

The Clean Development Mechanism: A Canadian Perspective

Prepared by

**The Centre for Global Studies
University of Victoria**

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The Clean Development Mechanism: A Canadian Perspective

Introduction

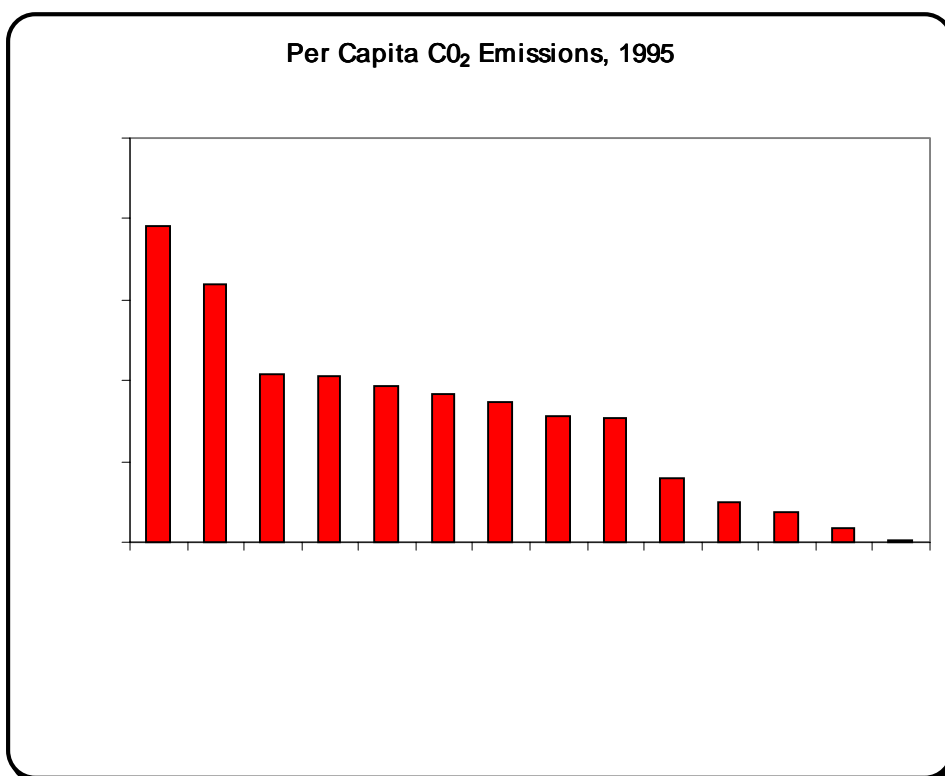
The Clean Development Mechanism (CDM) is a market-driven trading mechanism between industrialized and developing countries that will promote sustainable development and provide cost-effective reductions of greenhouse gas emissions. A win-win proposition, the Clean Development Mechanism allows industrialized countries to invest in value-added emissions reduction projects in developing countries and to earn credit for the resulting emissions reductions. At the same time, it allows developing countries to become fully engaged in climate change initiatives and to benefit from new investments and new, clean technologies. The Clean Development Mechanism is one of three emissions trading mechanisms arising out of the Kyoto Protocol, the global initiative to reduce the greenhouse gas emissions responsible for climate change.

(IPCC) predicts that mean atmospheric temperatures will rise a further 1.0°C to 3.5°C by 2100.³ These temperature changes would be uneven throughout the world, changing little at the equator but rising as much as 15°C at the poles.⁴ This temperature increase could melt most of the polar icecaps, causing sea levels to rise between 0.5 and 1.0 metres⁵ -- a catastrophe that would drown several island nations, such as those belonging to Alliance of Small Island States (AOSIS),⁶ permanently flood 10% of countries like Bangladesh and threaten many coastal areas that are home to most of the world's population. Global warming could also lead to broader climate change patterns, including increasingly erratic and severe weather patterns, such as floods, droughts, ice

Background

Climate Change and Global Warming

Scientists around the world agree that our climate is getting warmer. In the last hundred years since accurate world-wide records have been kept, the world's mean surface temperature has risen about 0.5°C, from 13.5° C to 14°C.¹ Globally, the 11 hottest years on record have occurred since 1982 and 1998 was the hottest year ever recorded.² Most scientists now believe that the global warming trend has been caused by human activities and is not just a naturally fluctuating temperature change. The Intergovernmental Panel on Climate Change



At the end of the millenium, Canada is emitting about 669 megatonnes (MT) of greenhouse gases into the atmosphere every year, up from 564 MT in 1990. Unless Canada acts to reverse this trend, Canada will be emitting 767 MT of greenhouse gases annually by 2020, or 36% higher than in 1990.¹² Canada produces 1.8 % of the world's total greenhouse gas emissions and ranks second only to the United States in per capita emissions.¹³

The world remains dependent on fossil fuels and will remain so for some time. Yet clearly, the global dependence on fossil fuels is unsustainable and must end. As the global population increases dramatically and as the developed world continues to expect to maintain its high standard of living, the demand for energy will only increase. Energy companies

and governments are supporting a long-term trend of decarbonizing energy sources and capturing greenhouse gas emissions, yet these efforts must be accelerated to slow down climate change. The challenge for Canada--and for the world--is to move from good intentions and policy around greenhouse gas reduction to implementation and commercialization of alternatives to the status quo.

