

**PRIMER
ON
CLEAN DEVELOPMENT MECHANISM (CDM)**

PREPARED FOR



**WORLD ENERGY COUNCIL
ASIA-PACIFIC REGION MEMBERS**

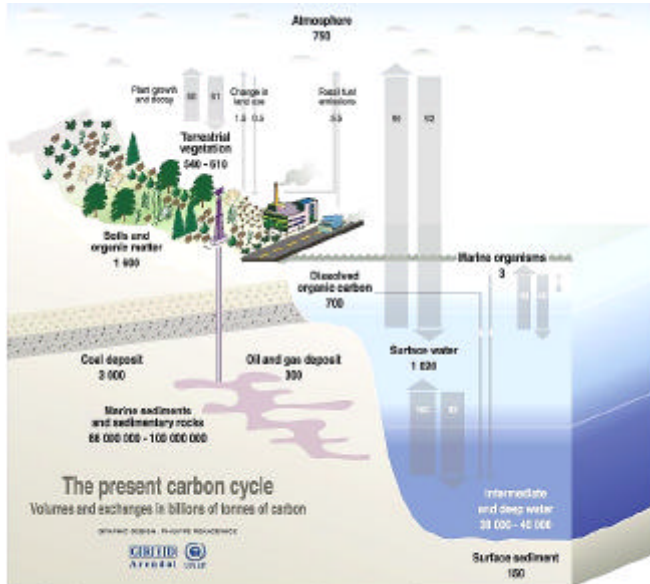
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CLIMATE CHANGE

Climate change can be caused by an increase in the atmospheric concentration of greenhouse gases (GHGs), which inhibit the transmission of some of the sun's energy from the earth's surface to the outer space.



Source: Center for climate research, Institute for environmental studies, University of Toronto; Canadian university colleges Canada; Department of geography, World Watch, November-December 1998; Climate-change 1998: The science of climate change, contribution of working group I to the second assessment report of the Intergovernmental panel on climate change, UNFCCC/WG1, Cambridge (UK) university, 1998.

The GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

The main greenhouse gases

Greenhouse gases	Chemical formula	Pre-industrial concentration	Concentration in 1994	Atmospheric lifetime (years)**	Anthropogenic sources	Global warming potential (GWP)*
Carbon dioxide	CO ₂	275 000 ppbv	358 000 ppbv	Variable	Fossil fuel combustion Land-use conversion Cement production	1
Methane	CH ₄	700 ppbv	1 721 ppbv	12.2 ± 3	Fossil fuels Rice paddies Waste dumps Livestock	21**
Nitrous oxide	N ₂ O	275 ppbv	311 ppbv	120	Fertilizer Industrial processes Combustion	310
CFC-12	CCl ₂ F ₂	0	0.508 ppbv	102	Liquid coolants Foams	6200-7100****
HCFC-22	CHClF ₂	0	0.106 ppbv	12.1	Liquid coolants	1300-1400****
Perfluoromethane	CF ₄	0	0.070 ppbv	50 000	Production of aluminum	6 900
Sulphur hexafluoride	SF ₆	0	0.032 ppbv	3 200	Dielectric fluid	23 900

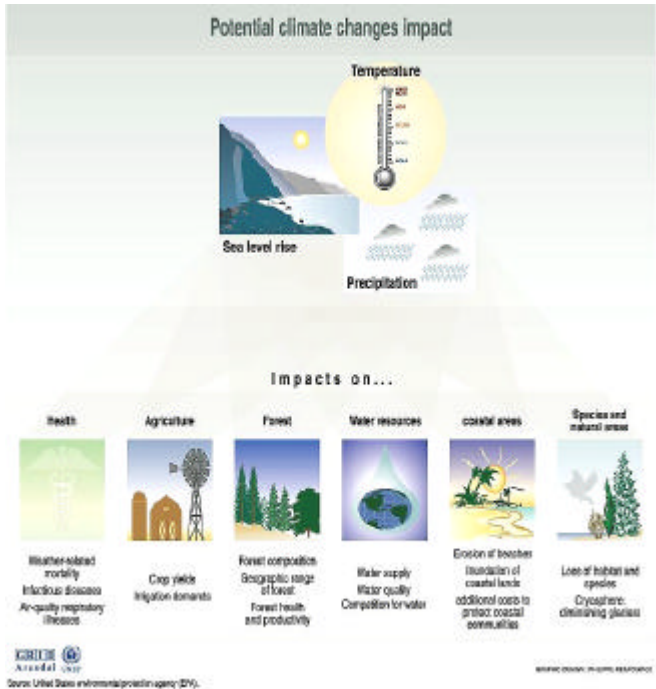
Note: ppbv: 1 part per billion by volume; pptbv: 1 part per trillion by volume; pptpv: 1 part per million by volume

* GWP for 100 year time horizon. ** Includes indirect effects of hydrofluorocarbon production and chlorofluorocarbon production. *** On page 16 of the IPCC SMI. For single gases (for CO₂) can be determined as of the different values of uptake by different sink processes. **** Not global warming potential. I.e., includes the indirect effect due to carbon depletion.

Source: IPCC, Second Assessment Report, Climate Change 1998: The Science of Climate Change, Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change, UNFCCC/WG1, Cambridge (UK) University, 1998.

