provide price preference to these projects. If the MNES policy is not a viable option, the best possible and affordable tariff should be

accorded to the RE based power. State governments should exhibit expediency and transparency of policy pronouncement. Business risk mainly emanates from the lack of clarity and biased implementation of policies in place. Delay in announcing or lack of clarity in policies lead to higher uncertainty than having even a bad policy in place. Further, the people of the respective government department or ministries will best know the specific issues and concerns at a national and state level. Hence it becomes invaluable for them to realise the implications of the CDM to attracting FDI and creating a climate conducive for investment in country.

## **Industry**

Industry or the project developers are the major beneficiaries of CDM. Proper knowledge of CDM including its rules and regulations can encourage the industry to explore new ideas and develop new projects that can qualify under CDM. CDM encourages companies to look at energy in its life cycle from a commercial and economic viewpoint - generation, use, reuse, efficiency, renewable sources and conservation. Moreover, industries can use CDM as the tool to source cleaner technologies for India. There is therefore a need for designing specific programs targeting different kinds of industries.

While Indian industry, is the most informed among stakeholders, there are still few issues on, which capacity building and institutional links need to be established. There is a high level of confusion between project level emission reduction and emission trading. Also, some of the stakeholders feel that GOI may be in a position to control the CER price. All such mis-conceptions need to be removed. Similarly the mis-conceptions about Technology Transfer, which is confused with cross border transfer of advanced technology; also needs to be cleared. Sectorally specialized project document preparation training courses are crucial as baseline and monitoring rules will differ considerably according to project types.

## **Banks & Financial Institutions**

Better appreciation of the CDM and its benefits to projects can encourage the financiers to invest in CDM projects as CDM has the potential to strengthen the project cashflows through foreign earnings. They also need to understand the other side of the coin such as the process intricacies and transaction costs etc. which would ultimately decide the net return to the project.

Barring few names majority of banks especially the private banks are still not the part of CDM project development process. The capacity building in this section needs to be mainstreamed into the existing training set up. All the training institutions in the banking sector could be networked into training programmes directed at informing them trends in risk management tools, climate change related risks to their portfolios in the light of future scenario of targets, market mechanisms – CDM in particular and also project structuring for qualification as CDM. It may be worthwhile to approach the bilateral aid agencies to develop programs for the bank officials at various levels from operating level to policy/decision making levels.

## **Insurance Companies**

The insurance sector is one sector, in India; where the awareness level is rather low. It may be worthwhile to co-ordinate with the recently formed *Task Force on Insurance Sector* and CDM

to develop capacity building for the insurance sector. One way is to establish links with the UNEP-FII program, which has been a co-operative program between international banks, research institutions and insurance companies. Training module with a focus on insurance companies may also be developed.

## **Civil Society**

The role of civil society is unique in the sense they do not have any direct benefits from their involvement in the subject. However, NGOs, independent experts and academic institutions have the potential to form dependable allies to both the government and the industry in helping shape the policies. The government may find national NGOs (through their networks with the government industry and other civil society organisations all across the country) useful in imparting training to at least some stakeholder groups. They can also help develop community based CDM projects, which can benefit the community directly. Further, they may be able to reach out to a wide network across several developing countries in an effort to gather consensus on raising the selling price for CERs to the Annex-1 countries. In addition, they may become the partners in developing project proposals for the industry. Finally, they are the ones that will be able to add value to projects during the public consultation process.

## **Awareness and Capacity Building Programme**

In the section described above, it is evident that there are certain common as well as separate requirements for each stakeholder category. There is a need to bring all the stakeholders to a common table to not only identify the different concerns and issues, but also the different options that may be considered to achieve the capacity building requirements. Since capacity building is a continuous process to kick start CDM in India, following 2-tier awareness-cum capacity building has been proposed, which constitute the following:

- General awareness program at state levels involving all stake holders
- Specific Capacity Building programs targeting different stake-holders
- Preparation and dissemination of CDM Implementation Manual
- Preparation of a Newsletter for disseminating basic information and on-going plans and programmes for promoting CDM in the country.

The awareness and capacity building programs can be executed by way of interactive workshops, or specific training programs. The CDM implementation manual would need to be developed and hosted at the website to be developed by the DNA. Cooperation from various Bilateral/ Multi-lateral funding agencies could be sought in this regard.

As already mentioned earlier capacity building is a continuous process and the programs mentioned here are part of the initial capacity building program to kick start the CDM market and need to be executed immediately. Awareness building, also can be achieved through regular advertisements in daily news papers of different local languages in print media and in Television, Radio, Video and CDs in audio visual media as well.

Summary of the programs to be executed initially are provided in the table below:



**Table 5 (a)**  
**Summary of the Programs**

Programme	Expected Number	Responsibility
<i>State-level CDM awareness programs</i>	30	CDM Promotion Agency
<i>Stake-holder specific Capacity Building programs</i>	10	CDM Promotion Agency
<i>Small scale CDM Workshops</i>	10	CDM Promotion Agency
<i>Workshop on LULUCF Sector</i>	4	CDM Promotion Agency
<i>Workshop on Preparation &amp; Dissemination of CDM Implementation Manual</i>	1	CDM Promotion Agency

Different areas, where capacity building needs to be undertaken are provided below:

### ***Project Identification and Formulation***

Project developers in either the energy sector or the land use sector are familiar with traditional project development. However, the potential carbon flow or carbon upgrade component of projects is not commonly recognized. In order to promote CDM investment, the project developers need to be trained on how to identify projects in which the base project can be distinguished from the carbon component. They can also begin to understand the context of the UNFCCC and the carbon market and the PDD format etc.

### ***Baseline Definition***

The definition of the baseline is one of the most crucial technical aspects of a CDM project. A project baseline defines the level of expected emissions /carbon stores in the *Business-as-Usual* scenario without the implementation of the CDM project. It is the basis from which the CERs for a CDM project activity must be measured and it is important that it be established properly and credibly at the outset.

The principal responsibility for defining the baseline associated with a specific project will lie with the project developer and investor. However, the underlying assumptions and data that support a baseline definition must be derived from national standards of CDM Executive Boards guidelines.

### ***Quantification of Emissions Reductions***

The amount of emissions reductions that will be associated by the proposed project is the difference between emissions in the baseline and the proposed project, minus the leakage. An accurate estimate of the emissions reduction potential may also be critical to the financial feasibility of the project. A low estimate may unduly disqualify a potential project based on inadequate revenue for financial sustainability. A high estimate may overally the benefits of the project. Due to the critical role that estimated emissions reduction potential can play in financing decisions for CDM projects, it is important that project developers need to properly understand the estimation of emissions reduction potential of CDM projects.

### ***Monitoring the Project Performance***

To determine the actual performance and emissions reduction that is achieved, by the project during implementation, project indicators will need to be closely monitored. A monitoring

plan should be established that is transparent and in accordance with National CDM Authority/ CDM Executive Board guideline in order for independent third party agents to verify the results.

In order to promote the widespread implementation of CDM projects the stakeholder: i.e. project developers, private companies, government agencies, bankers non-government organizations and other stakeholders involved in project development need to be trained on primary requirements for projects.

### ***International Marketing for CDM***

The first step in this direction is to give a strong message to the world, regarding India's preparedness to face the CDM challenge. This is very necessary for two reasons.

Firstly, the experience of many of the Annex-1 countries during the AIJ phase was not very pleasing. Many countries had to wait for years together before their projects could be approved. It is therefore required to undo the past experience and to show to the world that India has learnt from the experience and is at present actively looking for CDM deals.

Secondly, India has an advantage in that it has taken the lead role during the *negotiating process* under the UNFCCC and moreover it has a substantial amount of capacity built up over the years, being a key player, in the Kyoto Protocol processes. Many of the Western countries have shown their preferences to do business with India. Simplified and transparent '*Host Country Endorsment*' procedures can further enhance their interests to invest in India. Unless we have a very simple and transparent endrosment processes, India is unlikely to be choosen as the natural choice for CER transaction.

### ***Need for Targeted Marketing***

Rather than taking on the whole world at the same time, it would be much more effective if we can target few aggressive countries looking for investments to start with. Obviously, countries, which have high emissions reduction targets would be perhaps the right targets. The additional considerations would be to see their internal policies and how the countries are moving ahead to meet their targets. We can also see from the practical experience as to how they have been approaching the Indian market and what has been the scale of their activities over the past couple of years or so. Some of the countries having substantial targets however, are more interested in meeting the targets through domestic action rather than investing under CDM. Countries like Netherlands and Finland have come up with international CDM tenders and can therefore be said to have taken the lead in the CDM game.

All said above, the possibility and pressure join the protocol by other countries cannot be ruled out for all times to come. As such India as a country, must keep United States, Russia and Australia engaged in this climate change process.

To summerise there is a need to have targeted marketing strategy to take maximum share of the CDM market. Following sections provide some of the methods by which India can promote itself in the global CDM market.

### ***The Road-show Organisation***

It has already been said before that the country should give a strong message that it is ready to receive investments under CDM. In order to transmitting this message loud and clear at least to those handful of countries, which are proactive in the carbon market, it is necessary that international road shows are conducted.

The road show would involve touring to the targeted countries and making presentations before the chambers of commerce and industry, potential government departments and especially those private industries, which have been given emission reduction targets.

The committee recommends that such road shows be organized and executed immediately as CDM is clearly becoming a race and the sooner one starts the better would be the outcome. Countries have already started bringing out tenders and more are likely to follow. Many international funding agencies are setting aside huge amounts of funds for development of GHG emissions reduction projects and once we show our willingness and eagerness to attract CDM projects, it will be much easier for a country like India to ensure that a sizable amount of technical assistance funding available with the international organisations like the World Bank and the Asian Development Bank also comes to India.

India should also conduct side events during all the international events related to CDM especially during all the COPs.

### **Displaying our *Ability to Deliver***

India has already sent strong signals to the CDM market by participating in various international tenders for procuring Certified Emission Reductions. There is however a further need to show to the prospective CDM investors our preparedness when they come to our country. For this, it is necessary that we are ready to display our best CDM type projects, which are up, and running and which display our capacity to run and maintain such CDM type of projects. Second, since the Kyoto Protocol process is fairly complex and complicated, we must also display an understanding of the subject and other finer details of the process. This can be achieved by undertaking targeted research projects the output of which can be displayed before the clients. For example, the Ministry of Non-conventional Energy Sources has commissioned five studies on the subjects of Baselines, Sustainable Development criteria, real life case studies, Simplified Procedures etc, and once these are published, they would be made available freely to all those who are interested in setting up CDM projects. Such an output along with well produced CDM publicity material would go a long way in raising the confidence levels of investors from Annex-1 countries who can come and see that India has already invested a lot of time and money in the process and this will give them reassurance that their money would not go waste.

### **Organising an *International Climate Technology Bazar***

Another way being suggested to display India's readiness and potential is to deliver CDM projects is to organize an international carbon trade fair in the country. This is expected to gain wide publicity in the international carbon market. The developed countries and companies having emission reduction targets can be invited to the trade fair. This would also be a good opportunity for the Indian companies to showcase their CDM projects and attract potential buyers.

This should be in the form of a truly international exhibition and should be given adequate publicity especially in the targeted countries listed above and once these countries can see for themselves what India has been able to achieve in the field so far, investments will be expected to follow in its wake.

### **Preparing a *CDM Investor's Guide***

CDM investor's guide would be basically a document talking about opportunities and advantages of investing in India to attract CDM investors, Current position of the Govt. of India on climate change issues, institutional infrastructure in place to deal with aspects of CDM etc Moreover this guide book will basically bridge the gaps of understanding among various stake holders of the CDM Project development process; which would certainly help in bringing down the transaction cost in CDM Project development in India. After all the preparation of this CDM investor's Guide and will subsequently a CDM implementation manual would substantially boost and facilitate the CDM activities in India.

Summary of the initial CDM marketing programs that need to be executed are provided below.

**Table 5 (b)**  
**Summary of the initial CDM marketing programs**

<b>Programs</b>	<b>Responsibility</b>
Conducting International Road show Programmes	MoEF
Organizing an International Climate Technology Bazar at New Delhi*	MoEF
Conducting a number of Side Events during COP-9 at Milan, Italy*	MOEF, MNES
Preparation of CDM Investor's Guide for India	CDM Promotion Agency

\* Already organized in November - 2003

The details of initial CDM Promotion Programmes are suggested below :

**Table 5 (c)**  
**Road-show Programs to gain International Experience**

<b>Delegation</b>	<b>No. of Persons</b>	<b>No. of Countries to be visited</b>
CDM Promotion Agency	3	7 Countries such as Japan, Germany, UK, Netherland, Brazil, China and Indonesia
Representatives from Government	3	do
Representatives from FIs/Banks	2	do
Representatives from Industry	2	do
NGOs	2	do
Journalists/Press	3	do

**Table 5 (d)**  
**Climate Technology Bazar in India\***

<b>Various Stalls</b>	<b>Targets</b>	<b>Activities</b>	<b>No. of days</b>
Energy Stall	Developed Country Governments, Climate-friendly Multi-National Companies	Presentations Discussions	3
Industry Stall	-do-	-do-	-do-
LULUCF Stall	-do-	-do-	-do-
Rural Development Stall	-do-	-do-	-do-
Agriculture Stall	-do-	-do-	-do-
Renewable Energy Stall	-do-	-do-	-do-
Water Resources Stall	-do-	-do-	-do-
Transportation Stall	-do-	-do-	-do-

\*Already Organised in November - 2003

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# Chapter-6

## OPERATIONALIZING CDM in LULUCF SECTOR IN INDIA

### Clean Development Mechanism in Forestry

Forestry is broadly included under 'Land Use Land-Use Change and Forestry' (LULUCF) sector in the Climate Convention. It includes activities relevant to forests, pasture, rangelands, and croplands. Next to the energy sector, the focus of attention of the Climate Convention and scientific literature is largely on the forestry sector, for the following reasons:

- The forest sector is one of the key sources of CO<sub>2</sub> emissions, accounting for 1.6±0.8 Gt C annually, accounting for nearly 20% of the global CO<sub>2</sub> emissions, during 1990s.
- Developing countries, which are largely tropical, are experiencing large-scale deforestation, forest degradation and forest fragmentation, leading to declining biodiversity, loss of watersheds (soil erosion), water shortage and, in many cases, desertification. By conserving forests, developing countries can halt land degradation, conserve biodiversity; and reforestation will restore the degraded lands and meet their growing biomass needs.
- The forestry sector in the developing countries provides large and relatively low cost mitigation opportunities (Brown *et al.*, 1996; Sathaye and Ravindranath, 1998) to address climate change. Besides, mitigation activities have the potential to transfer investment funds and technology to developing countries and upgrade institutional capacity for forest conservation, reforestation, bioenergy and other forestry related activities.

### CDM and LULUCF Sector

The global climate negotiations under the UNFCCC have focused significant attention on the mitigation opportunities and potential of LULUCF sector or simply the "carbon sinks". Under the 'Kyoto Protocol and the Marrakech Accords'; afforestation, reforestation and (slowing) deforestation are eligible activities under Article 3.3 for Annex-I countries; forest management, grazing land management, cropland management and revegetation are eligible under Article 3.4; afforestation and reforestation are eligible activities under Article 12 for non-Annex-I countries like India. Definitions and modalities are under negotiation for including afforestation and reforestation activities under Article 12 in the first commitment period of 2008-2012, and other relevant and contentious issues such as; non-permanence, additionality, leakage, uncertainties and, socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystems. CDM will be operational after the Kyoto Protocol is ratified and all the modalities, definitions and institutional arrangements are finalized and adopted at the Conference of Parties (COP). CDM modalities in LULUCF sector is likely to be operationalized during COP-9, towards the end of 2003.

### Global potential / Demand for CERs from CDM:

The size of the CDM, in terms of both volume of emission offsets and financial revenue, is dependent on; the total emission reductions required to meet the Kyoto Protocol targets and

the comparative costs of achieving emission reductions under the different options provided by the Protocol (domestic reduction of emissions, Emissions Trading, Joint Implementation and the CDM).

CDM sink projects are limited to afforestation and reforestation. Projects involving rehabilitation of degraded forestland and avoiding deforestation would not generate CERs. They might, however, receive funding under the UNFCCC Adaptation Fund, and other portfolios like the World Bank BioCarbon Fund. This restriction would significantly limit the quantity of emission credits generated by sinks during the Protocol's first commitment period, as new plantings typically need several decades to achieve maximum carbon sequestration. Under the Marrakesh Accord agreements, there is a cap of only 1% of 1990 or base emission level that can be claimed by Annex-B countries, as CERs from A&R activities. A rough estimate at the global level shows a CER market of about 50 million tonnes of carbon annually for 5 years (2008-2012), with a cumulative total of about 250 MtC over the 5-year commitment period. One estimate is that total potential for C sequestration in first commitment phase is 110 Mt C of which US holds one third of potential market and is not a signatory to the CDM. So the market is much smaller than first anticipated. This is just to keep a broader view in perspective.

### **Issues in Operationalizing CDM**

Operationalization of CDM under the Kyoto Protocol has been a long drawn negotiation process due to various contentious issues such as; implications for sustainable development, development of baseline, selection of carbon pools to be measured, non-permanence of carbon stocks, additionality, leakage, methods for monitoring and verification, capacity building required and transaction costs involved in developing, implementing, monitoring and verification of projects. All these issues, excepting non-permanence, unique to LULUCF sector, are relevant to other sectors (energy, agriculture etc.) and activities also.

- Additionality and Baselines:
- Non-Permanence
- Leakage
- Measurement, monitoring and verification of carbon stocks:
- Transaction Costs

### **Definition of forests, Afforestation and Reforestation**

The decision to include only afforestation and reforestation projects during the first commitment period of 2008 to 2012 was taken at COP-7 in Marrakech (UNFCCC, 2001). The definition of forest as per the Marrakech Accord is, "a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30% with trees with the potential to reach a minimum height of 2-5 meters at maturity *in situ*." A forest may consist either of closed forest formations which have yet to reach a crown density of 10-30% or tree height of 2-5 meters are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forests. The definition of A&R given below are under negotiation for use under CDM.

**Afforestation** is defined as "the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the

human-induced promotion of natural seed sources”.

**Reforestation\*** is defined as “The direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land”.

The COP-7 also limited the total credits from A&R activities to not exceed one percent of the base year emissions of an Annex-I Party, during the first commitment period. Also, for the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain any forest on 31 December 1989.

## **Status of Forests and Afforestation/Reforestation in India**

### **Status of Forests**

India is one of the 12-mega diversity countries having a vast variety of flora and fauna. It supports 16 major forest types, varying from the alpine pastures in the Himalayas to temperate, sub-tropical, tropical forests, and mangroves in the coastal areas. As per the State of Forest Report-2001, the forest cover in India is 67 Mha, constituting about 21% of the geographical area. This is composed of 41.7 Mha (12.7%) of dense forest and 25.8 Mha (7.9%) of open forest. The forests in India are termed “dense” if canopy density is 40% and above; “open” if lands are with tree cover of canopy density between 10 and 40%. There is another 4.73 Mha scrub in addition to a reported forest cover of 67 Mha (FSI, 2001).

India has periodic satellite based forest-monitoring programme and the forest area assessment is published once every two years since 1986. Area under forests in India remained stable at around 64 Mha during the period 1986 to 1994. However, a decline in forest area was reported during the period 1995-97. Forest loss rates have been estimated by taking the difference in gross forest area between two-satellite assessment periods. In India, if tree crown cover declines below 10% it is considered non-forest. Shifting cultivation, which is practiced largely in the northeastern region of India is considered as deforested land and the regenerating fallow land is considered as gain in forest area. The forest cover in the country, according to 1999 assessment was 64 Mha and a comparison with the current assessment indicates an overall increase of about 3.8 Mha.

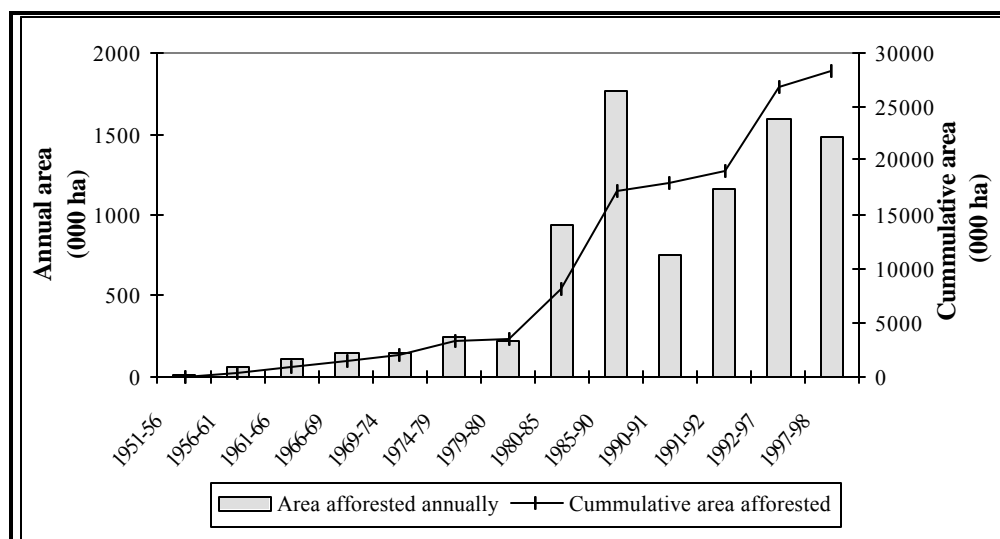
### **Afforestation and Reforestation in India**

India has implemented one of the largest afforestation programmes in the world. The programme was initiated during 1980 under the social forestry programme. The gross annual rate of afforestation (Figure 6 (a)), which was less than 1 Mha during 1980-85 increased to 1.7 Mha annually during the period 1985-90. It is declining since 1991-92 and during the period 1992-97, the average afforestation rate was 1.4 Mha annually. The total area afforested since 1980 to 1997 was 18.4 Mha, at over 1 Mha annually. In India, over 90% of forestation is ‘afforestation’ under the social forestry programme on village commons, degraded revenue lands and farmland (Ravindranath and Hall, 1995).