The United Nations Framework Convention on Climate Change

Most nations of the world have become increasingly concerned about rising concentrations of greenhouse gases in the atmosphere. To address this pressing problem, 150 nations from around the world signed the United Nations Framework Convention on

Climate Change (UNFCCC) in 1992. This treaty included a voluntary and legally non-binding commitment to cut greenhouse gas emissions to 1990 levels by 2000. The convention came into affect in 1994, and many countries initiated emission reducing actions, yet it soon became apparent that few nations would be able to meet their emission reduction targets by 2000. As well, the scientific community continued to gather compelling evidence that increasing concentrations of greenhouse gases was warming the earth because of human activity and that it could result in significant impacts, such as melting the polar ice caps, drought, extreme weather and health problems. This growing body of knowledge has clearly demonstrated the link between greenhouse gas emissions and global warming, effectively countering most suggestions that the warming trend is either natural or merely a temporary aberration.

In 1995, the parties to the UNFCCC met at the first Conference of the Parties (COP-1) in Berlin. At this meeting, the parties agreed to negotiate a protocol to establish legally binding limits or reductions in greenhouse gas emissions for industrialized countries, otherwise known as Annex I or Annex B countries. (There is currently little difference between these two categories. See the glossary for definitions.) These negotiations took place in Kyoto, Japan on December 1-11, 1997 at the third Conference of Parties (COP-3) negotiating session. These negotiations resulted in the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Kyoto Protocol

The Kyoto Protocol committed the world's industrialized nations to specific reductions in emissions of six greenhouse gases: carbon dioxide (CO₂), methane (CH₄) nitrous oxide (NO₂), perfluorocarbons (PFCs),

considerable disagreement over: which greenhouse gases to include in the treaty; the level of legally binding reductions to which each country must commit; whether developing countries should be required to meet emissions reduction targets; and, whether emissions trading should be allowed. Environmentalists and scientists complain that the Kyoto Protocol is too little too late: full compliance to the Kyoto Protocol's emissions reduction targets will reduce global warming by only one tenth of a degree by 2100 because of the cumulative effect of emissions.¹⁶ Industrialized nations opposed high targets because of their expected negative impact on the global economy and because emissions reduction targets are not required of developing countries. Most developing countries opposed participating in the Kyoto Protocol because they feared that being bound to emissions reduction targets would slow their economic growth and that they would bear the brunt of solving a problem created primarily by industrialized countries, which account for most greenhouse gas emissions.

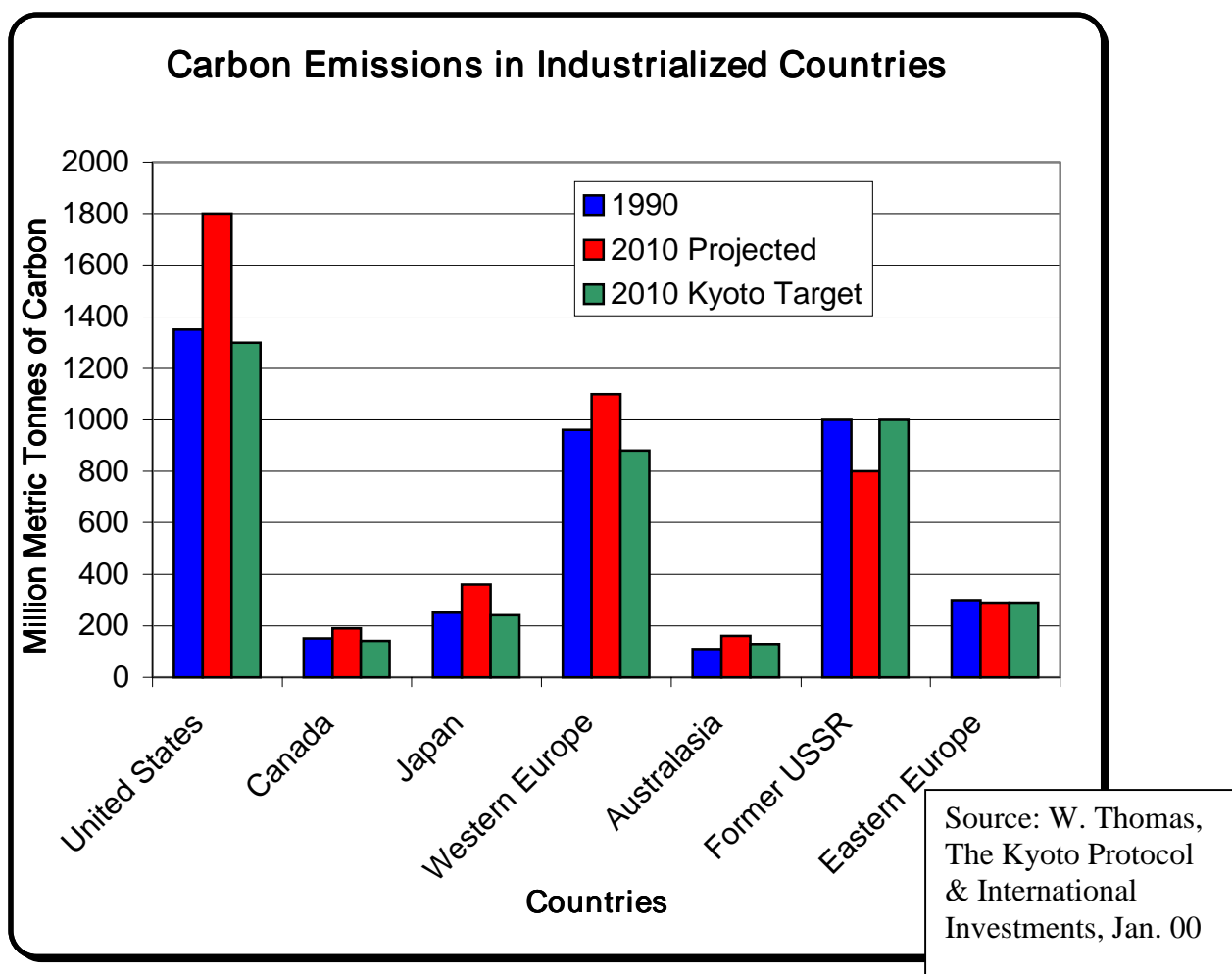
In the end, developing countries were excluded from meeting mandatory emission reduction targets, but provisions, such as the Clean Development Mechanism, were included to give industrialized countries the flexibility they wanted, by allowing credits for emissions reductions undertaken in developing countries. While developing countries will benefit from this participation, their involvement was secondary to obtaining the buy-in from industrialized countries. The Protocol calls for both industrialized and developing nations to take steps towards creating an inventory of greenhouse gas emissions and carbon sinks, to communicate their activities and to create updates on measures that lessen or adapt to climate change.