The increased concentrations of GHGs result in part from human activities such as deforestation, burning of fossil fuels (gasoline, oil, coal and natural gas), and the release of CFCs from refrigerators, air conditioners, etc.

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UNITED NATIONS FRAMEWORK CONVENTION FOR CLIMATE CHANGE (UNFCCC)

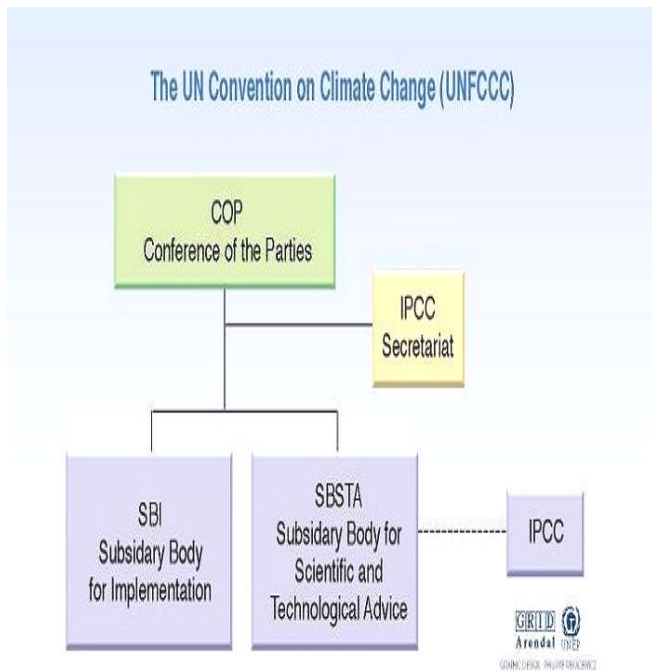
In the 1980s, public concern started to arise when scientific evidences revealed the linkage of GHGs from human activity to global climate change. This led to calls for a global treaty to address the problem and the United Nations General Assembly responded by establishing the United Nations Framework Convention for Climate Change (UNFCCC).



The Framework is the centrepiece of global efforts to combat global warming. It was adopted in June 1992 at the Earth Summit in Rio De Janeiro, Brazil and entered into force on March 21, 1998. It aimed to achieve stabilization of GHGs concentrations in the atmosphere at a level that would prevent dangerous human-interference with the climate system. This is to be achieved within a period sufficient enough to allow ecosystems to adapt naturally, to ensure food production is not threatened and to enable economic development to proceed in a sustainable manner.



The organizational structure of UNFCCC is shown in the following diagram.



Source: United Nations Framework Convention on Climate Change (UNFCCC)

CONFERENCE OF PARTIES (COP)

It is the supreme body of the UN Framework Convention on Climate Change. It comprises 170+ nations that have ratified the Convention. Its first session was held in 1995 in Berlin, Germany and it has since then met on a yearly basis. Its role and aim is to promote and review the implementation of the Convention. It will periodically review existing commitments in light of the Convention's objective, new scientific findings, and the effectiveness of national climate change programs.

KYOTO PROTOCOL

The Kyoto Protocol is an international agreement of 159 nations, which attended the Third Conference of Parties (COP-3) to the UNFCCC held in December 1997 in Kyoto, Japan to reduce worldwide emissions of GHGs. This Protocol is the legal instrument to respond to changes in scientific understanding and political will to realize the objectives of the Framework Convention.

Under this Protocol, Annex I ("industrialized or developed") countries are obliged, through a legally binding agreement, to reduce their combined GHGs emissions by 5.2% compared to 1990 levels in the first "commitment period" (2008-2012). *Note: Economic growth since 1990 means that industrialised countries emissions have grown since 1990 such that some countries face much greater emission reductions in the first commitment period (Ex. USA, EU, Japan).*

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The Protocol established the following market-based flexibility mechanisms to make the transition economically efficient:

1. Emissions Trading (ET)
2. Joint Implementation (JI)

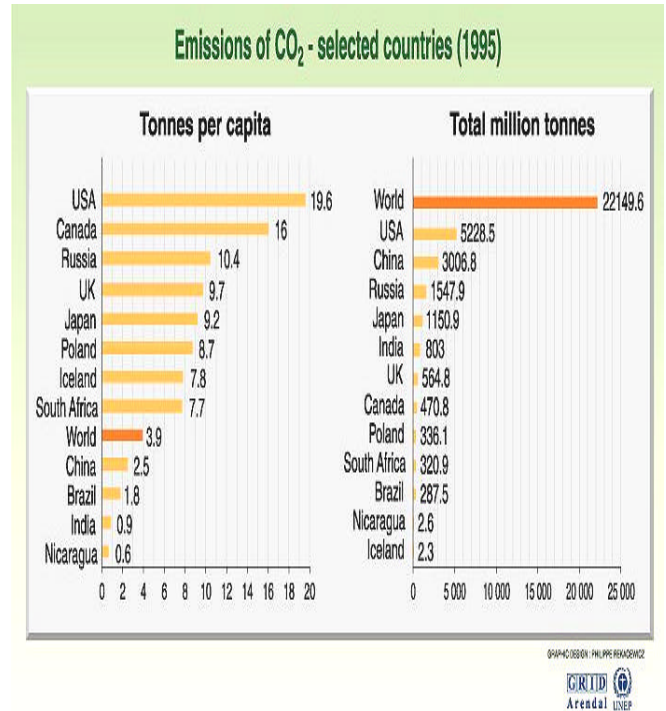
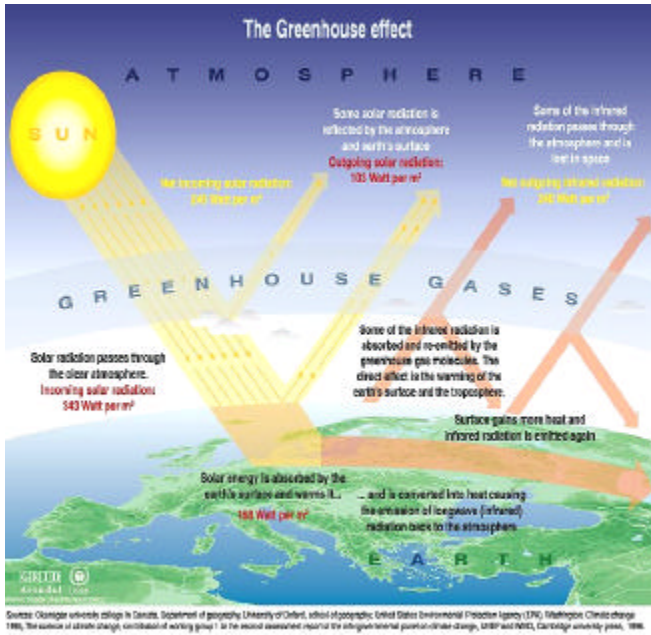
- Both allow Annex I countries, through the market, to redistribute the costs of compliance amongst themselves according to their marginal costs of abatement;

- and -

3. Clean Development Mechanism (CDM) – provides a legal framework for creating "off-shore" or outside the capped system) credits by reducing emissions in Annex I countries, and to count these towards meeting the Kyoto targets.

The Protocol also enforced the following:

- Annex I countries (39 developed countries) shall have an overall reduction in GHGs emissions of at least 5.2% in the 1st commitment period (2008-2012) compared to 1990;
- Annex I countries will demonstrate by 2005 a verifiable effort to fulfil their commitments;
- Within the overall -5.2% target, there is differentiation by country: e.g. -8% for the UE, -7% for the U.S. A., -6% for Japan, 0% for Russia, +8% for Australia, and +10% for Iceland;
- Carbon sinks that remove GHGs (e.g. reforestation, afforestation, and land use changes) are included as ways of meeting targets, although rules and methodologies are to be determined;
- Annex I countries are allowed to trade their emission allowances ("assigned amount") with one another or through Joint Implementation (JI) projects to meet part of their commitments;
- Industrialised countries can gain "offshore" credits via projects with developing countries under the CDM;
- The Protocol will enter into force once it is ratified by 55% of countries including countries representing 55% of 1990 emissions.



COMMITMENT PERIODS

These are range of years within which parties to The Kyoto Protocol are required to meet their GHG emissions reduction target, which is averaged over the years of the commitment period. The first commitment period will be 2008-2012.

ANNEX I COUNTRIES

Annex I countries (or Annex B countries) are industrialized or developed countries, and countries with economies in transition that are trying to return their GHGs emissions to 1990 levels by the year 2000 as mandated by the Kyoto Protocol.

Industrialized or developed countries are characterized by relative political stability and long-term industrial success. Their per capita incomes are comparable to those of Canada, Northern Europe, and the United States, and they have achieved a higher level of economic and environmental sustainability than developing countries because of higher levels of capital and natural resources.

Countries with economies in transition are those undergoing the process of transition to a market economy but at the same time also classified along with the EU, Japan and the U.S. as Annex I parties to the Convention. These included, among others, the Czech Republic, Hungary, and Poland, who face smaller reductions.

Thirty-nine (39) developed countries agreed to reduce their GHGs emissions. Collectively, developed countries agreed to cut back their emissions by a total of 5.2% between 2008 and 2012 from 1990 levels. The European Union (EU) agreed to reduce their emissions by 8% below 1990 levels; the United States of America signed on to a 7% reduction; and Japan agreed to a 6% reduction. Some countries, including Russia and Ukraine, are not bound to make any reductions while countries with smaller economies such as Iceland and Norway are allowed to actually increase their emissions. Australia was also allowed to increase GHGs emissions.

As of September 2002, President George W. Bush of USA refused to ratify the Protocol, claiming that it would hurt the U.S. economy, costing \$400 billion and over 4.9 million jobs. He also labels the agreement "unfair" because it excludes developing countries like China and India.

Like USA, Australia has opposed the treaty, arguing that because developing countries are not covered, they will only transfer high polluting industries to poor countries without cutting emissions that lead to global warming

China recently announced its ratification of the treaty, while Russia and Canada intend to ratify it within the year. If Russia does ratify the agreement, the 55% target (currently pegged at 37.1% of CO₂ emissions) would be reached, and the Kyoto Protocol could take effect and will become law in much of the world.