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\* Revised definitions proposed for first commitment period for A/R activities as per draft negotiation text produced after SBSTA meeting in Bonn in June 2003. Available on unfccc site.

**Figure 6 (a)**  
**Annual Afforestation in India**



### Potential Land Area for CDM in India

The Planning Commission Task Force and the National Wastelands Development Board (NWDB) have defined wastelands as “degraded lands which can be brought under vegetation cover with reasonable effort, and which are currently under-utilized, and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes”. Using this definition, the National Remote Sensing Agency (NRSA) identified 13 categories of wastelands, accounting for 16% of the total geographic area in India. Different studies have given varying estimates of the extent of wasteland in India, which is due to the varying definitions used for classifying wastelands and inadequate field data.

The Planning Commission reported total degraded land as 130 Mha. Chambers *et al.*, (1989) estimated the total land available for tree farming as 84 Mha, which includes degraded forest, crop- and non-crop land. According to the Ministry of Agriculture (1992), excluding degraded cropland, the other categories of degraded land account for 66 Mha. Kapoor (1992) estimated the total degraded land as 106 Mha. The wasteland area in India that could therefore be revegetated is between 66 and 130 Mha (Ravindranath *et al.*, 2002). This includes degraded forest, village commons and even cropland left fallow for long periods. The land area that could potentially be brought under CDM projects is thus likely to be large, particularly non-forest and wasteland categories, but the demand is likely to be small.

### LULUCF Opportunity for India

India has very progressive and successful forest conservation, afforestation and reforestation programmes, and policies. India has implemented one of the largest afforestation programmes in the world, including the large innovative Joint Forest Management programme. However, due to large rural and forest dependent communities as well as organized extraction, forest degradation continues. The incremental mitigation potential of the forestry sector, based on a biomass-demand-based scenario, using short- and long-term commercial forestry options is estimated to



be 122 MtC for the period 2000-2012 (Ravindranath *et al.*, 2002). At the rate of 25 tC/ha, 4.8 Mha could be afforested. However, the technical potential of the forestry sector is very large, Even if only 50% of 66 Mha of wastelands is brought under afforestation and reforestation activities, about 825 MtC could be sequestered in 12 years.

It is very difficult to state the potential share for India in the global CDM market for the LULUCF sector activities. This depends on how attractive India is, for the investors from Annex-B countries with emission reduction commitments. Of the global CDM potential of LULUCF activities of about 50 MtC annually, the share of India could be about 5 MtC annually, with an aggregate of 25 MtC over 5-years (assuming 10% of the global share). This when translated into CERs would gain a value of \$125 million at \$5 per ton of carbon over the 5-year period of 2008-2012. The price of carbon could be high, say over \$10 per ton of carbon, when the carbon market actually emerges, potentially leading to higher value for CERs.

### **Strategy for operationalizing CDM in Forestry sector**

A functional CDM will create a new commodity market. The resulting CERs will have a price and, like other natural resource commodities, will require some investment to be produced. India, as a non-Annex-I country stands to benefit from this investment and from the subsequent sale or transfer of CERs. The market is likely to be competitive, as India holds no monopoly on the production of emission reductions. To gain maximum benefit from the investments generated by the CDM, India will have to develop appropriate CDM projects, national investment conditions and facilitating institutions to attract international investment into local projects.

The strategy for operationalizing CDM in the forestry sector would include;

- Definition of sustainable development criteria
- Identification of eligible land categories
- Identification of potential A&R activities
- Determination of appropriate size or scale of the project
- Identification of institutions for implementing CDM projects
- Participation and involvement of stakeholders
- Identification of capacity building needs and activities
- Developing institutional arrangements for operationalizing CDM
- Identifying approaches to minimize transaction cost

Project formulation costs should also be included as these will be high and time consuming. Given the list of criteria and assessments that will be required to be fulfilled prior to project submission, it is apparent that specialized agencies will be required to speed up the process those that have vast experience in the field of forestry. ICFRE could be nodal agency for this purpose. The plan as envisaged in the report is excellent; however the actual implementation will need sorting out technical issues and cost associated with determining additionality, baseline, leakage etc. Land based forestry projects in India will not be viable unless a mechanism to address these costs are addressed. Questions like who pays, how much and for what scale of projects are important. Also a cost on the intangibles in landuse forestry projects is must to make them competitive with CDM projects in other sectors. Kindly include these issues and role of ICFRE/ research institutions in this regard.

However, the key challenge for Indian policymakers and CDM project developers, and local communities, will be how to artfully balance the desire for CDM activities that provide multiple social, environmental, and economic benefits, yet are capable of being funded, reviewed efficiently by government agencies, and actually implemented in a timeframe that will attract international private investment. If this challenge is not met, CDM will not prove to be a viable mechanism in India.

### Sustainable Development Criteria

The three broad criteria for testing sustainability of CDM projects may be economic; to ensure fostering of economic growth, employment generation and poverty eradication, social; to enhance human resource development, and promote participatory approach, and environmental; to protect and conserve the natural resource and environment (Table 6 (a)). Such sustainability development criteria need to be developed in consultation with the various stakeholders.

The A&R project should not lead to any adverse environmental impact. The critical sustainable development issues are; ensuring conservation of biodiversity, meeting biomass needs of communities dependent on land proposed for the project and empowerment and enhanced participation of local communities. Incorporation of the requirements of local participating communities would increase the stake for the participating communities and help avoid leakage of benefits (Table 6 (a)).

**Table 6 (a)**  
**Sustainable Development Criteria**

Criteria	Example	Details
Environmental	Biodiversity conservation	<ul style="list-style-type: none"> <li>- Activities and practices to promote biodiversity conservation to be incorporated in proposal</li> <li>- Demonstration of involvement of local communities (they will be eligible for example such as bioenergy plantations on wastelands as they have high fossil fuel replacement value).</li> </ul>
Social	Participatory approach	<ul style="list-style-type: none"> <li>- Institutional arrangement for the project</li> <li>- Demonstration of involvement of local communities in decisions on:               <ul style="list-style-type: none"> <li>• area proposed</li> <li>• species-mix proposed</li> <li>• product sharing arrangement</li> </ul> </li> <li>- Even in industry plantations or Forest Department managed projects, involvement of communities which depend on the proposed land is necessary</li> </ul>
Economic	Incorporation of biomass demands of local communities	<ul style="list-style-type: none"> <li>- Incorporation of local biomass demands in project design to:               <ul style="list-style-type: none"> <li>• minimize leakage-</li> <li>• increase stake for local communities</li> </ul> </li> <li>- Sharing arrangements</li> <li>- Even for industry or Forest Department promoted projects meeting critical biomass needs is necessary to minimize leakage</li> </ul>

## Eligible Land Categories

Identification of land categories suitable for afforestation and reforestation under CDM and also deciding on the type of activities that would be taken up on the land, based on its suitability as well as stakeholder choice is an important step towards operationalizing a CDM project.

The eligibility of land for CDM will primarily depend on the legal status, its status prior to 1990 and also the percent tree crown cover (<10%). Categories of land such as the wastelands, farmlands, fallow land, revenue or panchayat or gomal land and land not classified as forest prior to 1990 are likely to become eligible for project activities under CDM. The area potentially available under these different categories for CDM is given in Table 6 (b).

**Table 6 (b)**  
**Suitability of Land categories, potential area and activities under CDM.**

Eligibility	Land categories	Examples of potential activities
Eligible (if tree cover <10% and not a forest prior to 1990)	Wastelands covering several land categories	<ul style="list-style-type: none"> <li>- Mixed species plantation</li> <li>- Assisted Natural Regeneration</li> <li>- JFM type revegetation</li> <li>- Farm Forestry</li> <li>- Commercial timber plantations (if biodiversity is protected)</li> <li>- Fruit tree orchards (mango, tamarind, jackfruits, etc.)</li> </ul>
	Farmland (cropland)	
	Fallow land	
Not Eligible	Revenue/Panchayat/Gomal	<ul style="list-style-type: none"> <li>- Forest conservation</li> <li>- Protected area formation</li> <li>- Gap filling in forests</li> <li>- Natural regeneration in forest land</li> <li>- Timber treatment</li> </ul>
	Lands with tree cover >10% and classified as forests	
	Degraded forest with <10% tree cover but defined as 'forest' in the past, although no trees currently	
	Cropland	
		Agro-forestry

**Note:** Eligibility of forest land depends on the definition of "Forest" in India

All areas with tree cover >10% and defined as forests in India are not eligible for projects under CDM. Similarly, degraded forest areas, which may have tree cover of <10%, and potential to recover as forests, are ineligible due to their status or classification as 'forest' in the past. The other categories of land ineligible for CDM project activities are protected areas, reserve forests (with tree cover >10%) and any area classified as forest, even if currently degraded.

However, if the definition of "Forest" to be adopted for CDM purposes by India is changed to say, cover areas with greater than 30% tree crown, the rationale for such a change will have to be justified to the CDM Executive Board. Further, agro-forestry to be included as a CDM activity will have to meet the definition of "forest" and "afforestation".

## Potential A&R Activities

Examples of types of A&R activities likely to be eligible under CDM include; raising of mixed species plantations, natural or assisted natural regeneration of areas with potential root stock, farm forestry, orchards etc. Activities such as forest conservation, protected areas formation,

gap filling in forests and agro-forestry are not eligible, as only A&R activities are eligible under CDM. Further, A&R projects proposed should demonstrate their ability to meet national sustainable development criteria such as promotion of biodiversity, participation of local community etc.

### **Determination of Appropriate Size or Scale of the Project**

To promote regional and sub-regional distribution of A&R projects within and across countries, small-scale projects need to be promoted. For example, a project could be dispersed in several villages, say 10 to 50 villages with area of 5000 to 10000 ha. Similarly, farmers' cooperative or tree grower cooperative could operate across different blocks of farms or villages. If the projects are to be managed primarily by the Forest Department or Forest Development Agency, the extent of area covered could be anywhere from 2000 to 5000 ha. Larger areas extending from 5000 to more than 10000 ha, could be managed by industries or timber or orchard companies (refere Table - 6 (c) below). Very small projects of less than 500 ha may have high transaction cost per hectare and therefore may not be promoted. For clusters of land, land tenure will have to be addressed particularly for private areas i.e. how the sequestered will be transferred in the event of sale of property etc.

### **Institutions for Implementing CDM Projects**

The agency that will implement a CDM project will depend on the land tenure, type and scale of projects (refere Table - 6 (c) below). Federation of village level JFM committees could implement small-scale projects extending over several villages, with appropriate technical assistance from the Forest Department or any other institution with technical expertise. Similarly, if blocks of farms are involved, a farmers' cooperative or tree growers' cooperative society could be the implementing institution for the project. Larger areas to be brought under A&R projects could be managed or implemented by the state Forest Departments (refere Table - 6 (c) below). Forest Development Agency (FDA) could also implement a project. Industries could implement a project independently or jointly with the FDA, if on private lands.

**Table 6 ( c )**

**Land categories, institutions and scale of projects.**

<b>Land categories</b>	<b>Suggested institutions for implementation</b>	<b>Suggested scale</b>
Wasteland, gomal, panchayat, revenue lands	A federation of JFM committees NGO	- Cluster of JFM villages - 10 to 50 villages - 5000 to 10,000 ha
Farm land, fallow land	Farmers' cooperative Tree growers' cooperative	- Blocks of farmers - 2000 to 5000 farms
Degraded land but not 'forest'	Forest Department / Forest Development Agency	- Block of 2000 to 5000 ha
Private land or Farmland	Industry or Timber or Orchard company	- Over 5000 and < 10,000 ha

How will the clusters meet the CDM guidelines, JFM committees will not be in a position to formulate projects for approval by the CDM executive board. Role of forest department and ICFRE in the formulation and monitoring/verification is a must.

### **Participation and Involvement of Stakeholders**

Empowerment and involvement of local communities, particularly forest dependent families and women, is critical and must be demonstrated by A&R projects under CDM. This would ensure that the needs and rights of local communities are protected. Also, their stake in the project is increased, ensuring its success. Local institutions such as JFM committees, *panchayat* and other local institutions may be involved in decisions on location, species-mix, biomass needs to be met, density of planting, grazing practices, etc. to make the project participatory so the social criteria, is met. Empowerment and involvement of local communities minimizes leakage and contributes to sustaining carbon benefits.

### **Capacity Building Needs and Activities**

Capacity building and institutional strengthening are fundamental to India's success in attracting CDM investment and ensuring successful implementation of the projects. Knowledge on the climate mitigation is limited and further, CDM as a mechanism will require a period of learning for all the stakeholders involved. Capacity building is therefore imperative for different institutions; either promotional or regulatory. Capacity development needs of different institutions are presented in Table 6 (d).

The institutions requiring capacity building include; Technical Advisory Committee, State Nodal Agency, NGOs, research institutions and project proponents (such as federations of JFM committees, farmers' cooperatives, Forest Development Agency, Forest Department, NGOs and industries). Capacity building needs vary with institutions and their role in the CDM process. Capacity building needs include; awareness, training and creating access to information on definitions and modalities for A&R project, eligibility requirements for CDM projects, baseline methodologies, monitoring and evaluation methodologies, institutional requirements, socio-economic and environmental impact assessments, CDM process, negotiations, contracting, CER revenue sharing and so on. Professional NGOs, research institutions and consultancy firms could be identified for different capacity building activities. The capacity building activities include; awareness workshops, training programmes, guidelines and manuals, consultation workshops, field and laboratory visits and so on.

**Table 6 (d)**

**Capacity Building needs of different institutions**

Institutions requiring capacity building	Capacity building needs
Technical Advisory Committee	<ul style="list-style-type: none"> <li>- Criteria for evaluating CDM projects</li> <li>- Methodologies for baseline and monitoring</li> <li>- Socio-economic and environmental impacts</li> </ul>
State Nodal Agency-Chief Conservator of Forests and Forestry	<ul style="list-style-type: none"> <li>- Definitions and modalities of A&amp;R projects under CDM- Eligibility criteria for CDM projects</li> </ul>
NGOs	<ul style="list-style-type: none"> <li>- Eligibility and requirements for CDM projects</li> <li>- Institutional requirements</li> </ul>
Research Institutions (ICFRE & regional institutes)	<ul style="list-style-type: none"> <li>- Project formulation in accordance with CDM guidelines</li> <li>- Baseline methodologies</li> <li>- Monitoring and evaluation methodologies</li> <li>- Socio-economic and environmental impact assessments</li> </ul>
<ul style="list-style-type: none"> <li>- Project proponents</li> <li>- Federations of JFM committees</li> <li>- Farmers' cooperatives</li> <li>- Forest Development Agency</li> <li>- Forest Department</li> <li>- NGOs</li> <li>- Industries</li> </ul>	<ul style="list-style-type: none"> <li>- Eligibility and requirements for CDM projects</li> <li>- Baseline methodologies</li> <li>- Monitoring and evaluation methodologies</li> <li>- Institutional requirements</li> <li>- Socio-economic and environmental impact assessments</li> <li>- CDM process, negotiations, contracting, CER revenue sharing</li> </ul>

**Institutional Arrangements for Operationalizing CDM in LULUCF Sector**

The institutional setting in potential host countries will significantly affect decisions by investors on where to implement CDM projects. In the early phase of the CDM, when experience is limited and uncertainties are high, investors are particularly likely to look for countries and locations that offer simple and transparent procedures for CDM implementation, and monitoring and verification. Countries with supportive policies and a functioning institutional environment may have a decisive advantage in attracting investors. In some cases higher technical project costs could be offset by the lower implementation and transaction costs that stem from a good institutional framework and procedures. Again, the quality of institutions will be especially important in the early stages of the CDM, when there are ample abatement options available in many countries, and investors can choose their preferred location for investment. There are no quotas for countries and open competition will necessitate India to simplify the institutional arrangements.

Given the current limited levels of awareness about CDM and requirements for attracting CDM investment, it is likely that a new institutional arrangement is necessary or at least the processing and co-ordination of capacity within the existing institutions is strengthened to effectively deal with CDM. Since the CDM will involve complex investment proposal preparation, negotiations, contracting etc., dedicated institutions are needed to increase India's competitiveness in the CDM market. A defined CDM point of reference is also an indicator to investors, of the relative importance of and preparedness for CDM in India. Appropriate institutional arrangements for fast and efficient processing of CDM projects will ensure quick approval and implementation of the projects. A

possible institutional arrangement, with different roles and responsibilities for the various institutions that could be involved is given in Table-6 (e).

The Forest Department or the Forest Development Agency or Federation of JFM Committees or NGOs or industry could prepare the proposal direct project formulation by departments, federations etc. can be undertaken perhaps in the second commitment phase after capacity building. In the first instance institutes, which have undertaken pilot projects for research should be involved in the project formulation stage in consultation with the state forest department nodal representatives. This could however be done with the technical assistance of groups or institutions with relevant expertise. For instance, development of baseline, estimation of carbon credits or benefits, financial or economic analysis of projects etc. could be done by forestry research institution or consultancy firms. Similarly, technical aspects of the project such as silvicultural practices to be adopted during the implementation of the project could be developed by the Forest Departments or R&D departments of industries, while awareness and promotional activities could be taken up by the NGOs.

Promotional and capacity development activities could be given to professional NGOs and research institutions with relevant expertise.

**Table 6 (e)**

**Institutional arrangement for operationalizing CDM in India**

<b>Institution</b>	<b>Roles</b>
National CDM Authority	- Final endorsement/approval of the project
Technical Advisory Committee at MoEF and forestry research institutions	- Technical clearance of the project - Assess compatibility with sustainable development and other criteria
Nodal State Forest Department Functionary (such as Chief Conservator of Forests)	- Clearance of the project at the state level, particularly on lands proposed for A&R projects

**Designated CDM Authority:** The final responsibility of endorsement and approval of CDM projects will rest with the Designated National Authority. Thus, the regulatory functions of the project could be with the MoEF.

**Technical Advisory Committee:** A Technical Advisory Committee at the Ministry of Environment and Forests could assess compatibility of proposed projects with the sustainable development criteria as well as technical specifications of the project. The Technical advisory committee should have a notional role prior to final clearance. The detailed screening of projects should be handled by forestry research institutions and state nodal agencies.

**Nodal State Forest Department Functionary:** A Conservator of Forests (CCF) at the state level could be designated as the nodal person for ensuring land availability and suitability and to overcome legal hurdles, if any Research institutes could help in the first commitment phase.

**Operational Entity (OE):** The OE is a body that may be appointed by the national governments and is recognized by the Executive Board of CDM. The OE should ensure and demonstrate that the proposed project meets additionality requirements, the greenhouse gas benefits claimed are

real, measurable, and long-term, and a monitoring plan has been prepared. An OE engaged in the design and validation of the project may not be allowed to participate in monitoring, evaluation, reporting, verification and certification activities after the project starts. India needs to facilitate the formation of OE.

Research institutions with forestry experience should be part of the channel through which projects should be routed. This will help meet the complex procedures/ criteria outlined in CDM and screening for criteria will be streamlined.

### **Approaches to Minimize Transaction Cost**

CDM projects have unique features such as; development of baselines, demonstrating environmental additionality, consultation and involvement of different stakeholders, intensive monitoring and verification, and a long CDM negotiation process. The CDM, project development and implementation would therefore involve substantial transaction costs associated with search, approval, risk mitigation and processing. Some examples of transaction costs are as follows:

- Developing the project proposal; developing baselines, studies on soil and vegetation, household surveys, developing technical and institutional packages, consultations, workshops, satellite image assessments, GIS application etc.
- Organizing capacity needed to technically implement the project
- Capacity building activities to enable local communities and NGOs to participate in the project activities
- Periodic measurement, monitoring and verification of baseline and CDM project scenario carbon stocks and flows, socio-economic parameters etc.
- CDM processing costs, validation by Operational Entity, registration of CDM projects, negotiations with potential investors, contracting arrangements etc.

Transaction cost will play an important role in determining the viability of CDM projects for the carbon credit seeking partners or institutions in Annex-B countries as well stakeholders in host countries. The goal should be to minimize the transaction cost such that the CER values and financial benefits to local stakeholders is maximized and forestry projects are made attractive to all the stakeholders. The potential options for reducing the transaction cost are:

- Preparation of guidelines or manual by MoEF and dissemination
- Regional baseline or standardized baseline development
  - This issue is under negotiation in the Convention. On agreement at COP-9, the Executive Board of CDM is likely to provide guidelines on A&R projects. Establishment of regional baselines are likely to reduce transaction costs
- Simple approval / endorsement arrangement (single-window clearance)
  - Establishment of a fast track for clearing projects. For example, adoption of only two levels of screening by the state level nodal agency and the Technical Advisory Committee at MoEF, before submission to the Designated National Authority for endorsement and final approval
- Simple institutional arrangements at the village, project and forest division level
- Free technical advice by the Forest Department to community oriented projects
- Technical advice, training and monitoring to be promoted by the MoEF.



## Guidelines for Project Development

The Executive Board of the CDM will suggest the project proposal preparation guidelines. The potential key elements of developing a CDM project proposal for A&R activities are presented in this section.

i) **Land eligibility:** The eligibility of land, identified for CDM project activity needs to be demonstrated, particularly with respect to definitions. It is also necessary to demonstrate that there are no legal objections to the proposed project site. Finally, approval of the local stakeholders needs to be demonstrated.

ii) **Baseline:** A clear and verifiable baseline scenario giving the carbon stock changes in the “without project” situation needs to be presented using the approved methodology.

Developing baselines for existing C stocks and past trends along with addressal of leakage is a cumbersome process. EIA and SIA are also to be part of the project formulation and the onus is on project proponents to demonstrate that all these issues have been taken care of. The govt. will have to assign specific agencies that can take care of different requirements at the project formulation cases. For land use projects some back up information will be required from govt. sector even for projects on private land. Hence support mechanism has to be put in place. Kindly refer to the UNFCCC site documents for procedural details.

iii) **Project boundary:** It is necessary to clearly define the project boundary, in order to estimate the carbon benefits due to project activities and leakage, if any.

iv) **Project activities:** The proposed A&R activities along with the area to be dedicated should be described.

v) **Non-permanence and leakage of carbon stocks:** The proposed project should demonstrate how non-permanence and leakage are addressed to ensure sustained carbon benefits.

## Project Additionality

vi) **Technology Issues:** This will apply where project activities include introduction of new technologies or practices or removal of technical barriers. The additional or new practices, different from the baseline practices, should lead to increased regeneration and higher biomass growth rates. This may not be a critical issue for A&R projects in India, as capacity already exists with the Forest Department. The improved technical or silvicultural practices need to be described in the project proposal. A project for consideration under CDM, could include several soil and water conservation practices, selective retention of species, enrichment planting of quality seedlings, adoption of regulated grazing practices, adoption of sustainable fuelwood and NTFP extraction practices and other such initiatives. Sustainable extraction practices, without adversely affecting carbon stocks, will ensure sustained flow of benefits to local communities. Such technical additionalities however need incremental investment.

vii) **Institutional Issues:** This would involve developing and adopting institutional arrangements and capacity building activities to overcome institutional barriers, ultimately contributing to enhanced and sustained carbon benefits. The CDM projects could involve a number of innovative and additional institutional activities such as providing information on technical, legal, organizational, usufruct rights and sustainable biomass extraction practices, training of members of the committee in technical aspects etc. Such additional activities will also require incremental investment. The

proposal should demonstrate the institutional arrangement to ensure minimal transaction costs and maximize the flow of benefits to the participating local communities.

viii) **Financial Issues:** The CDM project may demonstrate that higher costs or risks are involved, compared to baseline activities. Innovative and effective technical practices and institutional arrangements, leading to expansion of area and enhanced biomass growth rates, need additional investment. The project should clearly propose the funding needed, sources of funding, different costs and benefits.

ix) **Sustainable Development Issues:** Sustainable development issues are most critical for A&R projects. There are clear national goals such as promotion of biodiversity and participation of local communities. Critical issues a proposal should address are as follows;

- Biodiversity conservation: Clear demonstration that the proposed Afforestation and Reforestation project leads to promotion of biodiversity
- Land reclamation or watershed protection: Regeneration of vegetative cover through A&R activities on degraded non-forest or pastureland will lead to soil and water conservation. A&R activities are likely to lead to protection of watersheds with appropriate soil and water conservation practices
- Participatory approach: Empowerment and involvement of local communities, particularly, women is critical and must be demonstrated by the A&R projects
- Meeting local biomass needs: It is important to incorporate into the project design, mechanisms to meet local needs and minimize leakage.

x) **Demonstration of Environmental Additionality:** The proposal should develop and present a baseline using the approved methodologies. Additionality of carbon benefits should be presented in the proposal using the approved methodology.

xi) **Monitoring and Verification Plan:** The project proposal should include a detailed measurement, monitoring and verification strategy to assess;

- carbon stock changes
- biodiversity conservation
- socio-economic and environmental impacts
- leakage of carbon benefits

### **Joint Forest Management as a Potential CDM Activity**

India has vast degraded forest and pasture lands, whose estimates vary from 66 to over 100 Mha. To involve local communities in forest protection and regeneration for ecological and socio-economic objectives, India has adopted a participatory approach, through the Joint Forest Management (JFM) programme. According to latest estimates over 63,000 VFCs/FPCs are managing nearly 14 Mha of forest or regenerating forests. The physical achievement, though significant, is small compared to the land area requiring protection and revegetation, estimated to be in the range of 66 to over 100 Mha and a majority of 0.5 million villages needing a village level institution for managing the forest, pasture and other vegetation resources around them. Clean Development Mechanism of the Kyoto Protocol provides an opportunity to promote JFM, to increase carbon stock in vegetation and soil, to build capacity and enable communities to participate effectively in forest protection and management and increase income or flow of benefits, creating long-term stake to the local communities.

JFM could potentially qualify largely as a reforestation project. A JFM project would qualify the sustainable development criteria as it promotes biodiversity, protects watersheds, enhances availability of fuelwood, timber and non-timber products to local communities. However, there are a number of technical, institutional and financial barriers to increasing the spread of JFM, improved biomass growth rate in regenerating lands and effective participation of local communities. Further, JFM in India is to a significant extent, driven by external assistance. The national and state level funding for JFM is very limited, particularly for overcoming institutional and technical barriers to the spread of JFM. CDM provides an opportunity to overcome these barriers and effectively spread JFM in India. It is necessary to ensure that the land areas selected satisfy the definitions of "forest", "afforestation" and "reforestation".

## **An Agenda for Action**

The Government of India, particularly the Planning Commission and the Ministry of Environment and Forests will have to play a pro-active role in promoting CDM projects by creating an enabling environment, a simple and transparent institutional structure, and approval process. Through proactive planning and appropriate guidelines, the Ministry of Environment and Forests should ensure that CDM projects contribute to sustainable development and reinforce national sovereignty.

Consideration of sustainable development benefits should become the guiding factor and an integral part of project selection and approval process. The government should actively put in place policies and institutions, aimed at reducing transaction costs and attracting investment. A key step would be to promote partnerships between government and private organizations, NGOs, community institutions, industries etc., so a "one-stop shop" for investors is created, making available rules, regulations and recommendations for CDM projects (Arm and Mundy, 2000).

The key actions to be taken by the Government of India, given the global competition and limited CER market are;

- Establishment of Designated National CDM Authority (DNA)
- Appointment of Operating Entity
- Formation of a Technical Advisory Group at the Ministry of Environment and Forests
- Nomination of State level "Project-Clearing House" with the Chief Conservator of Forests as the nodal officer to promote CDM projects
- Development of sustainable development or national eligibility criteria
- Development of clear guidelines on what land categories are eligible, the scale of projects, which institutions will implement the different types of projects etc.
- Development of nationally approved methods for development of baselines, measurement and monitoring, etc. consistent with decisions of CDM Executive Board
- Early preparation and dissemination of criteria and guidelines for A&R projects through
  - Workshops involving different stakeholders
  - Publication of booklets, guidelines and information dissemination through web sites
- Identification of capacity building needs and implementation of capacity building activities
- Identification of resource centers or institutions for training, capacity building and monitoring.

It is important to note that most of these steps are needed for operationalizing CDM in energy sector also.

### **Pilot Projects:**

To learn and demonstrate, a few pilot projects, even on a very small scale could be developed, to explore and compare institutional arrangements, technical approaches to project issues like baseline setting, and the selection and implementation of sustainable development criteria in a real-world setting. Many countries have gained their principal expertise in project activities through a few such projects. Ideally such pilots would be:

- representative of major potential CDM activities in India;
- diverse in the design and institutional arrangements (eg, perhaps 1-2 JFM pilots, 1-2 private sector pilots, in different institutional settings);
- in locations already well-studied, so basic socio-economic and biophysical data are already available, to speed the lessons and learning process; and
- supported by a local or regional research institution, forest agency, and NGO or community group. These pilots could be the petri dishes for experimenting with project activities that could help guide the potential scaling up from small to significant new mechanisms for sustainable development.

Many developing countries have already taken pro-active measures to attract CDM projects in forestry, energy and agricultural sectors. The Government of India also should initiate pro-active regulatory as well as promotional measures to attract CDM projects in the forestry sector. Intensively planned, implemented and monitored CDM projects in the forestry sector are likely to provide maximum socio-economic and environmental benefits. India has vast degraded or wasteland available for forestry projects, which can halt degradation, create rural employment, conserve biodiversity and ultimately enhance the livelihoods of rural and forest dependent communities.

CDM is a 'win-win' strategic mechanism, providing local benefits (to communities) as well as global benefits, contributing to the stabilization of CO<sub>2</sub> concentration in the atmosphere, to address Article 2 of the UNFCCC. The forest dwellers and rural communities will be rewarded for providing global environmental benefits. A large number of CDM projects, implemented in different regions of India, incorporating innovative technical, institutional and financial interventions, could lead to a large positive impact on programmes aimed at forest conservation and regeneration, reclamation of degraded land and socio-economic development of rural communities, in a participatory way. However, the land area that could potentially be brought under CDM projects is thus likely to be large, particularly non-forest and wasteland categories, but the demand is likely to be small.

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# Annexures

No.12074/1-1(13)/2002-E&F  
 Government of India  
**Planning Commission**  
 (Environment & Forests Division)

Yojana Bhavan, Sansad Marg,  
 New Delhi, the 11<sup>th</sup> March, 2003

## ORDER

**Subject: Constitution of Working Group for formulating Action Plan for Capacity Building in Operationalisation of Clean Development Mechanism (CDM) in India.**

Following the Brain Storming Session for the Operationalisation of Clean Development Mechanism held in the Office of PMO on 19-2-2003, a Working Group has been constituted for Formulation of Action Plan for Capacity Building for the Clean Development Mechanism (CDM) in India under the Chairmanship of Dr. R. Mandal, Adviser, Planning Commission. You have been nominated as a Member of the Working Group.

**The Composition of the Working Group would be as under :**

1.	Adviser (E&F), Planning Commission Sansad Marg, New Delhi-110001.	<b>Chairperson</b>
2.	Shri A.K. Mangotra, Joint Secretary, President's Secretariat, New Delhi-110001.	Member
3.	Shri Chhatar Singh, Joint Secretary, Prime Minister's Office, New Delhi-110001.	Member
4.	Shri C. Viswanath, Joint Secretary, MoEF, CGO Complex, Lodhi Road, New Delhi-110003	Member
5.	Shri A.K. Agrawal, Joint Secretary, Ministry of Agriculture, Krishi Bhavan, New Delhi-110001	Member
6.	Shri Sunil Khatri, Joint Secretary, Min. of Non-Conventional Energy Sources, CGO Complex, Lodhi Road, New Delhi-110003	Member
7.	Shri Rajamani, Joint Secretary, Min. of Urban Development, Nirman Bhavan, New Delhi-110001	Member
8.	Ms. Lalitha Kumar, Joint Secretary, Deptt. of Land Resources, (DoRL) Min. of Rural Development, Nirman Bhavan, New Delhi-110001	Member
9.	Shri S.K. Chaudhuri, Commissioner, (Policy Planning), Ministry of Water Resources, Shram Shakti Bhavan, New Delhi-110001	Member
10.	Dr. B. Sengupta, Member-Secretary, Central Pollution Control Board, (CPCB) East Arjun Nagar, Delhi-110032	Member

11.	Shri S.K. Srivastava, Addl. Director General, Indian Metrological Department (IMD), Lodhi Road, New Delhi- 110001	Member
12.	Dr. R.K. Pachauri, Chairman, IPCC, and Director General, TERI or His representative (Ambassador C. Dasgupta) India Hebitate Centre, Lodhi Road, New Delhi	Member
13.	Dr. G.B. Pant. Director General. IITM Indian Institute of Tropical Metrology, Pune, Maharastra.	Member
14.	Prof. P.R. Shukla, Professor Indian Institute of Management (IIM), Vastrapur, Ahmadabad-380015	Member
15.	Dr. S.K. Dash, Professor, Centre for Atmospheric Sciences (CAS) Indian Institute of Technology, Hauz Khas, New Delhi-110016	Member
16.	Prof. N.H. Ravindranath, Centre for ASTRA & Centre for Ecological Sciences, Indian Institute of Science, Bangalore-560012,	Member
17.	Prof. A.P. Mitra, Honorary Scientist of Eminence, National Physical Laboratory (NPL), New Delhi-110012.	Member
18.	Dr. Dinesh Mohan Prof. Transport Engineering WHO Collaborative Centre, Indian Institute of Technology, (IIT) Hauz Khas, Delhi-110016	Member
19.	Shri Pradeep Mallik, Chairman, National Committee on Environment, CII, 23, Institutional Area, Lodhi Road, New Delhi- 110003	Member
20.	Shri Anoop Seth, CFO, Infrastructure Development Finance Company Ltd. (IDFC), Mumbai- 400020	Member
21.	Shri Debasish Majumdar, Director (Technical), IREDA, Core 4 'A', 1 <sup>st</sup> Floor, Indian Habitat Centre, New Delhi- 110003	Member
22.	Shri Shashi Shekar, Director, Bureau of Energy Efficiency Ministry of Power. Shram Shakti Bhavan, New Delhi- 110001	Member
23.	Shri S.C.K. Patne, Director (Technical) & Chairman, IISCO Steel Authority of India Ltd., (SAIL) Ispat Bhavan, Lodhi Road, New Delhi- 110003	Member
24.	Shri Kalipada Chatterjee, Head, (CCC) Global Environment Systems Groups Development Alternatives, B-32, Tara Crescent, Qutab Institutional Area, New Delhi-110016,	Member
25.	Shri Srikanta K. Panigrahi, Consultant (E & F), Planning Commission, Room 317, Yojana Bhawan, Sansad Marg, New Delhi- 110001	<b>Member-Secretary</b>

## Co-opted Members

1. Shri Dipankar Ghosh,  
Managing Consultant,  
Ernst & Young Pvt. Ltd.,  
Environment & Sustainability Services  
Ernst & Young Tower, B-26, Outab Institutional Area,  
New Delhi- 110016, INDIA
2. Shri Vinay Deodhar  
Project Finance Specialist  
Global Environment Team  
The Louis Berger Group, Inc.  
C-6/7, Safdarjung Development Area  
New Delhi –110016. INDIA

## 2. The Terms of Reference of the Working Group would be:

- i) Formulation of an Action Plan for Capacity Building in CDM encompassing the major areas of Green House Gas (GHG) emission and carbon sequestration.
  - ii) Recommend steps to be followed for preparation of CDM Project Design Document (PDD) for necessary action by the Designated National Authority (DNA).
  - iii) Recommend to establish a Core Group to examine proposals pertaining to CDM.
  - iv) Recommend promotional measures for building awareness amongst the investors both from domestic and foreign sources for mutual cooperation.
  - v) Recommend measures for reduction of transaction cost of CDM projects, and
  - vi) Recommend mechanism to operationalise the CDM in India.
3. The Working Group may co-opt other Members and constitute Sub-Groups on specific themes.
  4. The Working Group would submit its report within three months from the date of notification.

**T. R. Meena**  
Director (Admn.)

## To

*Chairman of the Working Group*  
*Member-Secretary of the Working Group*  
*All Members of the Working Group*

## Copy to :

1. PS to Deputy Chairman, Planning Commission
2. PS to MOS (Planning)
3. PS to Members, Planning Commission
4. Sr. PPS to Secretary, Planning Commission
5. PPS to Pr. Adviser (E&F)
6. Director (Admn.), Planning Commission



## **Article-12 of the Kyoto Protocol**

1. A clean development mechanism is hereby defined.
2. The purpose of the clean development mechanism shall be to assist Parties not included in Annex 1 in achieving sustainable development and in contributing to the ultimate objective of the convention, and to assist Parties included in Annex 1 in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.
3. Under the clean development mechanism :
  - (a) Parties not included in Annex I will benefit from project activities resulting in certified emission reductions; and
  - (b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the conference of the Parties serving as the meeting of the Parties to this Protocol.
4. The clean development mechanism shall be subject to the authority and guidance of the conference of the Parties serving as the meeting of the parties to this protocol and be supervised by an executive board of the clean development mechanism.
5. Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the conference of the parties serving as the meeting of the parties to this protocol, on the basis of :
  - (a) Voluntary participation approved by each Party involved ;
  - (b) Real, measurable, and long-term benefits related to the mitigation of climate change; and
  - (c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.
6. The clean development mechanism shall assist in arranging funding of certified project activities as necessary.
7. The Conference of the Parties serving as the meeting of the parties of this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.
8. The Conference of the Parties serving as the meeting of the parties to this protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.
9. Participation under the clean development mechanism, including in activities mentioned in paragraph 3 (a) above and in the acquisition of certified emission reductions, may involve private and/or public entities, and is to be subject to whatever guidance may be provided by the executive board of the clean development mechanism.
10. Certified emission reductions obtained during the period from the year 2000 up to the beginning of the first commitment period can be used to assist in achieving compliance in the first commitment period.

\* \* \* \* \*

## **CDM Modalities & Procedures**

The following rules and modalities governing the implementation of the CDM were adopted as part of the Marrakech Accord at the seventh Conference of Parties to the UNFCCC.

- Participation by all parties involved must be voluntary. Both the host and investor countries should have ratified the Kyoto Protocol, and the host country must establish a National Authority for CDM.
- Project activities starting after January 1, 2000 are eligible to earn CERS.
- Projects should lead to “real, measurable, and long-term” GHG reduction, which are additional to any that would occur in the absence of the CDM project. A project is considered additional if the project emissions are lower than the emissions of a reasonable reference case, identified as the baseline.
- Public funding from Annex 1 countries for CDM projects should be additional to official development assistance and financial obligations under the UNFCCC/Kyoto Protocol.
- CDM project activities should lead to the transfer of environmentally safe and sound technology and know-how. However, it is the host country’s prerogative to ascertain whether a proposed CDM project assists it in achieving its sustainable development goals.
- Emission reductions resulting from CDM projects have to be certified by independent third parties known as designate operational entitles.
- Small-scale project categories have been defined which are eligible for fast-track procedures (including simplified baselines and monitoring requirements)
  - Renewable energy projects with output capacity up to 15 MW
  - Energy efficiency improvement projects, which reduce energy consumption on the supply and/or, demand side by up to 15 GWh annually
  - Other project activities that both reduce emissions by sources and directly emit less than 15 thousand tonnes Co2 equivalent annually
- In the forestry sector, afforestation and reforestation projects are included under CDM, but limited use of CERs from such projects is allowed in the first commitment period.
- Nuclear power projects are not allowed.