The Annex 1 countries and their current status on ratification of the Kyoto Protocol (as of 24 February 2003) are shown in Table 1.

Table 1

No.	Country	%CO ₂ emissions	Status
1	Australia	2.1	N. A.
2	Austria	0.4	Ratified
3	Belgium	0.8	Ratified
4	Bulgaria	0.6	Ratified
5	Canada	3.3	Ratified
6	Croatia		N. A.
7	Czech Republic	1.2	Approval
8	Denmark ¹	0.4	Ratified
9	Estonia	0.3	Ratified
10	European Community		Approval
11	Finland	0.4	Ratified
12	France	2.7	Approval
13	Germany	7.4	Ratified
14	Greece	0.6	Ratified
15	Hungary	0.5	Accession
16	Iceland	0.0	Accession
17	Ireland	0.2	Ratified
18	Italy	3.1	Ratified
19	Japan	8.5	Acceptance
20	Latvia	0.2	Ratified
21	Liechtenstein	0.2	N. A.
22	Lithuania	0.1	Ratified
23	Luxembourg	0.1	Ratified
24	Monaco	0.1	N. A.
25	Netherlands ²	1.2	Accession
26	New Zealand	0.2	Ratified
27	Norway	0.3	Ratified
28	Poland	3.0	Ratified
29	Portugal	0.3	Approval
30	Romania	1.2	Ratified
31	Russian Federation	17.4	Ratified
32	Slovakia	0.4	N. A.
33	Slovenia		Ratified
34	Spain	1.9	Ratified
35	Sweden	0.4	Ratified
36	Switzerland	0.3	N. A.
37	Ukraine		N. A.
38	UK & Northern Ireland	4.3	Ratified
39	U. S. A.	36.1	N. A.

Source: UNFCCC, updated 03 January 2003

Note: ¹ – With a territorial exclusion to the Faroe Islands

² – For the Kingdom in Europe

N. A. - No Action

NON-ANNEX I COUNTRIES

Non-Annex I countries are the developing countries or less developed countries (LDCs) which are in the process of becoming industrialized but have constrained resources with which to combat their environmental problems. They include China and India which have no formal binding targets, but have the option to set voluntary reduction targets.

The non-Annex 1 countries and their current status on ratification of the Kyoto Protocol are shown in Table 2.

Table 2

No.	Country	Status
1	Antigua & Barbados	Ratified
2	Argentina	Ratified
3	Azerbaijan	Accession
4	Bahamas	Accession
5	Bangladesh	Accession
6	Barbados	Accession
7	Benin	Accession
8	Bhutan	Accession

9	Bolivia	Ratified
10	Brazil	Ratified
11	Burundi	Accession
12	Cambodia	Accession
13	Cameroon	Accession
14	Chile	Ratified
15	China	Approval
16	Colombia	Accession
17	Cook Islands	Ratified
18	Costa Rica	Ratified
19	Cuba	Ratified
20	Cyprus	Accession
21	Djibouti	Accession
22	Dominican Republic	Accession
23	Ecuador	Ratified
24	Egypt	N. A.
25	El Salvador	Ratified
26	Equatorial Guinea	Accession
27	Fiji	Ratified
28	Gambia	Accession
29	Georgia	Accession
30	Grenada	Accession
31	Guatemala	Ratified
32	Guinea	Accession
33	Honduras	Ratified
34	India	Accession
35	Indonesia	N. A.
36	Israel	N. A.
37	Jamaica	Accession
38	Kazakhstan	N. A.
39	Kiribati	Accession
40	Laos	Accession
41	Lesotho	Accession
42	Liberia	Accession
43	Malawi	Accession
44	Malaysia	Ratified
45	Maldives	Ratified
46	Mali	Ratified
47	Malta	Ratified
48	Marshall Islands	N. A.
49	Mauritius	Accession
50	Mexico	Ratified
51	Micronesia	Ratified
52	Mongolia	Accession
53	Morocco	Accession
54	Nauru	Ratified
55	Nicaragua	Ratified
56	Niger	N. A.
57	Niue	Ratified
58	Palau	Accession
59	Panama	Ratified
60	Papua New Guinea	Ratified
61	Paraguay	Ratified
62	Peru	Ratified
63	Philippines	N. A.
64	Republic of Korea	Ratified
65	Saint Lucia	N. A.
66	Saint Vincent & the Grenadines	N. A.
67	Samoa	Ratified
68	Senegal	Accession
69	Seychelles	Ratified
70	Solomon Islands	N. A.
71	South Africa	Accession
72	Sri Lanka	Accession
73	Tanzania	Accession
74	Thailand	Ratified
75	Trinidad and Tobago	Ratified
76	Tunisia	Accession
77	Turkmenistan	Ratified
78	Tuvalu	Ratified
79	Uganda	Accession
80	Uruguay	Ratified
81	Uzbekistan	Ratified
82	Vanuatu	Accession
83	Vietnam	Ratified
84	Zambia	N. A.