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**Project Idea Note**

**Name of Project**  
**Date of Submission**

## **Project idea Note or PIN**

### **Description of size and quality expected of a PIN**

Basically a PIN will consist of approximately 5 pages providing indicative information on:

- the type and size of the project
- its location
- the anticipated total amount of Green house Gas (GHG) reduction compared to the “business-as-usual” scenario (which will be elaborated in the baseline later on at Project Design Document [PDD] level)
- the suggested crediting life time
- the suggested Certified Emission Reductions (CER) price in US\$/ton CO<sub>2</sub> eq reduced
- the financial structuring (indicating which parties are expected to provide the project’s financing)
- the project’s other socio-economic or environmental effects/benefits

**While every effort should be made to provide as complete and extensive information as possible, it is recognised that full information on every item listed in the template will not be available at all times for every project.**

Teleplate for PINs

***PROJECT IDEA NOTE******A. Project description, type, location and schedule******Name of the Project :*** \_\_\_\_\_***Technical Summary of the project    Date Submitted :*** \_\_\_\_\_

<b>Objective of the project</b>	<i>Describe in less than 5 lines</i>
<b>Project description and proposed activities (Including a technical description of the project)</b>	<i>About ½ page</i>
<b>Technology to be employed</b>	Describe in less than 5 lines. Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed
<b>Project developer</b>	
Name of the project developer	-----
Organizational category	Government/Governmental agency/Municipality/ Private company/Non Governmental Organization <i>(mention what is applicable)</i>
Other function(s) of the project Developer in the project	Sponsor/Operational entity/Intermediary/ Technical advisor/ <i>(emanation what is applicable)</i>
Summary of the relevant Experience of the project developer	Desirable in less than 5 lines
Address	Address, P.O. Box, City, Country
Contact person	Name of the Project Development Manager
Telephone/Fax	-----
E-mail and web address, if any	-----
<b>Project sponsors</b>	
<i>(List and provide the following information for all project sponsors)</i>	
Name of the project sponsor	-----
Organization category	Government/Government agency/Municipality/Private company/Non Governmental Organization/ <i>(mention what is applicable)</i>
Address (include web address, if any)	Address, PO Box, City, Country
Main activities	Not more than 5 lines
Summary of the financials	<i>Summarize the financials (Total assets, revenues, profit, etc.) in less than 5 lines.</i>

<b>Type of the project</b>	
Greenhouse gases targeted	Co <sub>2</sub> /CH <sub>4</sub> /N <sub>2</sub> O/HFCs/PCFs/SF <sub>6</sub> (mention what is applicable)
Type of activities	Abatement/CO <sub>2</sub> Sequestration
Field of activities	
a. Energy supply	Renewable energy, excluding biomass/biomass/cogeneration/ improving energy efficiency by replacing existing equipment/minimization of transport and distribution/fuel switch (e.g., switch coal to biomass) <i>(mention what is applicable)</i>
b. Energy demand	Replacement of existing "household equipment"/ Improvement of energy efficiency of existing production equipment <i>(mention what is applicable)</i>
c. Transport	More efficient engines for transport/Modal shift/fuel switch (e.g. public transport buses fuelled by natural gas) <i>(mention what is applicable)</i>
d. Waste management	Capture of landfill methane emissions / utilization of waste and wastewater emissions <i>(mention what is applicable)</i>
e. Land Use change and forestry	Afforestation/reforestation/forest management/wetlands management/watershed management/improved agriculture/land degradation prevention <i>(mention what is applicable)</i>
<b>Location of the project</b>	
Region	East Asia & Pacific/South Asia/Central Asia/Middle East/ North Africa/Subsaharan Africa/Southern Africa/ Central America & the Caribbean/South America/ Central & Eastern Europe <i>(mention what is applicable)</i>
Country	
City	
Brief description of the location the plant	<i>No more than 3-5 lines</i>
<b>Expected schedule</b>	
Earliest project start date	Year in which the plant will be operational
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments : xx months Time required for legal matters : xx months Time required for negotiations: xx months Time required for construction : xx months
Expected first year of CERdelivery	year
Project lifetime	Number of years
Current status or Phase of the project	Identification and pre-selection phase/opportunity study finished/pre-feasibility study finished/feasibility study finished/ negotiations phase/contracting phase/etc. <i>(mention what is applicable and indicate the documentation (e.g., the feasibility study) available)</i>
Current status of the acceptance of the Host Country	Letter of No Objection is available/letter of Endorsement is under discussion or available/Letter of Approval is under discussion or available/Host Country Agreement is under discussion of signed /Memorandum of Understanding is under discussion or available/ etc. <i>(mention what is applicable)</i>

<b>The position of the Host Country with regard to the Kyoto Protocol</b>	<p>The Host Country</p> <ol style="list-style-type: none"> <li>Signed, signed and ratified, accepted, approved or acceded to the Kyoto Protocol or</li> <li>Signed and has demonstrated a clear interest in becoming a party in due time (e.g., countries which have already started or are on the verge of starting the national ratification, acceptance or approval process) or</li> <li>has already started or is on the verge of starting of the national accession process</li> <li>Other.</li> <li><i>(mention what is applicable)</i></li> </ol>
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**B. Expected environmental and social benefits**

<b>Estimate of greenhouse Gases added/ CO<sub>2</sub> Sequestered (in metric tons of CO<sub>2</sub> – equivalent</b>	<p>Annual :</p> <p>Up to and including 2012 : xx tCO<sub>2</sub>-equivalent</p> <p>Up to period of 10 years : xx tCO<sub>2</sub>-equivalent</p> <p>Up to period of 7 years : xx tCO<sub>2</sub>-equivalent</p> <p>Up to period of 14 years : xx tCO<sub>2</sub>-equivalent</p>
<b>Baseline scenario</b>	<p>CDM projects must result in GHG emissions being lower than “business-as-usual” In the host Country. At the PIN stage questions to be answered are at least:</p> <ul style="list-style-type: none"> <li>What is the proposed Clean Development Mechanism (CDM) Project displacing/</li> <li>What would the future look like without the proposed CDM project?</li> <li>What would the estimated total GHG reduction be?</li> </ul> <p><i>(About ¼ - ½ page)</i></p>
<b>Specific global &amp; local environmental benefits</b>	<p><i>(In total about ¼ page)</i></p>
Which guidelines will be applied?	Name and, if possible, the web-site location
Location benefits	
Global benefits	
<b>Socio-economic aspects</b> What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?	<p><i>(In total about ¼ page)</i></p>
Which guidelines will be applied?	Name and, if possible, the web-site location
What are the possible direct efforts (e.g., employment creation, capital required, and foreign exchange effects)?	
What are the possible other effects? For example: <ul style="list-style-type: none"> <li>Training/educational associated with the introduction of new processes, technologies and products and/or</li> <li>The effects of a project on other industries</li> </ul>	

<b>Environmental strategy/Priorities of the Host Country</b>	A brief description of the relationship of the consistency of the project with environmental strategy and priorities of the Host Country (Not more than ¼ page)
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**C. Finance**

<b>Total project cost estimate</b>	
Development costs	xx US \$ million
Installed costs	xx US \$ million
Other costs	xx US \$ million
Total projects costs	xx US \$ million
<b>Sources of finance to be sought or already identified</b>	
Equity	Name of the organization and finance (in xx US \$ million)
Debt – Long-term	Name of the organization and finance (in xx US \$ million)
Debt – Short term	Name of the organization and finance (in xx US \$ million)
Not identified	xx US \$ million
CDM contribution sought	xx US \$ million
CDM contribution in advance payments (The quantum of upfront payment will depend on the assessed risk projects by the World Bank, and will not exceed 25% of the total ER value purchased by the World Bank for the project. Any upfront payment will be discounted by a factor considered appropriate by the World bank for the project.)	xx US \$ million and a brief clarification ( <i>not more than 5 liens</i> )
<b>Sources of carbon finance</b>	Name of carbon financiers other than PCF that you are contacting (if any)
<b>Indicative CER Price (Subject to negotiation and financial due diligence)</b>	
<b>Total Emission Reduction Purchase Agreement (ERPA) Value</b>	
A period until 2012 (end of the first budget period)	xx US \$
A period of 10 years	xx US \$
A period of 7 years	xx US \$
A period of 14 years (2* 7 years)	xx US \$
If financial analysis is available for the proposed CDM activity, provide the forecast financial internal rate of return for the project with and without the revenues. Provide the financial rate of return at the expected CER price above and US \$ 3/ tCO <sub>2</sub> e. Do Not assume any up-front payment from the PCF in the financial analysis that includes PCF revenue stream.  Please provide a spreadsheet to support these calculations.	

CLEAN DEVELOPMENT MECHANISM  
PROJECT DESIGN DOCUMENT (CDM - PDD)  
Version 01 (in effect as of: 29 August 2002)

### Introductory Note

1. This document contains the clean development mechanism project design document (CDMPDD). It elaborates on the outline of information in Appendix B "Project Design Document" to the Modalities and Procedures (decision 17/CP.7 contained in document FCCC/CP/2001/13/Add.2).
2. The CDM-PDD can be obtained electronically through the UNFCCC CDM web site (<http://unfccc.int/cdm>), by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in printed from the UNFCCC secretariat (Fax: +49-228-8151999).
3. *Explanations* for project participants are in italicized font.
4. The Executive Board may revise the project design document (CDM-PDD), if necessary. Revisions shall not affect CDM project activities validated at and prior to the date at which a revised version of the CDMPDD enters into effect. Versions of the CDMPDD shall be consecutively numbered and dated.
5. In accordance with the CDM M&P, the working language of the Board is English. The CDMPDD shall therefore be submitted to the Executive Board filled in English. The CDMPDD format will be available on the UNFCCC CDM web site in all six official languages of the United Nations.
6. The Executive Board recommends to the COP (COP/MOP) to determine, in the context of its decision on modalities and procedures for the inclusion of afforestation and reforestation activities in the CDM (see also paragraph 8-11 of decision 17/CP.7), whether the CDM-PDD shall be applicable to this type of activities or whether modifications are required.
7. A glossary of terms may be found on the UNFCCC CDM web site or from the UNFCCC secretariat by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in print (Fax: +49-228-815 1999).



## CONTENTS

- A. General description of project activity
- B. Baseline methodology
- C. Duration of the project activity / Crediting period
- D. Monitoring methodology and plan
- E. Calculations of GHG emissions by sources
- F. Environmental impacts
- G. Stakeholders comments

### **Annexes**

- Annex 1: Information on participants in the project activity
- Annex 2: Information regarding public funding
- Annex 3: New baseline methodology
- Annex 4: New monitoring methodology
- Annex 5: Table: Baseline data

## **A. General description of project activity**

### **A.1 Title of the project activity:**

### **A.2. Description of the project activity:**

*(Please include in the description*

*- the purpose of the project activity*

*- the view of the project participants of the contribution of the project activity to sustainable development (max. one page).*

### **A.3. Project participants:**

*(Please list Party(ies) and private and/or public entities involved in the project activity and provide contact information in Annex 1.)*

*(Please indicate at least one of the above as the contact for the CDM project activity.)*

### **A.4. Technical description of the project activity:**

#### **A.4.1. Location of the project activity:**

**A.4.1.1** Host country Party(ies):

**A.4.1.2** Region/State/Province etc.:

**A.4.1.3** City/Town/Community etc:

**A.4.1.4** Detail on physical location, including information allowing the unique identification of this project activity *(max one page)*:

#### **A.4.2. Category(ies) of project activity**

*(Using the list of categories of project activities and of registered CDM project activities by category*

*available on the UNFCCC CDM web site, please specify the category(ies) of project activities into which this project activity falls. If no suitable category(ies) of project activities can be identified, please suggest a new category(ies) descriptor and its definition, being guided by relevant information on the UNFCCC CDM web site.)*

#### **A.4.3. Technology to be employed by the project activity:**

*(This section should include a description on how environmentally safe and sound technology and know how to be used is transferred to the host Party, if any.)*

**A.4.4. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed CDM project activity, including why the emission reductions would not occur in the absence of the proposed project activity, taking into account national and/or sectoral policies and circumstances:**

*(Please explain briefly how anthropogenic greenhouse gas (GHG) emission reductions are to be achieved (detail to be provided in section B.) and provide the total estimate of anticipated reductions in tonnes of CO<sub>2</sub> equivalent as determined in section E. below.)*

#### **A.4.5. Public funding of the project activity:**

*(In case public funding from Parties included in Annex 1 is involved, please provide in Annex 2 information on sources of public funding for the project activity, including an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties.)*

## **B. Baseline methodology**

### **B.1 Title and reference of the methodology applied to the project activity:**

*(Please refer to the UNFCCC CDM web site for the title and reference list as well as the details of approved methodologies. If a new baseline methodology is proposed, please fill out Annex 3. Please note that the table "Baseline data" contained in Annex 5 is to be prepared parallel to completing the remainder of this section.)*

### **B.2. Justification of the choice of the methodology and why it is applicable to the project activity**

### **B.3. Description of how the methodology is applied in the context of the project activity:**

### **B.4. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (*i.e. explanation of how and why this project is additional and therefore not the baseline scenario*)**

### **B.5. Description of how the definition of the project boundary related to the baseline methodology is applied to the project activity:**

### **B.6. Details of baseline development**

**B.6.1** Date of completing the final draft of this baseline section (*DD/MM/YYYY*):

**B.6.2** Name of person/entity determining the baseline:

*(Please provide contact information and indicate if the person/entity is also a project participant listed in Annex-1.)*

## C. Duration of the project activity/Crediting period

### C.1 Duration of the project activity:

#### C.1.1. Starting date of the project activity:

*(For a definition by the Executive Board of the term "starting date", please refer to UNFCCC CDM web site. Any such guidance shall be incorporated in subsequent versions of the CDM PDD. Pending guidance, please indicate how the "starting date" has been defined and applied in the context of this project activity.)*

**C.1.2.** Expected operational lifetime of the project activity: *(in years and months, e.g. two years and four months would be shown as: 2y-4m)*

### C.2 Choice of the crediting period and related information: *(Please underline the appropriate option (C.2.1 or C.2.2.) and fill accordingly)*

*(Note that the crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, the starting date of the crediting period can be prior to the date of registration of the project activity as provided for in paras. 12 and 13 of decision 17/CP.7 and through any guidance by the Executive Board, available on the UNFCCC CDM web site)*

#### **C.2.1. Renewable crediting period (at most seven (7) years per period)**

**C.2.1.1.** Starting date of the first crediting period (DD/MM/YYYY):

**C.2.1.2.** Length of the first crediting period *(in years and months, e.g. two years and four months would be shown as: 2y-4m):*

#### **C.2.2. Fixed crediting period (at most ten (10) years):**

**C.2.2.1.** Starting date (DD/MM/YYYY):

**C.2.2.2.** Length (max 10 years): *(in years and months, e.g. two years and four months would be shown as: 2y-4m)*

## **D. Monitoring methodology and plan**

*(The monitoring plan needs to provide detailed information related to the collection and archiving of all relevant data needed to*

- estimate or measure emissions occurring within the project boundary;*
- determine the baseline; and;*
- identify increased emissions outside the project boundary.*

*The monitoring plan should reflect good monitoring practice appropriate to the type of project activity. Project participants shall implement the registered monitoring plan and provide data, in accordance with the plan, through their monitoring report.*

*Operational entities will verify that the monitoring methodology and plan have been implemented correctly and check the information in accordance with the provisions on verification. This section shall provide a detailed description of the monitoring plan, including an identification of the data and its quality with regard to accuracy, comparability, completeness and validity, taking into consideration any guidance contained in the methodology.*

*Please note that data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whatever occurs later.*

### **D.1. Name and reference of approved methodology applied to the project activity:**

*(Please refer to the UNFCCC CDM web site for the name and reference as well as details of approved methodologies. If a new methodology is proposed, please fill out Annex-4.)*

*(If a national or international monitoring standard has to be applied to monitor certain aspects of the project activity, please identify this standard and provide a reference to the source where a detailed description of the standard can be found.)*

### **D.2. Justification of the choice of the methodology and why it is applicable to the project activity:**

**D.3. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived:**

(Please add rows to the table below, as needed)

ID number (Please use numbers to ease cross-referencing to table D.6)	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored (electronic/paper)	How will the data be archived?	For how long is archived data to be kept?	Comment

**D.4. Potential sources of emissions which are significant and reasonably attributable to the project activity, but which are not included in the project boundary, and identification if and how data will be collected and archived on these emission sources.**

(Please add rows to the table below, as needed)

ID number (Please use numbers to ease cross-referencing to table D.6)	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored (electronic/paper)	How will the data be archived?	For how long is archived data to be kept?	Comment

**D.5. Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHG within the project boundary and identification if and how such data will be collected and archived**

(Depending on the methodology used to determine the baseline this table may need to be filled. Please add rows to the table below, as needed.)

ID number (Please use numbers to ease cross-referencing to table D.6)	Data type	Data variable	Data unit	Will data be collected on this item? (If no, explain).	How is data archived? (electronic/paper)	For how long is data archived to be kept?	Comment

**D.6. Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored.**

(data items in tables contained in section D.3., D.4. and D.5 above, as applicable)

Data (Indicate table and ID number e.g. D.4-1; D.4-2.)	Uncertainty level of data (High/Medium/Low)	Are QA/QC procedures planned for these data?	Outline explanation why QA/QC procedures are or are not being planned.

**D.7 Name of person/entity determining the monitoring methodology:**

(Please provide contact information and indicate if the person/entity is also a project participant listed in Annex 1 of this document.)



## **E. Calculation of GHG emissions by sources**

- E.1** Description of formulae used to estimate anthropogenic emissions by sources of greenhouse gases of the project activity within the project boundary: *(for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)*
- E.2** Description of formulae used to estimate leakage, defined as: the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the project boundary, and that is measurable and attributable to the project activity: *(for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)*
- E.3** The sum of E.1 and E.2 representing the project activity emissions:
- E.4** Description of formulae used to estimate the anthropogenic emissions by sources of greenhouse gases of the baseline: *(for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)*
- E.5** Difference between E.4 and E.3 representing the emission reductions of the project activity:
- E.6** Table providing values obtained when applying formulae above:

## **F. Environmental impacts**

- F.1.** Documentation on the analysis of the environmental impacts, including transboundary impacts *(Please attach the documentation to the CDM/PDD.)*
- F.2.** If impacts are considered significant by the project participants or the host Party: *please provide conclusions and all references to support documentation of an environmental impact assessment that has been undertaken in accordance with the procedures as required by the host Party.*

## **G. Stakeholders comments**

- G.1.** Brief description of the process on how comments by local stakeholders have been invited and compiled:
- G.2.** Summary of the comments received:
- G.3.** Report on how due account was taken of any comments received:

## Annex-I

### CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

*(Please copy and paste table as needed)*

Organization:
Street/P.O.Box:
Building:
City:
State/Region:
Postfix/ZIP:
Country:
Telephone:
FAX:
E-Mail:
URL:
<b>Represented by:</b>
Title:
Salutation:
Last Name:
Middle Name:
First Name:
Department:
Mobile:
Direct FAX:
Direct tel:
Personal E-Mail:

## Annex-2

### INFORMATION REGARDING PUBLIC FUNDING

## Annex-3

### NEW BASELINE METHODOLOGY

*(The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases 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. The general characteristics of a baseline are contained in para. 45 of the CDM M&P.*

*For guidance on aspects to be covered in the description of a new methodology, please refer to the UNFCCC CDM web site.*

*Please note that the table "Baseline data" contained in Annex 5 is to be prepared parallel to completing the remainder of this section.)*

**1. Title of the proposed methodology:**

**2. Description of the methodology:**

**2.1. General approach** *(Please check the appropriate option(s))*

- ? Existing actual or historical emissions, as applicable;
- ? Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment;
- ? 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.

**2.2. Overall description** *(other characteristics of the approach):*

**3. Key parameters/assumptions (including emission factors and activity levels), and data sources considered and used:**

**4. Definition of the project boundary related to the baseline methodology:**

*(Please describe and justify the project boundary bearing in mind that it shall encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the project activity. Please describe and justify which gases and sources included in Annex A of the Kyoto Protocol are included in the boundary and outside the boundary.)*

**5. Assessment of uncertainties:**

*(Please indicate uncertainty factors and how those uncertainties are to be addressed)*

**6. Description of how the baseline methodology addresses the calculation of baseline emissions and the determination of project additionality:**

*(Formulae and algorithms used in section E)*

**7. Description of how the baseline methodology addresses any potential leakage of the project activity:**

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

*(Formulae and algorithms used in section E.5)*

**8. Criteria used in developing the proposed baseline methodology, including an explanation of how the baseline methodology was developed in a transparent and conservative manner:**

**9. Assessment of strengths and weaknesses of the baseline methodology:**

**10. Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account:**

## ANNEX-4

### NEW MONITORING METHODOLOGY

#### Proposed new monitoring methodology

(Please provide a detailed description of the monitoring plan, including the identification of data and its quality with regard to accuracy, comparability, completeness and validity)

**1. Brief description of new methodology**

(Please outline the main points and give a reference to a detailed description of the monitoring methodology).

**2. Data to be collected or used in order to monitor emissions from the project activity, and how this data will be archived**

(Please add rows to the table below, as needed)

ID number (Please use numbers to ease cross-referencing to table 5)	Data type	Data variable	Data unit	Will data be collected on this item? (if no, explain).	How is data archived? (electronic/paper)	For how long is data archived to be kept?	Comment

3. **Potential sources of emissions which are significant and reasonably attributable to the project activity, but which are not included in the project boundary, and identification if and how data will be collected and archived on these emission sources**

(Please add rows to the table below, as needed.)

ID number (Please use numbers to ease cross-referencing to table 5)	Data type	Data variable	Data unit	Will data be collected on this item? (If no, explain).	How is data archived? (electronic/paper)	For how long is data archived to be kept?	Comment

4. **Assumptions used in elaborating the new methodology:**

(Please list information used in the calculation of emissions which is not measured or calculated, e.g. use of any default emission factors)

5. **Please indicate whether quality control (QC) and quality assurance (QA) procedures are being undertaken for the items monitored.** (see tables in sections 2 and 3 above)

Data (Indicate table and ID number e.g. 3.-1; 3.-2.)	Uncertainty level of data (High/Medium/Low)	Are QA/QC procedures planned for these data?	Outline explanation why QA/QC procedures are or are not being planned.

6. **What are the potential strengths and weaknesses of this methodology?** (please outline how the accuracy and completeness of the new methodology compares to that of approved methodologies).

7. **Has the methodology been applied successfully elsewhere and, if so, in which circumstances?**

After completing above, please continue filling sub-sections D.2. and following.

## ANNEX-V

### TABLE: BASELINE DATA

*(Please provide a table containing the key elements used to determine the baseline (variables, parameters, data sources etc.). For approved methodologies you may find a draft table on the UNFCCC CDM web site. For new methodologies, no predefined table structure is provided.)*

\* \* \* \* \*

## Interim Approval Criteria (Clean Development Mechanism )

### 1. Purpose

The purpose of the clean development mechanism (CDM) is defined in Article 12 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. The CDM has a two-fold purpose : (a) to assist developing country Parties in achieving sustainable development, thereby contributing to the ultimate objective of the Convention, and (b) to assist developed country Parties in achieving compliance with part of their quantified emission limitation and reduction commitments under Article 3. Each CDM project activity should meet the above two-fold purpose.

### 2. Eligibility

The project proposal should establish the following in order to qualify for consideration as CDM project activity:

#### Additionalities:

- *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 funding for CDM project activity should not lead to diversion of official development assistance. The project participants may demonstrate how this is being achieved.
- *Technological Additionality*: The CDM project activities should lead to transfer of environmentally safe and sound technologies and know how.

### 3. Sustainable Development Indicators:

It is the prerogative of the host Party to confirm whether a clean development mechanism project activity assists it in achieving sustainable development. The CDM should be oriented towards improving the quality of life of the very poor from the environmental standpoint.

#### Following aspects should be considered while designing CDM project activity:

- *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 level of pollution in general;
- *Technological well being*: The CDM project activity should lead to transfer of environmentally safe and sound technologies with a priority to the renewables sector or energy efficiency projects that are comparable to best practices in order to assist in up gradation of technological base.

### 4. Baselines:

The project proposal must clearly and transparently describe methodology of determination of baseline. It should confirm to following.

- Baselines should be precise, transparent, comparable and workable;
- Should avoid overestimation;
- The methodology for determination of baseline should be homogeneous and reliable;
- Potential errors should be indicated;



- Systems 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);
- Should include historic emission data-sets wherever available;
- Lifetime of project cycle should be clearly mentioned;

The baseline should be on project by project basis except for those categories that qualify for simplified procedures. The project proposal should indicate the formulae used for calculating GHG offsets in the project and baseline scenario. Leakage, if any, should be described. For the purpose of Project Idea Notes (PIN), default values may be used with justification. Determination of base project which would have come up in absence of proposed project should be clearly described in the project proposal.