Source: UNFCCC, updated 17 Sept 2002

Note: N. A. - No Action

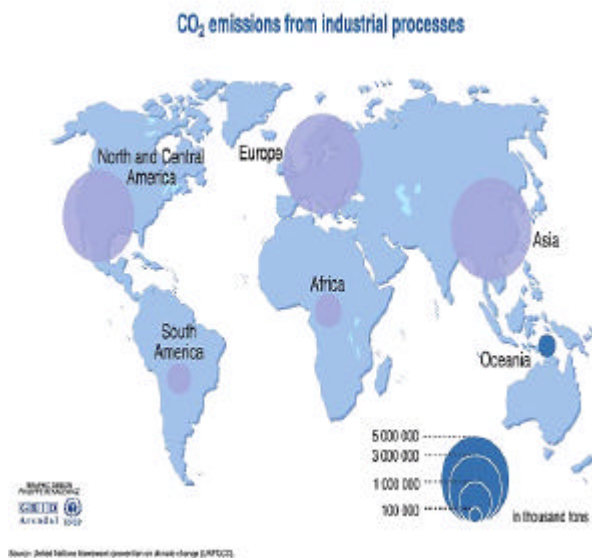
As of 24 February 2003, 105 countries have made ratifications/accessions/acceptances on the Protocol.

This is equivalent to a total percentage emission of 43.9% (out of the required 55% for the Protocol's implementation).

CLEAN DEVELOPMENT MECHANISM (CDM)

It is one of the market-based flexibility mechanisms (the others are Emissions Trading and Joint Implementation) that were included in the Kyoto Protocol for project-based activities in developing countries to make its transition economically efficient. Under Article 12 of the Protocol, the CDM shall assist non-Annex I countries to achieve "sustainable development" and contribute to the ultimate objective of the Convention, and to assist Annex I countries to achieve compliance with their quantified emission limitation and reduction commitments.

This mechanism allows Annex I countries to earn "certified emission reductions units (CERs)" whenever they undertake projects that contribute to sustainable development in a non-Annex I country and result in real, measurable and long-term GHGs reductions.



Under the supervision of an executive board, private and public funds may be channelled through this mechanism to finance projects in developing countries. Any party "may involve private and/or public entities" in the regime. A share of the proceeds from project activities is to be used to cover the administrative expenses of the CDM and another part will be used to help particularly vulnerable developing countries meet the costs of adapting to a changing climate.

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 Country). The Protocol envisages a prompt start to the CDM, allowing CERs to accrue from projects from the year 2000 onwards.

ASSIGNED AMOUNT UNITS (AAUS)

These are the units used to define emission allowances assigned under the Kyoto Protocol. These allowances are for the man-made emissions of greenhouse gases, which an industrialised country is permitted to emit over a certain commitment period. One Assigned Amount Unit is the equivalent of a metric tonne of Carbon Dioxide.

CERTIFIED REDUCTION EMISSIONS (CERS)

These are the verified and authenticated units of GHGs reductions from abatement or sequestration projects, which are certified by the CDM Executive Board.

SUSTAINABLE DEVELOPMENT

Article 12.2 of the Kyoto Protocol, explicitly states that "The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development..."

Sustainable development is the need to balance the satisfaction of near-term interests of the present with the protection of the interests of future generations, including their interests in a safe and healthy environment. As expressed by the 1987 UN World Commission on Environment and Development (the "Brundtland Commission"), sustainable development "... meets the needs of the present without compromising the ability of future generations to meet their needs."

Sustainable development is often divided into three different aspects: environmental, social and economic, with each element having their indicators involving many normative decisions. As an example, social elements may include, among others, combating poverty, equal income distribution; economic elements include, microeconomic efficiency and contribution to balance of payments; while environmental elements may deal on efficient use of natural resources and preservation of the life-supporting resources and ecosystems to maintain people's quality of life in their local environment.

CDM SUPERVISING AND GOVERNING BODY

CDM shall be subject to the authority and guidance of the conference of the Parties (COP) serving as the meeting of the Parties to the Kyoto Protocol and shall be supervised by the CDM executive board.

The CDM Executive Board will approve CDM projects, certify operational entities and issue carbon credits. It is currently operational, headed by Mr. John W. Ashe as Chairman and consists of 10

regular members and 10 alternates with terms of offices ranging from 2-3 years (e.g. 2001-03 and 2001-04).

The national authority is the official body representing the Government, which takes part in the arrangement of CDM projects. Some parties from different countries (e.g. Bolivia, Colombia, Nicaragua, and Uruguay) have also designated their national authority for CDM.

The operational entity is the independent body, which validates a GHGs reduction projects (eligibility of project type, baseline, monitoring and verification plan, etc.) and recommend whether or not the CDM Board should approve the project. It also verifies the amount of emission reduction credits the project generates, prior to the issue of the credits by the CDM Board. The CDM Executive Board accredits operational entities (applications for OEs are still on-going).

CERTIFICATION OF EMISSION REDUCTIONS FOR A CDM PROJECT

The CDM Executive Board will certify emission reductions from each CDM project activity through operational entities that will follow guidelines to verify emission reductions from CDM projects. The CDM Project developers needs to recognise the following points when developing a CDM project:

- Voluntary participation approved by each Party involved;
- Real, measurable, and long-term benefits related to the mitigation of climate changes; and
- Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.

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.