### **5. Financial Indicators:**

The project participants should bring out the following aspects:

- Flow of additional investment
- Cost effectiveness of energy saving
- Internal Rate of Return (IRR) without accounting for CERs
- IRR with CERs
- Liquidity, N.P.V., cost/benefit analysis, cash flow etc establishing that the project has good probability of eventually being implemented.
- Agreements reached with the related to validation, approval, registration, monitoring and verification, certification, share of proceeds
- Proposal should indicate funding available, financing agency and also describe as to how financial closure is sought to be achieved.

### **6. Technological Feasibility :**

The proposal should include following elements:

- The proposed technology/process
- Product/technology/material supply chain
- Technical complexities, if any
- Preliminary design, schematics for all major equipment needed, design requirement, manufacturers name and details, capital cost estimate
- Technological reliability
- Organizational and management plan for implementation, including timetable, personnel requirements, staff training, project engineering, CPM/PRT-Chart etc.

### **7. Risk Analysis**

The project proposal should clearly state risks associated with a project including apportionment of risks and liabilities; insurance and guarantees, if any.

### **8. Credentials**

The credentials of the project participants must be clearly described.

\* \* \* \* \*

## Small-Scale CDM Project Modalities

### (Draft Simplified Modalities and Procedures for Small-Scale Clean Development Mechanism Project Activities)

#### A. Introduction

1. Small-scale CDM project activities shall follow the stages of the project cycle specified in the modalities and procedures for a clean development mechanism contained in the annex to decision 17/CP. 72 (hereinafter referred as the CDM modalities and procedures). In order to reduce transaction costs modalities and procedures are simplified for small-scale CDM project activities, as follows:

- (a) Project activities may be bundled or portfolio bundled at the following stages in the project cycle: the project design document, validation, registration, monitoring, verification and certification. The size of the total bundle should not exceed the limits stipulated in paragraph 6 (c) of decision 17/CP. 7;
- (b) The requirements for the project design document are reduced;
- (c) Baselines methodologies by project category are simplified to reduce the cost of developing a project baseline;
- (d) Monitoring plans are simplified, including simplified monitoring requirements, to reduce monitoring costs; and
- (e) The same operational entity may undertake validation, and verification and certification.

2. Simplified baseline and monitoring methodologies have been developed for 14 small-scale CDM project activity categories related to types (i) to (iii). They are presented in appendix B. This list shall not preclude other types of small scale CDM project activities. If a proposed small-scale CDM project activity does not fall into any of the categories in appendix B, the project participants may submit a request to the Executive Board for approval of a simplified baseline and/or monitoring plan developed bearing in mind provisions in paragraph 8 below.

3. The CDM modalities and procedures shall apply to small-scale CDM project activities except for its paragraphs 37 to 60. The following paragraphs 4 to 31 apply instead. Appendix A to this annex should replace, as appropriate, provisions in appendix B of the CDM modalities and procedures.

#### B. Simplified modalities and procedures for small-scale CDM project activities

4. To use simplified modalities and procedures for small-scale CDM project activities, a proposed project activity shall:

- (a) Meet the eligibility criteria for small-scale CDM project activities set out in paragraph 6 (c) of decision 17/CP.7;
- (b) Conform to one of the project categories in appendix B to this annex;
  - 1. In order to facilitate referencing this document has been reformatted, it corresponds the second part of Annex 2 of document FCCC/CP/2002/3 adopted by the Conference of the parties at its eight session.
  - 2. Please refer to document FCCC/CP/2001/13/Add..2
  - 3. Type (i): Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent); Type (ii): energy efficiency improvement project activities which reduce energy consumption, on the

supply and/or demand side, by up to the equivalent of 15 gigawatt hours per year; and Type (iii): Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually; and

- (c) Not be a debundled component of a larger project activity, as determined through appendix C to this annex.

5. Project participants shall prepare a project design document in accordance with the format specified in appendix A to this annex.

6. Project participants may use the simplified baseline and monitoring methodologies specified in appendix B for their project category.

7. Project participants involved in small-scale CDM project activities may propose changes to the simplified baseline and monitoring methodologies specified in appendix B or propose additional project categories for consideration by the Executive Board.

8. Project participants willing to submit a new small-scale project activity category or revisions to a methodology shall make a request in writing to the Board providing information about the technology/activity and proposals on how a simplified baseline and monitoring methodology would be applied to this category. The Board may draw on expertise, as appropriate, in considering new project categories and/or revisions of and amendments to simplified methodologies. The Executive Board shall expeditiously, if possible at its next meeting, review the proposed methodology. Once approved, the Executive Board shall amend appendix B.

9. The Executive Board shall review and amend, as necessary, appendix B at least once a year.

10. Any amendments to appendix B shall apply only to project activities registered subsequent to the date of amendment and shall not affect registered CDM project activities during the crediting periods for which they are registered.

11. Several small-scale CDM project activities may be bundled for the purpose of validation. An overall monitoring plan that monitors performance of the constituent project activities on a sample basis may be proposed for bundled project activities. If bundled project activities are registered with an overall monitoring plan, this monitoring plan shall be implemented and each verification/certification of the emission reductions achieved shall cover all of the bundled project activities.

12. A single designated operational entity may perform validation as well as verification and certification for a small-scale CDM project activity or bundled small-scale CDM project activities.

13. The Executive Board, in proposing the share of proceeds to cover administrative expenses and registration fees to recover any project related expenses, may consider proposing lower fees for small-scale CDM project activities.

### **C. Validation and registration**

14. The designated operational entity selected by project participants to validate a project activity, being under a contractual arrangement with them, shall review the project design document and any supporting documentation to confirm that the following requirements have been met:

- (a) The participation requirements set out in paragraphs 28 to 30 of the CDM modalities and procedures are satisfied;
- (b) Comments by local stakeholders have been invited and a summary of the comments received has been provided to the designated operational entity together with a report indicating how due account was taken of any comments received;
- (c) Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, if required by the host party;

- (d) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed
- (e) The small-scale project activity conforms to one of the project categories in appendix B and uses the simplified baseline and monitoring methodology for that project activity category as specified in appendix B, or a bundle of small-scale project activities satisfies the conditions for bundling and the overall monitoring plan for the bundled small-scale project activities is appropriate; and
- (f) The project activity conforms to all other requirements for CDM project activities in the CDM modalities and procedures that are not replaced by these simplified modalities and procedures.

15. The designated operational entity shall:

- (a) Prior to the submission of the validation report to the Executive Board, have received from the project participants written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development;
- (b) In accordance with provisions on confidentiality contained in paragraph 27 (h) of the CDM modalities and procedures, make publicly available the project design document;
- (c) Receive, within 30 days, comments on the project design document from Parties, stakeholders and UNFCCC accredited non-governmental organizations, and make them publicly available;
- (d) After the deadline for receipt of comments, make a determination as to whether, on the basis of the information provided and taking into account the comments received, the project activity should be validated;
- (e) Inform project participants of its determination on the validation of the project activity; Notification to the project participants shall include either:
  - (i) Confirmation of validation and date of submission of the validation report to the Executive Board; or on and date of submission of the validation report to the Executive Board; or
  - (ii) An explanation of reasons for non-acceptance if the project activity, as documented, is judged not to fulfil the requirements for validation;
- (f) Submit to the Executive Board, if it determines. The proposed activity to be valid, a request for registration in the form of a validation report including the Project design document, the written approval of the host Party referred to in paragraph 15 (a) above, and an explanation of how it has taken due account of comments received.
- (g) Make this validation report publicly available upon transmission to the Executive Board.

16. The registration by the Executive Board shall be deemed final four weeks after the date of receipt by the Executive Board of the request for registration, unless a Party involved in the project activity or at least three members of the Executive Board request a review of the proposed CDM project activity. The review by the Executive Board shall be made in accordance with the following provisions:

- (a) It shall be related to issues associated with the validation requirements; and
- (b) It shall be finalized no later than at the second meeting following the request for review, with the decision and the reasons for it being communicated to the project participants and the public.

17. A proposed project activity that is not accepted may be reconsidered for validation and subsequent registration after appropriate revisions, provided that it follows the procedures and meets the requirements for validation and registration, including those related to public comments.

18. A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

19. The baseline for a CDM project activity is the scenario that reasonable represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity. A simplified baseline for a small-scale CDM project activity specified in appendix-B, shall be deemed to reasonable represent the anthropogenic emissions that would occur in the absence of the proposed small-scale project activity. If a simplified baseline is not used, the baseline proposed shall cover emission from all gases, sectors and source categories listed in Annex-A to the Kyoto Protocol within the project boundary.

20. A simplified baseline and monitoring methodology listed in appendix-B may be used for a small-scale CDM project activity if the project participants are able to demonstrate to a designated operational entity that the project activity would otherwise not be implemented due to the existence of one or more of the barriers listed in attachment A of appendix-B. Where specified in appendix-B for a project category, quantitative evidence that the project activity would otherwise not be implemented may be provided instead of a demonstration based on the barriers listed in attachment A to appendix B.

21. Project participants shall select a crediting period for a proposed small-scale CDM project activity from one of the following alternatives:

- (a) A maximum of seven years which may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable;
- (b) A maximum of 10 years with no option of renewal.

22. Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside of the project boundary, and which is measurable and attributable to the CDM projects activity. Reductions in anthropogenic emissions by sources shall be adjusted for leakage in accordance with the provisions of appendix B for the relevant project categories. The Executive Board shall consider simplification of the leakage calculation for any other project categories added to appendix-B.

23. The Project boundary shall encompass significant anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are reasonable attributable to the small-scale CDM project activity, in accordance with provisions of appendix B for the relevant project category.

#### **D. Monitoring**

24. Project participants shall include, as part of the project design document for a small-scale CDM project activity or bundle of small-scale CDM project activities, a monitoring plan. The monitoring plan shall provide for the collection and archiving of the data needed to:

- (a) Estimate or measure anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period as specified in appendix-B for the relevant project category;
- (b) Determine the baseline of anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period, as specified in appendix-B for the relevant project category.
- (c) Calculate the reductions of anthropogenic emissions by sources by the proposed small-scale CDM Project activity, and for leakage effects, in accordance with Provisions of appendix-B for the relevant Project Category.

25. The monitoring plan for a small-scale CDM project activity may use the monitoring methodology specified in appendix-B for the relevant project category if the designated operational entity determines at validation that the monitoring methodology reflects good monitoring practice appropriate to the circumstances of the project activity.

26. If project activities are boundled, a separate monitoring plan shall apply for each of the constituent project activities in accordance with paragraphs 24 and 25 above, or an overall monitoring plan shall apply for the bundled projects, as determined by the designated operational entity at validation to reflect good monitoring practice appropriate to the bundled project activities and to provide for collection and archiving of the data needed to calculate the emission reductions achieved by the bundled project activities.

27. Project participant shall implement the monitoring plan contained in the registered project design document, archive the relevant monitored data and report the relevant monitoring data to a designated operational entity contracted to verify the emission reductions achieved during the crediting period specified by the project participants.

28. Revisions, if any, to the monitoring plan to improve its accuracy and/or completeness of information shall be justified by project participants and shall be submitted for validation to a designated operational entity.

29. The implementation of the registered monitoring plan and its revisions, as applicable, shall be a condition for verification, certification and the issuance of certified emission reductions, (CERs).

30. Subsequent to the monitoring and reporting of reductions in anthropogenic emission, CERs resulting from a small-scale CDM project activity during a specified time period shall be calculated applying the registered methodology, by subtracting the actual anthropogenic emissions by sources from baseline emissions, and adjusting for leakage, as appropriate, in accordance with appendix-B for the relevant project category.

31. The project participants shall provide to the designated operational entity, contracted by the project participants to perform the verification, a monitoring report in accordance with the registered monitoring plan set out in paragraph 24 above for above for the purpose of verification and certification.

## **Appendix-A**

Simplified Project Design Document for Small Scale CDM Project Activities.

*(This appendix is currently being elaborated by the Executive Board)*

**Simplified Baseline and Monitoring methodologies for Selected Small-Scale CDM Project Activity Categories.**

*(note : The appendix is currently being elaborated by the Executive Board)*

## **Attachment A to Appendix-B**

*(Note : In accordance with paragraph 20 of the simplified modalities and procedures for small-scale CDM project activities, "a simplified baseline and monitoring methodology listed in appendix B may be used for a small-scale CDM project activity if the project participants are able to demonstrate to a designated operational entity that the project activity would otherwise not be implemented due to the existence of one or more of the barriers listed in attachment A to appendix B. Where specified in appendix B for a project category, quantitative evidence that the project activity would otherwise not be implemented may be provided instead of a demonstration based on the barriers listed in attachment A to appendix B".)*

## **Appendix - C**

**Decision Tree For Determing The Occurrence of Debundling**

*(Note : Debunling is defined as the fragmentation of a large project into smaller parts. A project that is developed in consecutive small-scale tranches is not eligible. The Executive Board is currently elaborating this appendix ".)*

\*\*\*\*\*

## Appendix A<sup>1</sup> to the simplified modalities and procedures for Small Scale CDM project activities

### CLEAN DEVELOPMENT MECHANISM SIMPLIFIED PROJECT DESIGN DOCUMENT FOR SMALL SCALE PROJECT ACTIVITIES (SSC - PDD) Version 01 (21 January, 2003)

#### Introductory Note

1. This document contains the clean development mechanism project design document for small-scale project activities (SSC-PDD). It elaborates on the outline of information in appendix B "Project Design Document" to the CDM modalities and procedures (annex to decision 17/CP.7 contained in document FCCC/CP/2001/13/Add.2) and reflects the simplified modalities and procedures (herewith referred as simplified M&P) for small-scale CDM project activities (annex-II to decision 21/CP.8 contained in document FCCC/CP/2002/7/Add.3)
2. The SSC-PDD can be obtained electronically through the UNFCCC CDM web site (<http://unfccc.int/cdm/ssc.htm>), by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in print from the UNFCCC secretariat (Fax: +49-228-8151999).
3. Explanations for project participants are in italicized font (*e.g. explanation*).
4. The Executive Board may revise the SSC-PDD if necessary. Revisions shall not affect small-scale CDM project activities validated prior to the date at which a revised version of the SSC-PDD enters into effect. Versions of the SSC-PDD shall be consecutively numbered and dated. The SSC-PDD will be available on the UNFCCC CDM web site in all six official languages of the United Nations.
5. In accordance with the CDM modalities and procedures, the working language of the Board is English. The completed SSC-PDD shall therefore be submitted to the Executive Board in English.
6. Small-scale activities submitted as a bundle, in accordance with paragraphs 9(a) and 19 of the simplified M&P for small-scale CDM project activities, may complete a single SSC-PDD provided that information regarding A.3 (*Project Participants*) and A.4.1 (*location of the project activity*) is completed for each project activity and that an overall monitoring plan is provided in section D.
7. A small-scale project activity with different components eligible to be proposed<sup>2</sup> as a small-scale CDM project activity may submit one SSC-PDD, provided that information regarding subsections

<sup>1</sup> This appendix has been developed in accordance with the simplified modalities and procedures for small-scale CDM project activities (contained in annex II to decision 21/CP.8, see document FCCC/CP/2002/7/Add.3) and it constitutes appendix A to that document. For the full text of the annex II to decision 21/CP.8 please see <http://unfccc.int/cdm/ssc.htm>.

<sup>2</sup> In paragraph 7 of simplified M&P for small-scale CDM project activities, on clarifications by the Executive Board on small-scale CDM project activities, the Board agreed that in a project activity with more than one component that will benefit from simplified CDM modalities and procedures, each component shall meet the threshold criterion of each applicable type, e.g. for a project with both a renewable energy and an energy efficiency component, the renewable energy component shall meet the criterion for "renewable energy" and the energy efficiency component that for "energy efficiency".

a.4.2 (*Type and category(ies) and technology of project activity*), and A.4.3 (*brief statement on how anthropogenic emissions of greenhouse gases (GHGs) by sources are to be reduced by the proposed CDM project activity*) and sections B (*Baseline methodology*), D (*Monitoring methodology and plan*) and E (*Calculation of GHG emission reductions by sources*) is provided separately for each of the components of the project activity.

8. If the project activity does not fit any of the project categories in appendix B of the simplified M&P for small-scale CDM project activities, project proponents may propose additional project categories for consideration by the Executive Board for consideration after it has amended appendix B as necessary.

9. A glossary of terms may be found on the UNFCCC CDM web site or from the UNFCCC secretariat by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in print (Fax: +49-228-8151999).



## CONTENTS

- A. General description of project activity
- B. Baseline methodology
- C. Duration of the project activity/ Crediting period
- D. Monitoring methodology and plan
- E. Calculation of GHG emission reductions by sources
- F. Environmental impacts
- G. Stakeholders comments

### **Annexes**

Annex 1: Information on participants in the project activity

Annex 2: Information regarding public funding

## **A. General description of project activity**

### **A. 1 Title of the project activity:**

### **A. 2 Description of the project activity:**

*(please include in the description  
-the purpose of the project activity  
-the view of the project participants on the contribution of the project activity to sustainable development (max. one page).)*

### **A.3 Project Participants:**

*(Please list Party(ies) and private and/or public entities involved in the project activity and provide contact information in annex 1 of this document.)*

*(Please designate one of the above as the official contact for the CDM project activity)*

### **A.4 Technical description of the project activity:**

**A.4.1** Host country Party(ies):

**A.4.1.2** Region/State/Province etc.:

**A.4.1.3** City/Town/Community etc:

**A.4.1.4** Detailed description of the physical location, including information allowing the unique identification of this project activity (max one page):

#### **A.4.2 Type and category(ies) and technology of project activity**

*(please specify the type and category of the project activity using the categorization of appendix B to the simplified M&P for small-scale CDM project activities, hereafter referred to as appendix B. Note that appendix B may be revised overtime and that the most recent version will be available on the UNFCCC CDM web site.*

*In this section you shall justify how the proposed project activity conforms with the project type and category selected (for simplicity, the rest of this document refers to "project category" rather than "project type and category").*

*If your project activity does not fit any of the project categories in appendix B, you may propose additional project categories for consideration by the Executive Board, in accordance with paragraphs 15 and 16 of the simplified M&P for small-scale CDM project activities. The final SSC-PDD project design document shall, however, only be submitted to the Executive Board for consideration after the Board has amended appendix B as necessary.)*

*(This section should include a description of the environmentally safe and sound technology and know-how is transferred to the host Party, if such a transfer is part of the project.)*

**A.4.3 Brief statement on how anthropogenic emissions of greenhouse gases (GHGs) by sources are to be reduced by the proposed CDM project activity:**

*(Please state briefly how anthropogenic greenhouse gas (GHG) emission reductions are to be achieved (detail to be provided in section B.) and provide the estimate of total anticipated reductions in tonnes of CO<sub>2</sub> equivalent as determined in section E. below.)*

**A.4.4 Public funding of the project activity:**

*(Indicate whether Public funding from Parties included in Annex I is involved in the proposed project activity. If public funding from one or more Annex I Parties is involved, please provide information on sources of public funding for the project activity in annex 2, including an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those parties.)*

**A.4.5 Confirmation that the small-scale project activity is not a debundled component of a larger project activity:**

*(Please refer to appendix C to the simplified M&P for the small-scale CDM project activities for guidance on how to determine whether the proposed project activity is not a debundled component of a larger project activity.)*

## **B. Baseline methodology**

### **B.1 Title and reference of the project category applicable to the project activity:**

*(Please refer to the UNFCCC CDM web site for the most recent list of the small-scale CDM project activity categories contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

### **B.2 Project category applicable to the project activity:**

*(Justify the choice of the applicable baseline calculation for the project category as provided for in appendix B of the simplified M&P for small-scale CDM project activities.)*

### **B.3 Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed CDM project activity (i.e. explanation of how and why this project is additional and therefore not identical with the baseline scenario)**

*(Justify that the proposed project activity qualifies to use simplified methodologies and is additional using attachment A to appendix B of the simplified M&P for small-scale CDM project activities.)*

*(National policies and circumstances relevant to the baseline of the proposed project activity shall be summarized here as well.)*

### **B.4 Description of the project boundary for the project activity:**

*(Define the project boundary for the project activity using the guidance specified in the applicable project category for small-scale CDM Project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

### **B.5 Details of the baseline and its development:**

**B.5.1** Specify the baseline for the proposed project activity using a methodology specified in the applicable project category for small-scale CDM project activities:

**B.5.2** Date of completing the final draft of this baseline section (DD/MM/YYYY):

**B.5.3** Name of person/entity determining the baseline:

*(Please provide contact information and indicate if the person/entity is also a project participant listed in annex I of this document.)*

## C. Duration of the project activity and crediting period

### C.1 Duration of the project activity:

#### C.1.1 Starting date of the project activity:

*(For a definition of the term "starting date", please refer to the UNFCCC CDM web site).*

**C.1.2** Expected operational lifetime of the project activity: *(in years and months, e.g. two years and four months would be shown as: 2y-4m.)*

**C.2 Choice of the crediting period and related information:** *(Please underline the selected option (C.2.1 or C.2.2) and provide the necessary information for that option.)*

*(Note that the crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, the starting date of the crediting period can be prior to the date of registration of the project activity as provided for in paragraphs 12 and 13 of decision 17/CP. 7 and in any guidance by the Executive Board, available on the UNFCCC CDM web site.)*

#### **C.2.1 Renewabel crediting period** *(at most seven (7) years per crediting period)*

**C.2.1.1** Starting date of the first crediting period *(DD/MM/YYYY):*

**C.2.1.2** Length of the first crediting period *(in years and months, e.g. two years and four months would be shown as : 2y-4m.):*

**C.2.2** Fixed crediting Period (at most ten (10) years):

**C.2.2.1** Starting date *(DD/MM/YYYY):*

**C.2.2.2** Length (max 10 years): *(in years and months,e.g. two years and four months would be shown as : 2y-4m.)*

## **D. Monitoring methodology and plan**

*(The monitoring plan shall incorporate a monitoring methodology specified for the applicable project category for small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities and represent good monitoring practice appropriate to the type of project activity.*

*The monitoring plan shall also provide information on the collection and archiving of the data specified in appendix B of the simplified M&P for small-scale CDM project activities to:*

- Estimate or measure emissions occurring within the project boundary;*
- Determine the baseline, as applicable;*
- Estimate leakage, where this needs to be considered.*

*Project participants shall implement the registered monitoring plan and provide data, in accordance with the plan, through their monitoring reports.*

*Operational entities will verify that the monitoring methodology and plan have been implemented correctly and check the information in accordance with the provisions on verification. This section shall provide a detailed description of the monitoring plan, including an identification of the data to be collected, its quality with regard to accuracy, comparability, completeness and validity, taking into consideration any guidance contained in the methodology, and archiving of the data collected.*

*Please note that monitoring data required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.*

*An overall monitoring plan that monitors performance of the constituent project activities on a sample basis may be proposed for bundled project activities. If bundled project activities are registered with an overall monitoring plan, this monitoring plan shall be implemented and each verification/certification of the emission reductions achieved shall cover all of the bundled project activities)*

### **D.1 Name and reference of approved methodology applied to the project activity:**

*(Please refer to the UNFCCC CDM web site for the most recent version of the indicative list of small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

*(If a national or international monitoring standard has to be applied to monitor certain aspects of the project activity, please identify this standard and provide a reference to the source where a detailed description of the standard can be found.)*

### **D.2 Justification of the choice of the methodology and why it is applicable to the project activity:**

*(Justify the choice of the monitoring methodology applicable to the project category as provided for in appendix B.)*

### D.3 Data to be monitored:

(The table below specifies the minimum information to be provided for monitored data. Please complete the table for the monitoring methodology chosen for the proposed project activity from the simplified monitoring methodologies for the applicable small-scale CDM project activity category contained in appendix B of the simplified M&P for small-scale CDM project activities.