SPECIFIC GOALS OF A CDM PROJECT

The specific goals of a CDM project are:

- To assist in the achievement of a sustainable development;
- To contribute to the attainment of the environmental goals of the Framework Convention;
- To assist Annex I countries in complying with their emissions reduction commitments;
- To benefit Non-Annex I countries from project activities resulting in certified emission reductions;
- To allow Annex I countries to use certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction

commitments, as determined by the Conference of the Parties (COP) serving as the Meeting of the Parties (MOP) to the Protocol.

KEY ELIGIBILITY CRITERIA FOR CDM PROJECTS

The mandatory criteria (or validation requirements) for CDM projects are:

- Only GHGs covered by the Kyoto Protocol are eligible.
- The host country should be a party to the Kyoto Protocol
- The emission reductions of the project must be additional ("*project additionality*") to any that would occur in the absence of the project.
- If a project is financed by sources of public funding, this must not result in a diversion of official development assistance, and the sources of public funding must be separate and not be counted towards the financial obligations of the Annex I countries.
- The project must contribute to the host country's sustainable development objectives.
- The project should not result in unacceptable negative impacts on the environment. If it is expected that the unintended environmental impacts of the project are significant, then an Environmental Impact Assessment (EIA) in accordance with the procedures as required by the host country should be carried out.
- The project concept must be acceptable to the host country and conform to its CDM requirements.
- The project should lead to the transfer of environmentally safe and sound technology and know-how.
- The project developer should define the period over which CERs will be claimed.
- The emission reductions of the project need to be measurable and need to be validated/determined and verified by an Operational Entity (OE)/Independent Entity.

PROJECT ADDITIONALITY

It refers to whether GHGs emissions reduction or sequestration in a CDM project occurs over and above the business as usual baseline and constitutes a new reduction that would not have otherwise occurred without the existence of the project. This is also when there is a positive difference between the emissions that occur in the baseline scenario, and the emissions associated with a proposed project.

The different types of additionality are:

- Environmental additionality - demonstrated if a project results in reductions in the emissions of

greenhouse gases, compared to a "business-as-usual" or baseline case.

- Financial additionality - demonstrated if a project calls upon additional funds, rather than diverting funds already destined for the host country in the form of Official Development Assistance.
- Investment additionality - demonstrated if the project would not be commercially viable without the revenue the project generates in terms of emission reduction credits. Whilst initially proposed as one of the project eligibility criteria, this is no longer a requirement.
- Technical additionality – demonstrated when technologies employed in the project should be the best available technology for the host nation.

EMISSIONS LEAKAGE

This is the emission abatement achieved in one location that may be offset by increased emissions in unregulated locations. Such leakage can be (a) short-term (where emissions abaters reduce energy demand or timber supply, influencing world prices for these commodities and increasing the quantity emitted elsewhere) or (b) long-term (when industries relocate to avoid controls).

SUPPLEMENTARITY

It refers to whether parties of the Kyoto Protocol, while using flexibility mechanisms such as emissions trading to lower GHGs mitigation costs, also institute adequate domestic energy and other policies for ensuring the achievement of long-term GHGs reduction goals.

BASELINE

This represents the emission of GHGs that would occur without the intended project activity or policy intervention or emissions associated with a business-as-usual (BAU) scenario. The additional emission reductions that a project contributes can only be determined once the baseline has been assessed. Various approaches can be taken to determine the baseline, but the approach must be justified as part of the project validation process.

ATTRACTIVENESS OF A CDM PROJECT

Based on the study undertaken by Point Carbon-Norway (14 June 2002), project experts considered the CDM policies of a host country as extremely important for the attractiveness of a CDM project. This is due to the following:

- A non-Annex I country must have ratified the Kyoto Protocol to host CDM projects.
- Host country recognition of a project is necessary for certification of the achieved emissions reductions.
- A particular host government's attitude towards CDM indicates how forthcoming it will be in approving CDM projects.

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- Quick government approval is crucial to minimise transaction costs (time, efforts, and other resources needed to locate, negotiate and complete a deal) and thus total project costs.
- Even though a host government approves a project, it may be changed or stopped due to bureaucratic battles or other organisational problems, and thus yield lower emissions reductions than stipulated or none at all. This counts for the relations between national-level bureaucracies and local stakeholders, as project approval is no guarantee that local authorities in the project area approve of a project.
- Non-Annex I countries have differed in their opinions about which types should be eligible for CERs under the CDM. Some countries might reject certain types of projects.

CRITICAL FACTORS DETERMINING THE ATTRACTIVENESS OF CDM INVESTMENTS

From the same study made by Point Carbon-Norway (2002), experiences from recent CDM projects worldwide show that the following critical factors determine the attractiveness of CDM investments.

Table 3

Factor	Score
Host country CDM policies	9.4
Investment climate in host country	7.6
Techno-economic potentials	6.5
Easy baseline estimation	6.2

Note: Average score (10 = max, 1 = min.)

The following factors are also important for project attractiveness:

- Counterpart credibility and ability to tackle financial penalty or replacement of credits if the project under-performs;
- Active and solid local equity investors;
- Projects' environmental integrity;
- Effective relations with investor country authorities.

ELIGIBLE CDM PROJECT CATEGORIES

The following are eligible CDM project categories:

- Installations based on renewable energy sources (geothermal, wind, solar, biomass, small hydro, etc.);
- Fuel switch to lower carbon intensive fuels (in electricity and heat sector, industry);
- Energy efficiency at supply side (improvement of the efficiency with which a fuel is used to generate power or heat. (Ex. Use of improved technologies, improved transmission and distribution systems, updated district heating networks, etc.);
- Energy efficiency at the demand side, including an improvement of the efficiency of the use of supplied energy. This includes projects in the residential as well as the industrial sector;
- Combined heat and power (CHP) projects;

- Agricultural sector projects, other than land-use change, e.g. change of food chain, manure management, rice cultivation, etc.'
- Transport sector;
- Reduction in methane emissions from landfills and other waste-handling activities;
- Reforestation and afforestation projects (Note: The rules for Forestry and Land Use projects have not been defined yet, and will be set on COP 9 in 2003). Submitting a project in this category is a complicated exercise where all the risks are likely to be borne by the project developer).

The above is only an indicative list and does not exclude other project ideas, which the project developer can propose and would be analysed later on a case-to-case basis.

(Note: Nuclear energy projects are not eligible under CDM).

ELIGIBLE CDM TECHNOLOGIES

There are no specific performance standards for the applicable CDM project technology. The project technology, however, should introduce at least an equal or better performance standard than the existing operational technologies in the host country. Projects introducing the same technology with a lower efficiency would not be eligible for CDM. The technology to be applied must be:

- A proven technology (not necessarily in the host country);
- An established and commercially feasible technology, although not necessarily in the host country;
- The technology should be replicable and/or facilitate technology transfer to the host country.

"FAST-TRACK" OR SMALL-SCALE CDM PROJECTS

The CDM is a project-based instrument and without appropriate general framework it is foreseeable that small and medium-scale projects will hardly profit from future CDM investments. In particular, it is foreseen that transaction costs (e.g. for project development, assessment, validation and verification) will be unprofitably high for projects of a smaller size, and private investors will tend to opt for larger projects.

In consideration that many small-scale projects can contribute immensely to the sustainable development of a host country, the Conference of Parties, decided to adopt simplified rules and modalities for the following small-scale or "fast-track" projects:

- Renewable energy project activities with a maximum output capacity equivalent of up to 15 MW (or an appropriate equivalent);

- Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GWh per year;
- Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 ktonnes of CO₂ equivalent annually.

STATUS OF CURRENT CDM PROJECTS

The same study made by Point Carbon-Norway also produced the following table showing the status of current CDM projects being implemented in different countries.

Table 4: CDM project types

PROJECT TYPE	REMARKS
Agriculture	<ul style="list-style-type: none"> • Projects on biomass with agricultural components, and farm waste, possibly interesting. • Baseline and other methodological difficulties. Leakage problems. High monitoring costs.
Biomass	<ul style="list-style-type: none"> • Large potential, modular, sustainable development benefits, well-known among host-country engineers, easy baseline estimation, credible
Energy efficiency, District heating plants	<ul style="list-style-type: none"> • Large, low-cost reductions possible. Easy baseline estimation. Private owners more effective. Projects more attractive if private companies buy heat produced. • Limited emissions reduction potential (district heating not needed in most CDM areas).
Energy efficiency, Electricity producers	<ul style="list-style-type: none"> • Interesting for clean coal projects. • Baseline and additionality troubles (plants may need upgrading anyway).
Energy efficiency, End user	<ul style="list-style-type: none"> • Baseline estimation and ownership structure potentially less problematic in public lighting projects. • Difficult to quantify, monitor, validate (indirect reductions). Ownership of emissions reductions. Small CER volumes generated. Few transactions to learn from.
Fuel switching, Coal to biomass	<ul style="list-style-type: none"> • Simple, easy baseline estimation, credible.
Fuel switching, Coal to gas	<ul style="list-style-type: none"> • Potential for low cost CERs. • Limited experience (emissions reductions credibility unclear). Large investment.
Geothermal	<ul style="list-style-type: none"> • Small and large projects eligible • Baseline easy to quantify
Hydropower	<ul style="list-style-type: none"> • Small (micro or mini) hydropower: reliable and low-cost. Baseline estimation may be difficult. • Large hydropower problematic (environmental integrity, risk). Large upfront GHG emissions.
Methane gas capture from mines, landfills, pipelines (flaring)	<ul style="list-style-type: none"> • Easy to monitor, cheap, give large reductions
Sink projects	<ul style="list-style-type: none"> • Potentially low initial capital costs. Cheap reductions. May protect forests' diversity. Commercial reforestation and afforestation projects are more attractive than conservation. • Environmental integrity (measurement, leakage, permanence of reductions). Regulatory risks. Few buyers.

Solar power	<ul style="list-style-type: none"> Reliable, strong sustainable development component, may obtain aid financing. Solar thermal systems are cheaper and have larger market penetration in some countries. Costly (especially solar PV), thus, not profitable.
Wind power	<ul style="list-style-type: none"> Sustainable development benefits. Lower unit cost than other renewable energy technologies and possibly competitive with fossil fuels if good sites/locations. Lack of wind power experience = technical problems. Large upfront costs. Small CER volume generated. High transaction costs. Difficult baseline estimation (indirect reductions).