Please note that for some project categories it may be necessary to monitor the implementation of the project activity and/or activity levels for the calculation of emission reductions achieved.

Please add rows or columns to the table below, as needed)

ID number	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	For how long is archived data to be kept?	Comment

### D.4 Name of person/entity determining the monitoring methodology:

(Please provide contact information and indicate if the person/entity is also a project participant listed in annex I of this document.)

## **E. Calculation of GHG emission reductions by sources**

### **E.1 Formulae used:**

*(In E.1.1 please provide the formula used to calculate the GHG emission reductions by sources in accordance with the applicable project category of small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

*In case the applicable project category from appendix B does not indicate a specific formula to calculate the GHG emission reductions by sources, please complete E.1.2 below.)*

#### **E.1.1 Selected formulae as provided in appendix B:**

*(Describe the calculation of GHG emission reductions in accordance with the formula specified for the simplified M&P for small-scale CDM project activities.)*

#### **E.1.2 Description of formulae when not provided in appendix B:**

**E.1.2.1** Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary: (for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)

**E.1.2.2** Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in appendix B of the simplified modalities and formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)

**E.1.2.3** The sum of E.1.2.1 and E.1.2.2 represents the project activity emissions:

**E.1.2.4** Describe the formulae used to estimate the anthropogenic emissions by sources of GHG's in the baseline using the baseline methodology for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities: *(for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)*

**E.1.2.5** Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a give period:

### **E.2 Table providing values obtained when applying formulae above:**



## **F. Environment impacts**

**F.1** If required by the host Party, documentation on the analysis of the environmental impacts of the project activity: *(if applicable, please provide a short summary and attach documentation)*

## **G. Stakeholders comments**

**G.1** Brief description of the process by which comments by local stakeholders have been invited and compiled:

**G.2** Summary of the comments received:

**G.3** Report on how due account was taken of any comments received:

Annex 1

**CONTACT INFORMATION FOR PARTICIPANTS IN THE PROJECT ACTIVITY**

*(please repeat table as needed)*

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postcode/ZIP:	
Country:	
Telephone:	
FAX:	
E-mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

**INFORMATION REGARDING PUBLIC FUNDING**

\*\*\*\*\*

**UNITED  
NATIONS**

Framework Convention  
on Climate Change

Distr.  
GENERAL

FCCC/CP/2001/13Add.2  
21<sup>st</sup> January, 2002

CONFERENCE OF THE PARTIES

Original : English

**REPORT OF THE CONFERENCE OF THE PARTIES ON  
ITS SEVENTH SESSION, HEALD AT MARRAKESH  
FROM 29 OCTOBER TO 10 NOVEMBER 2001**

**Addendum**

**PART TWO : ACTION TAKEN BY THE CONFERENCE OF THE PARTIES**

**Volume II**

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## Decision 17/CP.7

### Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol

*The Conference of the Parties,*

Recalling Article 12 of the Kyoto Protocol which provides that the purpose of the clean development mechanism shall be to assist Parties not included in Annex-I to the Convention 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 of the Kyoto Protocol.

*Recalling also* its decision 5/CP. 6 containing the Bonn Agreements on the implementation of the Buenos Aires Plan of Action,

*Aware of* its decisions 2/CP.7, 11/CP.7, 15/CP.7, 16/CP.7, 18/CP.7, 19/CP.7, 20/CP.7, 21/CP.7, 22/CP.7, 23/CP.7, 24/CP.7 and 38/CP.7,

*Affirming* that it is the host Party's prerogative to confirm whether a clean development mechanism project activity assists it in achieving sustainable developments,

*Recognizing* that Parties included in Annex I are to refrain from using certified emission reductions generated from nuclear facilities to meet their commitments under Article 3, paragraph 1.

*Bearing in mind* the need to promote equitable geographic distribution of clean development mechanism project activities at regional and subregional levels,

*Emphasizing* that public funding for clean development mechanism projects from Parties in Annex I is not to result in the diversion of official development assistance and is to be separate from and not counted towards the financial obligations of Parties included in Annex-I.

*Further emphasizing* that clean development mechanism project activities should lead to the transfer of environmentally safe and sound technology and know-how in addition to that required under Article 4, paragraph 5, of the Convention and Article 10 of the Kyoto Protocol.

*Recognizing* the need for guidance for project participants and designated operational entities, in particular for establishing reliable, transparent and conservative baselines, to assess whether clean development mechanism project activities are in accordance with the additionally criterion in Article 12, paragraph 5 (c), of the Kyoto Protocol,

1. *Decides* to facilitate a prompt start for a clean development mechanism by adopting the modalities and procedures contained in the annex below;
2. *Decides* that ,for the purposes of the present decision, the Conference of the Parties shall assume the responsibilities of the Conference of the Parties serving as the meeting of the Parties of the Kyoto Protocol as set out in the annex below on modalities and procedures;
3. *Invites* nominations for membership in the executive board:
  - (a) For facilitating the prompt start of the clean development mechanism, from Parties o the convention to be submitted to the President of the Conference of the Parties at its present session, with a view to the

Conference of the Parties electing the members of the executive board at that session;

(b) Upon the entry into force of the Kyoto Protocol, to replace any member of the executive board of the clean development mechanism whose country has not ratified or acceded to the Kyoto Protocol. Such new members shall be nominated by the same constituencies and elected at the first session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol:

4. *Decides* that, prior to the first session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol. The executive board and any designated operational entities shall operate in the same manner as the executive board and designated operational entities of the clean development mechanism as set out in the annex below;

5. *Decides* that the executive board shall convene its first meeting immediately upon the election of its members;

6. *Decides* that the executive board shall include in its work plan until the eighth session of the Conference of the Parties, inter alia, the following tasks:

(a) To develop and agree on its rules of procedure and recommend them to the Conference of the Parties for adoption, applying draft rules until then;

(b) To accredit operational entities and designate them, on a provisional basis, pending the designation by the Conference of the Parties at its eighth session;

(i) Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);

(ii) Energy efficiency improvement project which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatt/hours per year;

(iii) Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually;

(d) To prepare recommendations on any relevant matter, including on Appendix C to the annex below, for consideration by the Conference of the Parties at its eighth session;

(e) To identify modalities for seeking collaboration with the Subsidiary Body for Scientific and Technological Advice on methodological and scientific issues;

7. *Decides*:

(a) That for eligibility of land use, land-use change and forestry project activities under the clean development mechanism is limited to afforestation and reforestation;

(b) That for the first commitment period, the total of additions to a Party's assigned amount resulting from eligible land use, land-use change and forestry project activities under the clean development mechanism shall not exceed one per cent of base year emissions of that Party, times five;

(c) That the treatment of land use, land-use change and forestry project activities under the clean development mechanism in future commitment periods shall be decided as part of the negotiations on the second commitment period;

8. *Requests* the secretariat to organize a workshop before the sixteenth session of the Subsidiary Body for Scientific and Technological Advice with the aim of recommending terms of reference and an agenda for the work to be conducted under paragraph 10(b) below on the basis of, inter alia, submissions by Parties referred to in paragraph 9 below;

9. *Invites* Parties to provide submissions by the secretariat by 1 February 2002 on the organization of the workshop referred to in paragraph 8 above, and to express their views on the terms of reference and the agenda for the work to be conducted under paragraph 10(b) below;

10. *Requests* the subsidiary Body for Scientific and Technological Advice:

(a) To develop at its sixteenth session terms of reference and an agenda for the work to be conducted under subparagraph (b) below, taking into consideration, inter alia, the outcome of the workshop mentioned in paragraph 8 above;

(b) To develop definitions and modalities for including afforestation and reforestation project activities under the clean development mechanism in the first commitment period, taking into account the issues of non-permanence, additionally, leakage, uncertainties and socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystems, and being guided by the principles in the preamble to decision -/CMP.1 (Land use, land-use change and forestry) and the terms of reference referred to in subparagraph (a) above, with the aim of adopting a decision on these definitions and modalities at the ninth session of the Conference of the Parties, to be forwarded to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its first session;

11. *Decides* that the decision by the conference of the Parties at the Parties at its ninth session, on definitions and modalities for inclusion of afforestation and reforestation project activities under the clean development mechanism, for the first commitment period, referred to in paragraph 10 (b) above, shall be in the form of an annex on modalities and procedures for afforestation and reforestation project activities for a clean development mechanism reflecting, *mutatis mutandis*, the annex to the present decision on modalities and procedures for a clean development mechanism;

12. *Decides* that certified emission reductions shall only be issued for a crediting period starting after the date of registration of a clean development mechanism project activity;

13. *Further decides* that a project activity starting as of the year 2000, and prior to the adoption of this decision, shall be eligible for validation and registration as a clean development mechanism project activity if submitted for registration before 31 December 2005. If registered, the crediting period for such project activities may start prior to the date of its registration but not earlier than 1 January 2000.

14. *Requests* Parties included in Annex I to start implementing measures to assist Parties not included in Annex I, in particular the least developed and small island developing States among them, with building capacity in order to facilitate their participation in the clean development mechanism, taking into account relevant decisions by the Conference of the Parties on capacity-building and on the financial mechanism of the convention:

15. *Decides*:

(a) That the share of proceeds to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation, as referred to in Article 12, paragraph 8, of the Kyoto Protocol, shall be two per cent of the certified emission reductions issued for a clean development mechanism project activity;

(b) That clean development mechanism project activities in least developed country Parties shall be exempt from the share of proceeds to assist with the costs of adaptation:

16. *Decides* that the level of the share of proceeds to cover administrative expenses of the clean development mechanism shall be determined by the Conference of the Parties upon the recommendation of the executive board:

17. *Invites* Parties to finance the administrative expenses for operating the clean development mechanism by making contributions to the UNFCCC Trust Fund for Supplementary Activities, Such contributions shall be reimbursed, if requested, in accordance with procedures and a timetable to be determined by the Conference of the Parties upon the recommendation of the executive board. Until the conference of the Parties determines a percentage of the share of proceeds for the administrative expenses, the executive board shall charge a fee to recover any project related expenses;

18. *Requests* the secretariat to perform any functions assigned to it in the present decision and in the annex below;

19. *Decides* to assess progress made regarding the clean development mechanism and to take appropriate action, as necessary. Any revision of the decision shall not affect clean development mechanism project activities already registered;

20. *Recommends* that the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, at its first session, adopt the draft decision below.

**8<sup>th</sup> plenary meeting**

**10 November 2001**

**Draft decision -/CMP.1 (Article 12)**

**Modalities and procedures for a clean development mechanism  
as defined in Article 12 of the Kyoto Protocol**

*The conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol,*

*Recalling* the provisions of articles 3 and 12 of the Kyoto Protocol.

*Bearing in mind* that ,in accordance with article 12, the purpose of the clean development mechanism is to assist Parties not included in Annex I to the convention in achieving sustainable development and in contributing to 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 of the Kyoto Protocol,

Aware of its decisions -/CMP.1 (*Mechanisms*). -/CMP.1 (*Article 6*), -/CMP.1 (*Article 17*), -/CMP.1 (*Land use, land-use change and forestry*), -/CMP.1 (*Modalities for the accounting of assigned amounts*), CMP.1 (*Article 5.1*), -1 CMP.1 (*Article 5.2*), -/CMP.1 (*Article 7*)-/CMP.1 (*Article 8*), and decisions 2/CP.7 and 24/CP.7,

*Cognizant* of decision 17/CP.7 on modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol,

1. *Decides* to confirm, and give full effect to any actions taken pursuant to, decision 17/CP.7 and to any other relevant decisions by the Conference of the Parties, as appropriate;
2. *Adopts* the modalities and procedures for a clean development mechanism contained in the annex below;
3. *Invites* the executive board to review the simplified modalities, procedures and the definitions of small-scale project activities referred to in paragraph 6(c) of decision 17/CP.7 and, if necessary, make appropriate recommendations to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol:
4. *Decides* further that any future revision of the modalities and procedures for a clean development mechanism shall be decided in accordance with the rules of procedure of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, as applied. The first review shall be carried out no later than one year after the end of the first commitment period, based on recommendations by the executive board and by the subsidiary Body for Implementation drawing on technical advice from the Subsidiary Body for Scientific and Technological Advice, as needed. Further reviews shall be carried out periodically thereafter. Any revision of the decision shall not affect clean development mechanism project activities already registered.

## ANNEX

### Modalities and procedures for a clean development mechanism

#### A. Definitions

1. For the purposes of the present annex the definitions contained in Article 1<sup>1</sup> and the provision of Article 14 shall apply. Furthermore:

(a) An "emission reduction unit" or "ERU" is a unit pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined 2/CP.3 or as subsequently revised in accordance with Article 5;

(b) A "certified emission reduction" or "CER" is a unit issued pursuant to Article 12 and requirement thereunder, as well as the relevant provisions in these 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;

(c) An "assigned amount unit" or "AAU" is a unit issued pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) 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;

(d) A "removal unit" or "RMU" is a unit issued pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) 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;

(e) "Stakeholders" means the public, including individuals, groups or communities affected., or likely to be affected, by the proposed clean development mechanism project activity.

#### **B. Role of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol**

2. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) shall have authority over and provide guidance to the clean development mechanism (CDM).

3. The COP/MOP shall provide guidance to the executive board by taking decisions on:

(a) The recommendations made by the executive board on its rules of procedure;

(b) The recommendations made by the executive board, in accordance with provisions of decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;

(c) The designation of operational entities accredited by the executive board in accordance with Article 12, paragraph 5, and accreditation standards contained in Appendix A below.

4. The COP/MOP shall further:

(a) Review annual reports of the executive board;

(b) Review the regional and subregional distribution of designated operational entities and take appropriate decisions to promote accreditation of such entities from developing country Parties.

<sup>1</sup>In the context of this annex "Article" refers to an article of the Kyoto Protocol, unless otherwise specified.



(c) Review The regional and subregional distribution of CDM project activities with a view to identifying systemic barriers to their equitable distribution and take appropriate decisions. based *inter alia*, on a report by the executive board;

(d) Assist in arranging funding of CDM project activities as necessary.

### **C. Executive board**

5. The executive board shall supervise the CDM, under the authority and guidance of the COP/MOP, and be fully accountable to the COP/MOP. In this context, the executive board shall:

(a) Make recommendations to the COP/MOP on further modalities and procedures for the CDM. as appropriate;

(b) Make recommendations to the COP/MOP on any amendments or additions to rules of procedure for the executive board contained in the present annex, as appropriate;

(c) Report on its activities to each session of the COP/MOP;

(d) Approve new methodologies related to, *inter alia*, base lined, monitoring plans and project boundaries in accordance with the provisions of Appendix C below;

(e) Review provisions with regard to simplified modalities, procedures and the definitions of small scale project activities and make recommendations to the COP/MOP;

(f) Be responsible for the accreditation of operational entities, in accordance with accreditation standards contained in Appendix A below, and make recommendations to the COP/MOP for the designation of operational entities, in accordance with Article 12, paragraph 5. This responsibility includes:

(i) Decisions on re-accreditation, suspension and withdrawal of accreditation;

(ii) Operationalization of accreditation procedures and standards;

(g) Review the accreditation standards in Appendix A below and make recommendations to the COP/MOP for consideration, as appropriate;

(h) Report to the COP/MOP on the regional and subregional distribution of CDM project activities with a view to identifying systematic or systemic barriers to their equitable distribution;

(i) Make publicly available relevant information, submitted to it for this purpose, on proposed CDM project activities in need of funding and on investors seeking opportunities. in order to assist in arranging funding of CDM project activities, as necessary;

(j) Make any technical reports commissioned available to public and provide a period of at least eight weeks for public comments on draft methodologies and guidance before documents are finalized and any recommendations are submitted to the COP/MOP for their consideration;

(k) Develop, maintain and make publicly available a repository of approved rules. procedures, methodologies and standards;

(l) Develop and maintain the CDM registry as defined in Appendix D below;

(m) Develop and maintain a publicly available database of CDM project activities containing information on registered project design documents, comments received, verification reports, its decision as well as information on all CERs issued;

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<sup>2</sup>In the context of this annex "Party" refers to an article of the Kyoto Protocol, unless otherwise specified.

(n) Address issued relating to observance of modalities and procedures for the CDM by project participants and/or operational entities, and report on them to the COP/MOP;

(o) Elaborate and recommend to the COP/MOP for adoption at its next session procedures for conduction the reviews referred to in paragraphs 41 and 65 below including, *inter alia*, procedures to facilitate consideration of information from Parties, stakeholders and UNFCCC accredited observers. Until their adoption by the COP/MOP, the procedures shall be applied provisionally;

(p) Carry out any other functions ascribed to it in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP

6. Information obtained from CDM project participants marked as proprietary or confidential shall not be disclosed without the written consent of the provider of the information except as required by national law. Information used to determine additionally as defined in paragraph 43 below, to describe the baseline methodology and its application, and to support and environmental impact assessment referred to in paragraph 37 (c) below, shall not be considered as proprietary or confidential.

7. The executive board shall comprise ten member from Parties to the Kyoto Protocol, as follows: one member from each of the five United Nations regional groups, two other members from the Parties included in Annex I, two other members from the Parties not included in Annex I, and one representative of the small island developing states, taking into account the current practice in the Bureau of the Conference of the Parties.

8. Members, including alternate members, of the executive board shall:

(a) Be nominated by the relevant constituencies referred to in paragraph 7 above and be elected by the COP/MOP. Vacancies shall be filled in the same way:

(b) Be elected for a period of two years and be eligible to serve a maximum of two consecutive terms. Terms as alternate members do not count. Five members and five alternate members for a term of two years. Thereafter, the COP/MOP shall elect, every year, five new members, and five new alternate members, for a term of two years. Appointment pursuant to paragraph 11 below shall count as one term. The members, and alternate members, shall remain in office until their successors are elected;

(c) Possess appropriate technical and/ or policy expertise and shall act in their personal capacity. The cost of participation of members, and of alternate members, from developing country Parties and other Parties eligible under UNFCCC practice shall be covered by the budget for the executive board;

(d) Be bound by the rules of procedure of the executive board;

(e) Take a written oath of service witnessed by the Executive Secretary of the UNFCCC or his/ her authorized representative before assuming his or her duties;

(f) Have no pecuniary or financial interest in any aspect of a CDM project activity or any designated operational entity;

(g) Subject to their responsibilities to the executive board, not disclose any confidential or proprietary information coming to their knowledge by reason of their duties for the executive board. The duty of the member, including alternate member, not to disclose confidential information constitutes an obligation in respect of that member, and alternate member, and shall remain an obligation after the expiration or termination of that member's function for the executive board.

9. The COP/MOP shall elect an alternate for each member of the executive board based on the criteria in paragraphs 7 and 8 above. The nomination by a constituency of a candidate member shall be accompanied by a nomination for a candidate alternate member from the same constituency.

10. The executive board may suspend and recommend to the COP/MOP the termination of the membership of a particular member, including an alternate member, for cause including *inter alia*, breach of the conflict of interest provisions, breach of the confidentiality provisions, or failure to attend two consecutive meetings of the executive board without proper justification.

11. If a member, or an alternate member, of the executive board resigns or is otherwise unable to complete the assigned term of office or to perform the functions of that office, the executive board may decide, bearing in mind the proximity of the next session of the COP/MOP, to appoint another member, or an alternate member, from the same constituency to replace the said member for the remainder of the member's mandate.