ELIGIBLE PROJECT DEVELOPERS

The following organisations can submit CDM projects:

- Governmental bodies (i.e. government departments or ministries);
- Government agencies (can be independent from the government);
- Municipalities;
- Foundations;
- Financial institutions;
- Private sector companies;
- NGOs.

Organisations acting as an intermediary for any of the above organisations can also submit their application on behalf of the project sponsor.

CDM PROJECT CYCLE

The CDM project cycle is as follows:

- The operational entities (OE) will validate proposed CDM projects on the basis of project design documents. This will include a check to ensure the validity of the baseline, on which basis the emission reductions will be calculated, and the project's monitoring plan;
- The executive board will formally register the project under the CDM;
- Once the project is running, the participants will monitor the project;
- A different OE will verify the monitored emission reductions;
- This different OE will eventually certify those emission reductions as legitimate CERs.
- Based on this, the executive board will issue the CERs and distribute them to project participants as requested.

The CERs generated by projects will be subject to a levy (officially termed the "share of proceeds"). Two percent of the CERs of each project will be paid into 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 levy in order to promote the equitable

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distribution of projects). A further percentage, yet to be determined, is to cover the administrative costs of the CDM.

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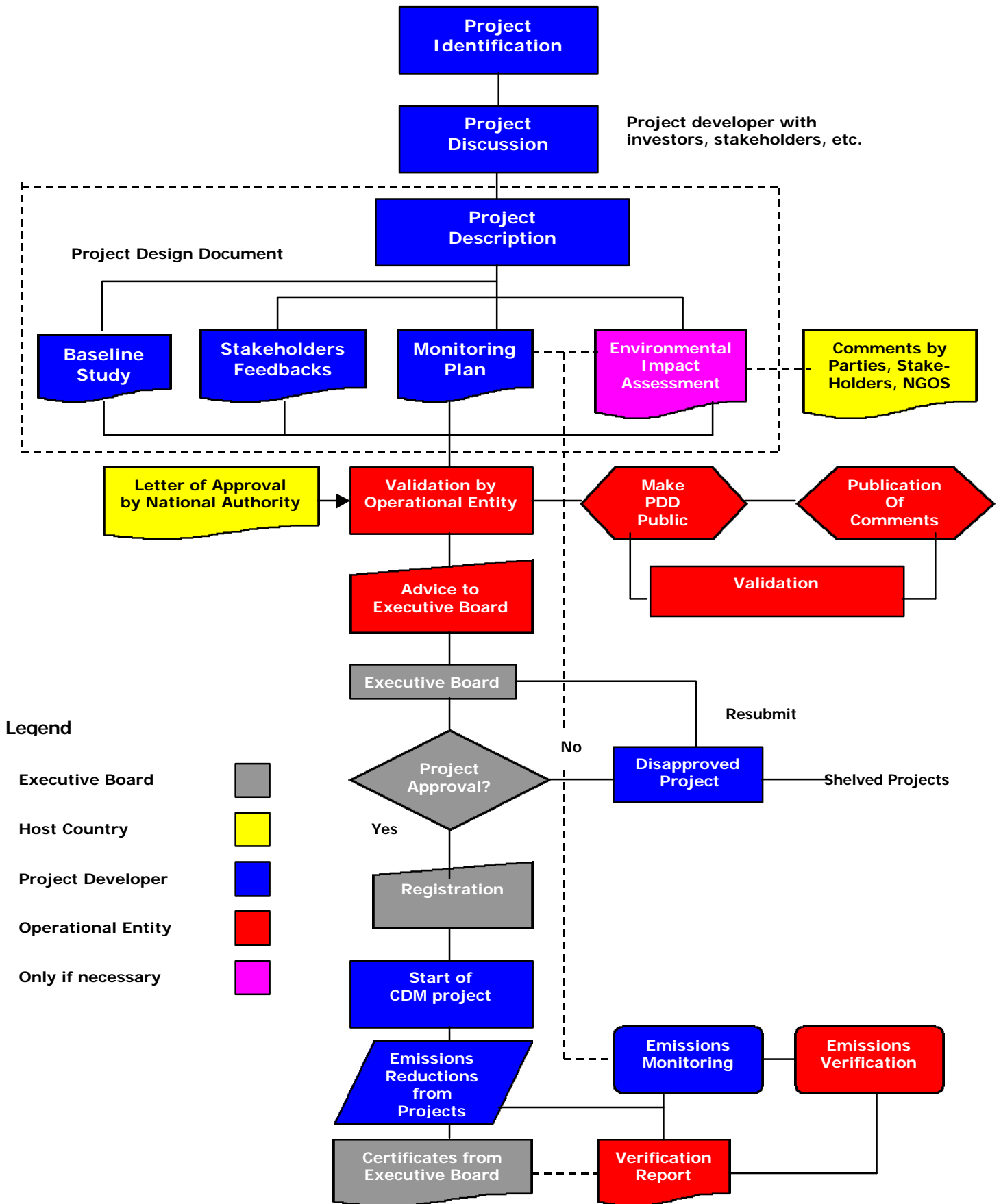
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A POSSIBLE CLEAN DEVELOPMENT MECHANISM PROJECT CYCLE



Legend

- Executive Board
- Host Country
- Project Developer
- Operational Entity
- Only if necessary