12. The executive board shall elect its own chairperson and vice-chairperson, with one being a member from a Party included in Annex I and the other being from a Party not included in Annex I. The positions of chairperson and vice-chairperson shall alternate annually between a member from a Party included in Annex I and a member from a Party not included in Annex I.

13. The executive board shall meet as necessary but no less than three times a year, bearing in mind the provisions of paragraph 41 below. All documentation for executive board meetings shall be made available to alternate members.

14. At least two thirds of the members of the executive board, representing a majority of members from Parties included in Annex I and a majority of members from Parties not included in Annex I., must be present to constitute a quorum.

15. Decisions by the executive board shall be taken by consensus, whenever possible. If all efforts at reaching a consensus have been exhausted and no agreement has been reached, decisions shall be taken by a three-fourths majority of the members present and voting at the meeting. Members abstaining from voting shall be considered as not voting.

16. Meetings of the executive board shall be open to attendance, as observers, by all Parties and by all UNFCCC accredited observers and stakeholders, except where otherwise decided by the executive board.

17. The full text of all decisions of the executive board shall be made publicly available. The working language of the executive board shall be English. Decisions shall be made available in all six official languages of the United Nations.

18. The executive board may establish committees, panels or working groups to assist it in the performance of its functions. The executive board shall draw on the expertise necessary to perform its functions, including from the UNFCCC roster of experts. In this context, it shall take fully into account the consideration of regional balance.

19. The secretariat shall service the executive board.

#### **D. Accreditation and designation of operational entities**

20. The executive board shall:

- (a) Accredit operational entities which meet the accreditation standards contained in Appendix A below;
- (b) Recommend the designation of operational entities to the COP/MOP;
- (c) Maintain a publicly available list of all designated operational entities;
- (d) Review whether each designated operational entity continues to comply with the accreditation standards contained in Appendix A below and on this basis confirm whether to reaccredit each operational entity every three years;
- (e) Conduct spot-checking at any time and, on the basis of the results, decide to conduct the above-mentioned review, if warranted.

21. The executive board may recommend to the COP/MOP to suspend or withdraw the designation of designated operational entity if it has carried out a review and found that the entity no longer meets the accreditation standards or applicable provisions in decisions of the COP/MOP. The executive board may recommend the suspension or withdrawal of designation only after the designated operational entity has had the possibility of a hearing. The suspension or withdrawal is with immediate effect, on a provisional basis, once the executive board has made a recommendation, and remains in effect pending a final decision by the COP/MOP. The affected entity shall be notified, immediately and in writing, once the executive board has recommended its suspension or withdrawal. The recommendation by the executive board and the decision by the COP/MOP on such a case shall be made public.

22. Registered project activities shall not be affected by the suspension or withdrawal of designation of a designated operational entity unless significant deficiencies are identified in the relevant validation, verification or certification report for which the entity was responsible. In this case, the executive board shall decide whether a different designated operational entity shall be appointed to review, and where appropriate correct, such deficiencies. If such a review reveals that excess CERs were issued, the designated operational entity whose accreditation has been withdrawn or suspended shall acquire and transfer, within 30 days of the end of review, an amount of reduced tonnes of carbon dioxide equivalent equal to the excess CERs issued, as determined by the executive board, to a cancellation account maintained in the CDM registry by the executive board.

23. Any suspension or withdrawal of designated operational entity that adversely affects registered project activities shall be recommended by the executive board only after the affected project participants have had the possibility of a hearing.

24. Any costs related to the review referred to in paragraph 22 above shall be borne by the designated operational entity whose designation has been withdrawn or suspended.

25. The executive board may seek assistance in performing the functions in paragraph 20 above, in accordance with the provisions of paragraph 18 above.

#### **E. Designated operational entities**

26. Designated operational entities shall be accountable to the COP/MOP through the executive board and shall comply with the modalities and procedures in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP and the executive board.

27. A designated operational entity shall:
- (a) Validate proposed CDM project activities;
  - (b) Verify and certify reductions in anthropogenic emissions by sources of greenhouse gases;
  - (c) Comply with applicable laws of the Parties hosting CDM project activities when carrying out its functions referred to in subparagraph (e) below;
  - (d) Demonstrate that it, and its subcontractors, have no real or potential conflict of interest with the participants in the CDM project activities for which it has been selected to carry out validation or verification and certification functions;
  - (e) Perform one of the following functions related to a given CDM project activity: validation or verification and certification, Upon request, the executive board may, however, allow a single designated operational entity to perform all these functions within a single CDM project activity;
  - (f) Maintain a publicly available list of all CDM project activities for which it has carried out validation, verification and certification;
  - (g) Submit an annual activity report to the executive board;
  - (h) Make information obtained from CDM project participants publicly available as required by the executive board. Information marked as proprietary or confidential shall not be disclosed without the written consent of the provider of the information, except as required by national law. Information used to determine additionally as defined in paragraph 43 below, to describe the baseline methodology and its application, and to support an environmental impact assessment referred to in paragraph 37 (c) below, shall not be considered as proprietary or confidential.

#### **F. Participation requirements**

28. Participation in a CDM project activity is voluntary.
29. Parties participating in the CDM shall designate a national authority for the CDM.
30. A Party not included in Annex I may participate in a CDM project activity if it is a Party to the Kyoto Protocol.
31. Subject to the provisions of paragraph 32 below, a Party included in Annex I with a commitment inscribed in Annex B is eligible to use CERs 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 the 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.

32. A Party included in Annex-I with a commitment inscribed in Annex B shall be considered:

(a) To meet the eligibility requirements referred to in paragraph 31 above after 16 months have elapsed since the submission of its report to facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7 and 8, and to demonstrate its capacity to account for its emissions and assigned amount in accordance with the modalities adopted for the accounting of assigned amount under Article 7, paragraph 4, unless the enforcement branch of the compliance committee funds in accordance with decision 24/CP.7 that the Party does not meet these requirements, or, at an earlier date, if the enforcement branch of the compliance committee has decided that it is not proceeding with any questions of implementation relating to these requirements indicated in reports of the expert review teams under Article 8 of the Kyoto Protocol, and has transmitted to the secretariat;

(b) To continue to meet the eligibility requirements referred to in paragraph 31 above unless and until the enforcement branch of the compliance committee decides that the Party does not meet one or more of the eligibility requirements, has suspended the Party's eligibility, and has transmitted this information to the secretariat.

33. A Party that authorizes private and/or public entities to participate in Article 12 project activities shall remain responsible for the fulfillment of its obligations under the Kyoto Protocol and shall ensure that such participation is consistent with the present annex. Private and /or public entities may only transfer and acquire CERs if the authorizing Party is eligible to do so at that time.

34. The secretariat shall maintain publicly accessible lists of;

(a) Parties not included in Annex-I which are Parties to the Kyoto Protocol;

(b) Parties included in Annex-I that do not meet the requirements in paragraph 31 above or have been suspended.

### **G. Validation and registration**

35. 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, the present annex and relevant decisions of the COP/MOP, on the basis of the project design document, as outlined in Appendix B below.

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

37. The designated operational entity selected by project participants to validate a project being under a contractual arrangement with them, shall review the project design document and any supporting documentation to confirm that the following requirements have been met:

(a) The participation requirements as set out in paragraphs 28 to 30 above are satisfied;

(b) Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;

(c) Project participants have submitted to the designated operational entity documentation on the analysis of environmental impacts of project activity, including transboundary impacts and , if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;

(d) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 53 below;

(e) The baseline and monitoring methodologies comply with requirements pertaining to:

(i) Methodologies previously approved by the executive board ; or

(ii) Modalities and procedures for establishing a new methodology, as set out in paragraph 38 below;

(f) Provisions for monitoring, verification and reporting are in accordance with decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;

(g) The project activity conforms to all other requirements for CDM project activities in decision 17/CP.7, the present annex and relevant decisions by the COP/MOP and the executive board.

38. If the designated operational entity determines that the project activity intends to use a new baseline or monitoring methodology, as referred to in paragraph 37(e) (ii) above, it shall prior to a submission for registration of this project activity, forward the proposed methodology, together with the draft project design document, including a description of the project and identification of the project participants, to the executive board for review. The executive board shall expeditiously, if possible at its next meeting but not later than four months, review the proposed new methodology in accordance with the modalities and procedures of the present annex. One 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 and submit the project design document for registration. In the event that the COP/MOP requests the revision of an approved methodology, on CDM project activity may use this methodology. The Project participants shall revise the methodology, as appropriate, taking into consideration any guidance received.

39. A revision of a methodology shall be carried out in accordance with the modalities and procedures for establishing new methodologies as set out in paragraph 38 above. Any revision to an approved methodology shall only be applicable to project activities registered subsequent to the date of revision and shall not affect existing registered project activities during their crediting periods.

40. The designated operational entity shall :

(a) Prior to the submission of the validation report to the executive board, have received from the project participants written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development;

(b) In accordance with provisions on confidentiality contained in paragraph 27(h) above, make publicly available the project design document;

(c) Receive, within 30 days, comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

(d) After the deadline for receipt of comments, make a determination as to whether, on the a basis of the information provided and taking into account the comments received, the project activity should be validated;

(e) Inform project participants of its determination on the validation of the project activity. Notification to the project participants will include;

(i) Confirmation of validation and date of submission of the validation report to the executive board; or

(ii) An explanation of reasons for non-acceptance if the project activity, as documented, is judged not to fulfil the requirements for validation;

(f) Submit to the executive board, if it determines the proposed project activity to be valid, a request for registration in the form of a validation report including the project design document, the written approval of the host Party as referred to in subparagraph (a) above, and an explanation of how it has taken due account of comments received;

(g) Make this validation report publicly available upon transmission to the executive board.

41. The registration by the executive board shall be deemed final eight weeks after the date of receipt by the executive board of the request for registration, unless a Party involved in the project activity or at least three members of the executive board request a review of the proposed CDM project activity. The review by the executive board shall be made in accordance with the following provisions:

(a) It shall be related to issue associated with the validation requirements;

(b) It shall be finalized no later than at the second meeting following the request for review, with the decision and the reasons for it being communicated to the participants and the public.

42. A proposed project activity that is not accepted may be reconsidered for validation and subsequent registration, after appropriate revisions, provided that it follows the procedures and meets the requirements for validation and registration, including those related to public comments.

43. A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

44. The baseline for a CDM project activity is the scenario that reasonably represents the authoropogenic emissions by sources of greenhouse gases 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 within the project boundary. A baseline shall be deemed to reasonably represent the authoropogenic 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 above.

45. A baseline shall be established:

(a) By project participants in accordance with provisions for the use of approved and new methodologies, contained in decision 17/CP. 7, the present annex and relevant decisions of the COP/MOP;

(b) In a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionally and taking into account uncertainly;



- (c) On a project-specific basis;
- (d) In the case of small-scale CDM project activities which meet the criteria specified in decision 17/CP.7 and relevant decisions by the COP/MOP, in accordance with simplified procedures developed for such activities;
- (e) Taking into account relevant national and/or sectional policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sectors expansion plans, and the economic situation in the project sector.

46. The baseline may include a scenario where future anthropogenic emissions by sources are projected to rise above current levels, due to the specific circumstances of the host Party.

47. The baseline shall be defined in a way that CERs cannot be earned for decreases in activity levels outside the project activity or due to *force majeure*.

48. In choosing a baseline methodology for a project participants shall select from among the following approaches the one deemed most appropriate for the project activity, taking into account any guideline by the executive board, and justify the appropriateness of their choice;

- (a) Existing actual or historical emissions, as applicable; or
- (b) Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment; or
- (c) 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.

49. Project participants shall select a crediting period for a proposed project activity from one of the following alternative approaches;

- (a) A maximum of seven years which may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the executive board that the original project baseline is still valid or has been updated taking account of new data where applicable; or
- (b) A maximum of ten years with one option of renewal.

50. Reductions in anthropogenic emissions by sources shall be adjusted for leakage in accordance with the monitoring and verification provisions in paragraphs 59 and 62 (f) below, respectively.

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

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

## H. Monitoring

53. Project participants shall include, as part of the project design document, a monitoring plan

- (a) The collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period;

(b) The collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources of greenhouse gases within the project boundary during the crediting period;

(c) The identification of all potential sources of and the collection and archiving the data on increased anthropogenic emissions by sources of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project activity during the crediting period.

(d) The collection and archiving the information relevant to the provisions in paragraph 37(c) above;

(e) Quality assurance and control procedures for the monitoring process;

(f) Procedures for the periodic calculation of the reductions of anthropogenic emissions by sources by the proposed CDM project activity, and for leakage effects;

(g) Documentation of all steps involved in the calculations referred to in paragraph 53(c) and (f) above.

54. A monitoring plan for a proposed project activity shall be based on a previously approved monitoring methodology or a new methodology, in accordance with paragraphs 37 and 38 above.

(a) Is determined by the designated operational entity as appropriate to the circumstances of the proposed project activity and has been successfully applied elsewhere;

(b) Reflects good monitoring practice appropriate to the type of project activity.

55. For small-scale CDM project activities meeting the criteria specified in decision 17/CP.7 and relevant decisions by the COP/MOP, project participants may use simplified modalities and procedures for small-scale project.

56. Project participants shall implement the monitoring plan contained in the registered project design document.

57. Revisions, if any, to the monitoring plan to improve its accuracy and/or completeness of information shall be justified by project participants and shall be submitted for validation to a designated operational entity.

58. The implementation of the registered monitoring plan and its revisions, as applicable, shall be a condition for verification, certification and the issuance of CERs.

59. Subsequent to the monitoring and reporting of reductions in anthropogenic emissions, CERs resulting from a CDM project activity during a specified time period shall be calculated, applying the registered methodology, by subtracting the actual anthropogenic emissions by applying the registered methodology, by subtracting the actual anthropogenic emissions by sources from baseline emissions and adjusting for leakage.

60. The project participants shall provide to the designated operational entity, contracted by the project to perform the verification, a monitoring report in accordance with the registered monitoring plan set out in paragraph 53 above for the purpose of verification and certification.

### **I. Verification and certification**

61. Verification is the periodic independent review and ex post determination by the designated operational entity of the monitored reductions in anthropogenic emissions by sources of greenhouse gases that have occurred as a result of a registered CDM project activity during the verification period. 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 as verified.

62. In accordance with the provisions on confidentiality in paragraph 27(h) above, the designated operational entity contracted by the project participants to perform the verification shall make the monitoring report publicly available, and shall;

(a) Determine whether the project documentation provided is in accordance with the requirements of the registered project design document and relevant provisions of decision 17/CP. 7, the present annex and relevant decisions of the COP/MOP;

(b) conduct on-site inspections, as appropriate, that may comprise, *inter alia*, a review of performance records, interviews with project participants and local stakeholders, collocation of measurements, observation of established practices and testing of the accuracy of monitoring equipment;

(c) If appropriate, use additional data from other sources;

(d) Review monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent;

(e) Recommend to the project participants appropriate changes to the monitoring methodology for any further crediting period, if necessary;

(f) Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information derived under subparagraph (a) above and obtained under subparagraph (b) and/or (c) above, as appropriate, using calculation procedures consistent with those contained in the registered project design document and in the monitoring plan;

(g) Identify and inform the project participants of any concern related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information;

(h) Provide a verification report to the project participants, the Parties involved and the executive board. The report shall be made publicly available.

63. The designated operational entity shall, based on its verification report, certify in writing that, during the specified time period, the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity. It shall inform the project participants, Parties involved and the executive board of its certification process and make the certification report publicly available.

#### **J. Issuance of certified emission reductions**

64. The certification report shall constitute a request for issuance to the executive board of CERs equal to the verified amount of reductions of anthropogenic emissions by sources of greenhouse gases.

65. The issuance shall be considered final 15 days after the date of receipt of the request for issuance, unless a Party involved in the project activity or at least three members of the executive board request a review of the proposed issuance of CERs. Such a review shall be limited to issues of fraud, malfeasance or incompetence of the designated operational entities and be conducted as follows:

(a) Upon receipt of a request for such a review, the executive board, at its next meeting, shall decide on its course of action. If it decides that the request has merit it shall perform a review and decide whether the proposed issuance of CERs should be approved;

(b) The executive board shall complete its review with 30 days following its decision to perform the review;

(c) The executive board shall inform the project participant of the outcome of the review, and make public its decision regarding the approval of the proposed issuance of CERs and the reasons for it.

66. Upon being instructed by the executive board issue CERs for a CDM project activity the CDM registry administrator, working under the authority of the executive board shall promptly, issue the specified quantity of CERs into the pending account of the executive board in the CDM registry, in accordance with Appendix D below. Upon such issuance, the CDM registry administrator shall promptly;

(a) Forward the quantity of CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation, respectively, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for the management of the share of proceeds;

(b) Forward the remaining CERs to the registry accounts of Parties and project participants involved, in accordance with their request.

## APPENDEX-A

### G. Standards for the accreditation of operational entities

1. An operational entity shall :

(a) Be a legal entity (either a domestic legal entity or an international organization) and provide documentation of this status:

(b) Employ a sufficient number of persons having the necessary competence to perform validation, verification and certification functions relating to the type, range and volume of work performed, under a responsible senior executive;

(c) Have the financial stability, insurance coverage and resources required for its activities;

(d) Have sufficient arrangements to cover legal and financial liabilities arising from its activities;

(e) Have documented internal procedures for carrying out its functions including, among others, procedures for the allocation of responsibility within the organization and for handling complaints. These procedures shall be made publicly available;

(f) Have, or have access to, the necessary expertise to carry out the functions specified in modalities and procedures of the CDM and relevant decisions by the COP/MOP; in particular knowledge and understanding of;

(i) The modalities and procedures and guidelines for the operation of the CDM, relevant decisions of the COP/MOP and of the executive board;

(ii) Issues, in particular environmental, relevant to validation, verification and certification of CDM project activities, as appropriate;

(iii) The technical aspects of CDM project activities relevant to environmental issues, including expertise in the setting of baselines and monitoring of emissions;

(iv) Relevant environmental auditing requirements and methodologies;

(v) Methodologies for accounting of anthropogenic emissions by sources;

(vi) Regional and sectoral aspects;

(g) Have a management structure that has overall responsibility for performance and implementation of the entity's functions including quality assurance procedures, and all relevant decisions relating to validation, verification and certification. The applicant operational entity shall make available;

- (i) The names, qualifications, experience and terms of reference of senior management personnel such as the senior executive, board members, senior officers and other relevant personnel;
- (ii) An organizational chart showing lines of authority, responsibility and allocation of functions stemming from senior management;
- (iii) Its quality assurance policy and procedures;
- (iv) Administrative procedures, including document control;
- (v) Its policy and procedures for the recruitment and training of operational entity personnel, for ensuring their competence for all necessary functions for validation, verification and certification functions, and for monitoring their performance;
- (vi) Its procedures for handling complaints, appeals disputes;

(h) Not have pending any judicial process for malpractice, fraud and/or other activity incompatible with its functions as a designated operational entity.

2. An applicant operational entity shall meet the following operational requirements;

(a) Work in a credible, independent, non-discriminatory and transparent manner, complying with applicable national law and meeting, in particular, the following requirements;

- (i) An applicant operational entity shall have a documented structure, which safeguard impartiality, including provisions to ensure impartiality of its operations;
- (ii) If it is part of a large organization and where parts of the organization are, or may become, involved in the identification, development or financing of any CDM project activity, the applicant operational entity shall;
  - Make a declaration of all the organization's actual and planned involvement in CDM project activities, if any, indicating which part of the organization is involved and in which part of the organization is involved and in which particular CDM project activities;
  - Clearly define the links with other parts of the organization demonstrating that no conflicts of interest exist;
  - Demonstrate that no conflict of interest exists between its functions as an operational entity and any other functions that it may have and demonstrate how business is managed to minimize any identified risk to impartiality. The demonstration shall cover all sources of conflict of interest, whether they arise from within the applicant operational entity or from the activities of related bodies;
  - Demonstrate that it, together with its senior management and staff, is not involved in any commercial, financial or other processes which might influence its judgement or endanger trust in its independence of judgement and integrity in relation to its activities, and that it complies with any rules applicable in this respect;

(b) Have adequate arrangements to safeguard confidentiality of the information obtained from CDM project participants in accordance with provisions contained in the present annex.

## APPENDEX-B

### Project design document

1. The provisions of this appendix shall be interpreted in accordance with the annex above on modalities and procedures for a CDM.
2. The purpose of this appendix is to outline the information required in the project design document. A project activity shall be described in detail taking into account the provisions of the annex on modalities and procedures for a CDM, in particular, section G on validation and registration and section H on monitoring, in a project design document which shall include the following:
  - (a) A description of the project comprising the project purpose, a technical description of the project, including how technology will be transferred, if any, and a description and justification of the project boundary;
  - (b) A proposed baseline methodology in accordance with the annex on modalities and procedures for a CDM including, in the case of the :
    - (i) Application of an approved methodology;
      - Statement of which approved methodology has been selected;
      - Description of how the approved methodology will be applied in the context of the project;
    - (ii) Application of a new methodology;
      - Description of the baseline methodology and justification of choice, including an assessment of strengths and weaknesses of the methodology;
      - Description of key parameters, data sources and assumptions used in the baseline estimate, and assessment of uncertainties;
      - Projection of how the baseline methodology addresses potential leakage;
    - (iii) Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account and an explanation of how the baseline was established in a transparent and conservative manner;
  - (c) Statement of the estimated operational lifetime of the project and which crediting period was selected;
  - (d) Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity;
  - (e) Environmental impacts;
    - (i) Documentation on the analysis of the environmental impacts, including transboundary impacts;
    - (ii) If impacts are considered significant by the project participants or the host Party; conclusions and all references to support documentation of an environmental impact assessment that has been undertaken in accordance with the procedures as required by the host Party;
  - (f) Information on sources of public funding for the project activity from parties included in Annex I which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those parties;
  - (g) Stakeholder comments, including a brief description of the process, a summary of the comments received, and a report on how due account was taken of any comments received;

- (h) Monitoring Plan:
  - (i) Identification of data needs and data quality with regard to accuracy comparability, completeness and validity;
  - (ii) Methodologies to be used for data collection and monitoring including quality assurance and quality control provisions for monitoring, collecting and reporting;
  - (iii) In the case of a new monitoring methodology, provide a description of the methodology, including an assessment of strengths and weaknesses of the methodology and whether or not it has been applied successfully elsewhere;
- (j) Calculations:
  - (I) Description of formulae used to calculate and estimate anthropogenic emissions by sources of greenhouse gases of the CDM project activity within the project boundary;
  - (II) Description of formulae used to calculate and to project leakage, defined as: the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the CDM project activity boundary, and that is measurable and attributable to the CDM project activity;
  - (III) The sum of (i) and (ii) above representing the CDM project activity emissions;
  - (IV) Description of formulae used to calculate and to project the anthropogenic emissions by sources of greenhouse gases of the baseline;
  - (V) Description of formulae used to calculate and to project leakage;
  - (VI) The sum of (iv) and (v) above representing the baseline emissions; reductions of the CDM project activity;
  - (j) References to support the above, if any.

## APPENDIX-C

### Terms of reference for establishing guidelines on baselines and monitoring methodologies

The executive board, drawing on experts CDM, shall develop and recommend to the COP/MOP, *inter alia*:

- (a) General guidance on methodologies relating to baselines and monitoring consistent with the principles set out in those modalities and procedures in other to:
  - (i) Elaborate the provisions relating to baselines and monitoring methodologies contained in decision 17/CP. 7, the annex above and relevant decisions of the COP/MOP;
  - (ii) Promote consistency, transparency and predictability;
  - (iii) Provide rigour to ensure that net reductions in anthropogenic emissions are real and measurable, and an accurate reflection of what has occurred within the project boundary;
  - (iv) Ensure applicability in different geographical regions and to those project categories which are eligible in accordance with decision 17/CP. 7 and relevant decisions of the COP/MOP;
  - (v) Address the additional requirement of Article 12, paragraph 5(c), and paragraph 43 of the above annex;
- (b) Specific guidance in the following areas:

- (i) Definition of project categories (e.g. based on sector, subsection, project type technology, geographic area) that show common methodological characteristics for baseline setting, and/or monitoring, including guidance on the level of geographic aggregation, taking into account data availability;
- (ii) Baseline methodologies deemed to reasonably represent what would have occurred in the absence of a project activity;
- (iii) Monitoring methodologies that provide an accurate measure of actual reductions in anthropogenic emissions as a result of the project activity, taking into account the need for consistency and cost-effectiveness;
- (iv) Decision trees and other methodological tools, where appropriate, to guide choices in order to ensure that the most appropriate methodologies are selected, taking into account relevant circumstances;
- (v) The appropriate level of standardization of methodologies to allow a reasonable estimation of what would have occurred in the absence of a project activity wherever possible and appropriate. Standardization should be conservative in order to prevent any overestimation of reductions in anthropogenic emissions;
- (vi) Determination of project boundaries including accounting for all greenhouse gases that should be included as a part of the baseline, and monitoring. Relevance of leakage and recommendations for establishing appropriate project boundaries and methods for the ex post evaluation of the level of leakage;
- (vii) Accounting for applicable national policies and specific national or regional circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the sector relevant to the project activity;
- (viii) The breadth of the baseline, e.g. how the baseline makes comparisons between the technology/fuel used and other technologies/fuels in the sector;
- (c) In developing the guidance in (a) and (b) above, the executive board shall take into account:
  - (i) Current practices in the host country or an appropriate region, and observed trends;
  - (ii) Least cost technology for the activity or project category.

## **APPENDIX-D**

### **Clean development mechanism registry requirements**

1. The executive board shall establish and maintain a CDM registry to ensure the accurate accounting of the issuance, holding, transfer and acquisition of CERs by Parties not included in Annex I. The executive board shall identify a registry administrator to maintain the registry under its authority.

2. The CDM registry shall be in the form of a standardized electronic database which contains, *inter alia*, common data elements relevant to the issuance, holding, transfer and acquisition of CERs. The structure and data formats of the CDM registry shall conform to technical standards to be adopted by the COP/MOP for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the CDM registry and the independent transaction log.

3. The CDM registry shall have the following accounts;

(a) One pending account for the executive board, into which CERs are issued before being transferred to other accounts;



(b) At least one holding account for each Party not included in Annex I hosting a CDM project activity or requesting an account;

(c) At least one cancellation account for the purpose of canceling ERUs, CERs, AAUs and RMUs equal to excess CERs issued, as determined by the executive board, where the accreditation of a designated operational entity has been withdrawn or suspended;

(d) At least one account for the purpose of holding and transferring CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation accordance with Article 12, paragraph 8. Such an account may not otherwise acquire CERs.

4. Each CER shall be held in only one account in one registry at a given time.

5. Each account within the CDM registry shall have a unique account number comprising the following elements:

(a) Party/organization identifier: the Party for which the account is maintained, using the two-letter country code defined by the International Organization for Standardization (ISO 3166), or, in the cases of the pending account and an account for managing the CERs corresponding to the share of proceeds, the executive board or another appropriate organization;

(b) A unique number: a number unique to that account for the Party or organization for which the account is maintained.

6. Upon being instructed by the executive board to issue CERs for a CDM project activity, the registry administrator shall, in accordance with the transaction procedures set out in decision -/CMP.1 (*Modalities for the accounting of assigned amounts*):

(a) Issue the specified quantity of CERs into a pending account of the executive board;

(b) Forward the quantity of CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for holding and transferring such CERs;

(c) Forward the remaining CERs to the registry accounts of project participants and Parties involved, in accordance with their request.

7. Each CER shall have a unique serial number comprising the following elements:

(a) Commitment period: the commitment period for which the CER is issued;

(b) Party of origin: the Party which hosted the CDM project activity, using the two letter country code defined by ISO 3166;

(c) Type: this shall identify the unit as a CER;

(d) Unit: a number unique to the CER for the identified commitment period and Party of origin;

(e) Project identifier : a number unique to the CDM project activity for the Party of origin.

8. Where the accreditation of a designated operational entity has been withdrawn or suspended, ERUs, CERs, AAUs equal to the excess CERs issued as determined by the executive board, shall be transferred to a cancellation account in the CDM registry. Such ERUs, CERs, AAUs, and RMUs may not be further transferred or used for the purpose of demonstrating the compliance of a Party with its commitment under Article 3. paragraph 1.

9. The CDM registry shall make non-confidential information publicly available and provide a publicly accessible user interface through the Internet that allows interested persons to query and view it.

10. The information referred to in paragraph 9 above shall include up-to-date information, for each account number in the registry, on the following:

(a) Account name: the hold of the account;

(b) Representative identifier: the representative of the account holder, using the Party/ organization identifier ( the two-letter country code defined by ISO 3166) and a number unique to that representative for that Party or organization;

(c) Representative name and contact information: the full name, mailing address, telephone number, facsimile number and e-mail address of the representative of the account holder.

11. The information referred to in paragraph 9 above shall include the following CDM project activity information, for each project identifier against which the CERs have been issued;

(a) Project name: a unique name for the CDM project activity;

(b) Project location: the Party and town or region in which the CDM projec activity is located:

(c) Years of CER issuance : the years in which CERs have been issued as a result of the CDM project activity;

(d) Operational entities: the operational entities involved in the validation, verification and certification of the CDM project activity;

(e) Reports: downloadable electronic versions of documentation to be made publicly available in accordance with the provisions of the present annex

12. The information referred to in paragraph 9 above shall include the following holding and transaction information relevant to CDM registry, by serial number, for each calendar year (defined according to Greenwich Mean Time):

(a) The total quantity of CERs in each account at the beginning of the year,

(b) The total quantity of CERs issued;

(c) The total quantity of CERs transferred and the edentity of the acquiring accounts and registries;

(d) The total quantity of ERUs, CERs, AAUs and RMUs cancelled in accordance with paragraph 8 above;

(e) Current holdings of CERs in each account.

\* \* \* \* \*

## Glossary of terms used in the CDM Project Design Document (CDM-PDD)

(The following CDM glossary intendsto assist in clarifying terms used in the CDM-PDD and the in the CDM medalitites and procedures in order to facilitate the completion of the CDM-PDD 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 Parties<sup>1</sup> 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 attibutable”.

#### **Baseline:**

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, sector’s and source categories listed in Annex-A (of the Kyoto Protocol) within the project boundary. A baseline shall be deemed to reasonably represent the authropogenic 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.

#### **Baseline approach:**

A baseline approach is the basis for a baseline methodology. The Executive Board agreed that the three approaches identified in sub-paragraph 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
- Emission from a technology that represents an economically attractive course of action, taking into account barriers to investment; or

<sup>1</sup> In this glossary, the term “Party” is used as deined in the Kyoto Protocol; “Party” means, unless the context otherwise idicates, 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 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 executed a priori so those 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 the proposed methodology in a draft project design document (CDM – PDD), including the description of the project activity and the identification of the project participants.

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 may use this methodology. The COP/MOP requests the revision of an approved methodology, on CDM project activity may use this methodology, on 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 [cdm-info@unfccc.int](mailto:cdm-info@unfccc.int) or Fax: (49-228) 815-1999.

### **Crediting period :**

The crediting period for a CDM project activity is the period for which reduction from the baseline are verified and certified by a designated operational entity for the purpose of issuance of certified emission reduction (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 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) (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 the 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 inform 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 reduction in anthropogenic emissions by the sources of greenhouse gases (GOE to perform all those 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 M & P.

**Issuance of certified emission reduction (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 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 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 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 the proposed methodology described in a draft project design document (CDM-PDD), including a description of the project activity and identification of the project participants.

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 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 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 CDM project activity:**

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

**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 a project design document (CDM-PDD).

**Project participants:**

In accordance with the use of the term project participant in the CDM modalities and procedures, a project participant is either a Party involved or, in accordance with paragraph 33 of the CDM modalities and procedures, a private and/or public entity authorized by a Party to participate, under the Party’s responsibility, in CDM project activities.

Project participants are Parties or private and/or public entities that take decision on the allocation of CERs from the project activity under consideration.

At registration, a statement signed by all project participants shall be provided clarifying the modalities of communicating with the Executive Board and the secretariat, in particular with regard to instructions regarding allocations of CERs at the point of issuance.

**Renewable crediting period:**

See Crediting period – renewable

**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 as of the year 2000 (1 January 2000) and prior to the adoption of decision 17/CP.7 (10 November 2001) have to provide documentation, at the time of registration showing that the starting date fell within this period.

**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 choice 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 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 reduction 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 to be longer than the crediting period.

\* \* \* \* \*



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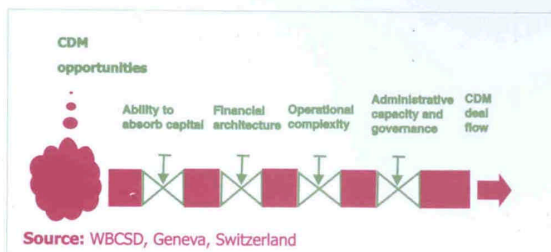
## Some Useful CDM Websites

- Global Environment Facility (GEF) [www.undp.org/gef](http://www.undp.org/gef)  
United Nations Development Programme (UNDP), New York
- The United Nations Framework Convention on Climate Change (UNFCCC) [www.unfccc.int/](http://www.unfccc.int/)
- World Meteorological Organisation (WMO) [www.wmo.ch](http://www.wmo.ch)
- Intergovernmental Panel on Climate Change (IPCC) [www.ipcc.ch](http://www.ipcc.ch)
- Ministry of Housing, Spatial Planning and the Environment (Government of Netherlands) <http://www.cdminfo.nl>
- WADE – World Alliance for decentralized Energy, Edinburgh, Scotland, UK [www.idalpower.org](http://www.idalpower.org)
- Global Environment Forum-Kansai, Osaka, Japan [www.global-kansai.or.jp](http://www.global-kansai.or.jp)
- European Renewable Energy Council [www.erec-renewables.org](http://www.erec-renewables.org)
- Climtech, Tekes, National Technology Agency, Finland [www.climtech.vtt.fi/www.takes.fi](http://www.climtech.vtt.fi/www.takes.fi)
- Pew Center on Global Climate Change, Arlington, USA [www.pewclimate.org](http://www.pewclimate.org)
- Rijksinstituut voor volksgezondheid en Milieu (rium), Netherlands [www.rium.nl](http://www.rium.nl)
- International Emissions Trading Association, Deloitte & Touche [www.deloitte.co.uk](http://www.deloitte.co.uk)
- Det Norske Veritas (DNV) [www.dnv.com](http://www.dnv.com)
- Grid-Arendal, Norway [www.grida.no.com](http://www.grida.no.com)
- Natsource Inc. [www.natsource.com](http://www.natsource.com)
- European Renewable Energy Council [www.erec-renewables.org](http://www.erec-renewables.org)
- Climtech, Tekes, National Technology Agency, Finland [www.climtech.vtt.fi/www.takes.fi](http://www.climtech.vtt.fi/www.takes.fi)
- Pew Center on Global Climate Change, Arlington, USA [www.pewclimate.org](http://www.pewclimate.org)
- Ministry of Environment & Forests, Government of India (GoI) <http://www.envfor.nic.in/cc/index.htm>
- Ministry of Science and Technology, GoI <http://mst.nic.in/>
- Department of Science & Technology, GoI <http://dst.gov.in/>
- Department of Scientific and Industrial Research, GoI <http://dsir.nic.in/>
- Department of Biotechnology, GoI <http://dbtindia.nic.in>
- Department of Ocean Development, GoI <http://dod.nic.in>
- Bureau of Energy Efficiency (BEE), Ministry of Power, GoI [www.bee-india.com](http://www.bee-india.com)
- Indian Meteorological Department (IMD), GoI [www.imd.ernet.in](http://www.imd.ernet.in)
- India's first National Communication to \* the UNFCCC [www.natcomindia.org](http://www.natcomindia.org)
- Asia Least-cost Greenhouse Gas Abatement Strategy: India <http://ntwebo3.asiandevbank.org/>
- Centre for Wind Energy Technology, Chennai, India [Email: ewet@md4.usnl.net.in](mailto:ewet@md4.usnl.net.in)
- Greenhouse Gas Pollution Prevention Project [www.climatechangeindia.com](http://www.climatechangeindia.com)
- The Energy Research Institute (TERI) [www.teriin.org/climate/climate.htm](http://www.teriin.org/climate/climate.htm)
- FICCI's environmental website [www.cleantechindia.com](http://www.cleantechindia.com)
- U.S. Dept. of Energy – Energy Information Administration <http://www.eia.doe.gov/>
- U.S. Environmental Protection Agency (EPA) – Global Warming [http://www.epa.gov/global\\_warming/](http://www.epa.gov/global_warming/)
- U.S. Environmental Protection Agency (EPA) – Ozone Depletion <http://www.epa.gov/ozome/index.html>
- U.S. Dept. Of State, International Information Programs (Global) <http://usinfo.state.gov/topical/global/>
- Whitehouse – Environment <http://www.whitehouse.gov/infocus/environment/>
- American Council for an Energy Efficient Economy (ACEEE) <http://www.aceee.org/>
- Americans for Equitable Climate Solutions AECS <http://www.aecs-inc.org/index2.html>
- Council of State Governments-Environmental Policy Group <http://www.csg.org/clip/policy/environment.htm>
- Environmental and Energy Study Institute (EESI) <http://www.eesi.org/>
- Green House Network <http://www.greenhousenet.org/>
- International Institute for Sustainable Development (IISD) <http://www.iisd.org/default.asp>
- National Governors Association (NGA) <http://www.nga.org/center/>
- National Library for the Environment (NLE) <http://www.cnle.org/NLE/>
- OECD-Climate Change, Energy and Transport <http://www.oecd.org/EN/home/>
- United Nations framework Convention on Climate Change <http://www.unfccc.int/>
- World Bank – Climate Change <http://inweb18.worldbank.org>
- U.S. Global Change Research Information Office (GCRIO) <http://www.gcrio.org/index.shtml>
- Eco-Portal – The Environmental Sustainability Information Source <http://www.eco-portal.com/>

## CHOKE MODEL OF CDM PROJECT DEAL FLOW

### Choke Model of CDM project deal flow

('Choke' - a type of valve that restricts the flow in a pipeline)



**Choke 1 : Ability to absorb capital** - The ability to efficiently absorb capital depends on a variety of factors that are specific to their context and situation. Political and security risks, as well as the prevailing ethical and legal frameworks, and business and investment infrastructures, are factors in the ability to absorb external investment. This is not, of course, something that is exclusive to the CDM. It applies to investment generally and gives rise to constraints on the nature and pace of investment.

Countries that are poor and less developed industrially, generally will have fewer emission reduction opportunities. They are also likely to have poor institutional and commercial capacity, not to mention high-risk ratings and a very limited ability to develop and manage CDM projects. Generating a flow of CDM projects from poorer countries will require progressive capacity building and funding from public sector finance (the World Bank or IFC) and concessionary finance to catalyse projects.

Even in richer and higher growth developing countries, the micro-economic environment would impose constraints on the ability to absorb capital through CDM projects. For example, a country's private sector will need to be aware of and understand the CDM and incorporate it within their business strategies and management processes. This may take time.

**Choke 2 : Financial architecture** - The financial architecture would determine the number of potential participants and the potential sources of know-how and investment. The architecture adopted would either exacerbate or improve the ability of CDM projects to attract investment, for a given set of constraints on a country's ability to absorb capital.

**Choke 3 : Operational Complexity** - CDM methodologies and processes will create bottlenecks and raise transaction costs. The greater the complexity

the lower the deal flow.

CDM project investment carries with it an important new dimension : it attracts a global level of scrutiny, over and above host country processes which must be satisfied for any project investment, regardless of the CDM. The investment and trade-related functions of the CDM therefore need to be organised with the minimum of bureaucracy and it will be particularly important to keep additionality and baselines as simple as possible.

Assessing the sustainable development credentials of a project could further introduce complexity. A 'one-size-fits-all' approach, such as a list of universal criteria, will not assure consistency nor guard against a lax application of those criteria. Simplicity will derive from an integrated host country review process. Assurance will derive from host-country public scrutiny and disclosure, and this will be reinforced by ex-post disclosure of CDM related decisions to facilitate policy and process review at a global level.

**Choke 4: Governance and Administrative Capacity**- The nature and capacity of governance and administration will affect the 'Deal-flow' and transaction costs of projects. Administrative delays and barriers will depend on the CDM governance system, that is, the structure, roles and processes that are adopted. Operational entities will face significant learning curves in developing the systems, processes and staffing to support their work. There will be constraints on the number of projects that can be serviced with competent, experienced and professional staff. Moreover, there are considerable lead times associated with project development (concept, feasibility, design, etc), which can take years, especially with large projects.

### Market Size and Deal Flow - the verdict ?

- ❖ It is difficult to envisage a possible scenario in which the CDM could deliver high 'Deal flow' by the first commitment period. Now 1-2 billion tons of Co2 emission reductions by the end of this period would appear to be optimistic.
- ❖ The major challenge is to reduce bottlenecks and stimulate 'Deal flow' so that the CDM can attain a sufficient mass to be relevant to potential investors and developing countries.
- ❖ It is also difficult to envisage how the CDM could detract from the need to take domestic action in Annex-1 countries. It does not seem much risk that the CDM just provides an easy alternative to domestic action in Annex-1. However there is a significant risk that the CDM could turn out to be "too little, too late".

Source: CDM Contributing to Policy Dialogue by World Business Council for Sustainable Development (WBCSD), Geneva, Switzerland.

Climate change is one of the greatest challenges that the global community has ever faced. It is being addressed collectively through the United Nations Framework Convention on Climate Change (UNFCCC) and the most practical instrument of the convention; the Kyoto Protocol, which offers 3 fold mechanisms; (i) Joint implementation (JI), (ii) *Clean Development Mechanism (CDM)* and (iii) Emission Trading (ET) to tackle the danger posed by growing emissions of Greenhouse gases (GHGs), thereby combating global warming and achieving stability in earth's temperature. Among, above 3 mechanisms; CDM emerges as the *only and one* alternative to tackle this problem, involving *developing countries*, and by finding ways to generate *Certified Emission Reductions (CERs)* from the developed ones' which would contribute immensely to their process of sustainable development.

India has ratified the *Kyoto Protocol* in August, 2002 and subsequently hosted the *Eight Conference of Parties (COP-8)* to UNFCCC in New Delhi from 23<sup>rd</sup> October to 1<sup>st</sup> November, 2002; thereby, emerging as a *Global Leader* in the field. At the instances of *Prime Minister's Office, Government of India*, a working Group was constituted at *Planning Commission* to prepare an *Action Plan for CDM* in March, 2003. This is the report of the Working Group, unfolding the *National CDM Action Plan*, which is under implementation now. Although, the *Kyoto Protocol* is yet to come into existence at the global scenario, India is well ahead in establishing a full-fledged system in *operationalising CDM*, through the *Designated National Authority (DNA)*, where a simplified, clear and fast tracked clearance system for the issuance of *'Host Country Endorsement'* is already in place and dynamic initiatives to create an enabling atmosphere in bringing a *healthy and competitive CDM market*, is being attempted based on the recommendations of this working group report.