Industrialized countries have been slow to ratify the Protocol because of concerns about its

economic impacts and because it does not require emissions limits for developing countries, in particular. Some lobby groups continue to insist that the Protocol is not scientifically justified, while others maintain that the Protocol is too weak to combat climate change effectively.

The Kyoto Protocol was opened for signature between March 16, 1998 and March 16, 1999. Canada signed the Kyoto Protocol on April 29, 1998. As of January 13, 2000, 84 countries including Canada, the United States, China, Japan, Russia and member countries of the

ratification. As yet, Canada has no timetable for ratification.



Developments Since Kyoto

The third Conference of Parties (COP-3) negotiations that resulted in the Kyoto Protocol have been followed by two more COP sessions. The fourth session, COP-4 took place in Buenos Aires, Argentina, November 2-13, 1998. Because of the complexity of issues left unresolved at Kyoto in 1997, the COP-4 meeting focussed primarily on developing a two-year action plan focusing on key issues

including: rules and guidelines for market-based mechanisms, rules and procedures governing treaty compliance, technology development and transfer, and defining and verifying carbon sinks. COP-4 scheduled this action plan for completion by late 2000 or early 2001 so that substantive negotiations could take place by COP-6.

COP-5 took place in Bonn, Germany, October 26-November 5, 1999. It was primarily a technical meeting that postponed major

decisions until COP-6. COP-5 did, however, confirm timetables for decisions as set out in COP-4 in Buenos Aires the previous year and sped up the work program¹⁷.

COP-6 is scheduled to take place in The Hague, Netherlands, November 13-24, 2000. According to the schedule, issues such as the implementation of the Clean Development Mechanism are to be resolved at this meeting.

Although they have not yet ratified the Kyoto Protocol, a few countries like Argentina and Kazakhstan have publicly declared that they will make a commitment to meet the binding emissions targets set out in the document. It is not known how many other developing countries may make similar commitments.¹⁸

The Kyoto Challenge

Meeting the legally binding commitments of the Kyoto Protocol will be extremely difficult. Already, 7 billion tonnes of carbon (or 28 billion tonnes of CO₂) are emitted from human sources into the atmosphere annually.¹⁹ As the world population increases, demands for energy will continue to rise globally. Although industrialized countries currently produce the majority of greenhouse gases, China will exceed the emissions of the United States sometime between 2010 and 2020 and, soon after, emissions from the developing world will exceed those of developed nations.²⁰ If industrialized nations were to achieve the emissions reductions expected by the Protocol solely by limiting fossil fuel use, projected energy demands would have to be reduced by between 40 to 60 quadrillion BTUs, an equivalent 20 and 30 million barrels of oil per day.²¹ Such reductions would be difficult-- if not impossible-- because projected global energy demands are rising at about 30% each decade.

Overall, most business communities are nervous about the implications of the Kyoto Protocol. Some industrial lobby groups claim that the scientific models demonstrating global warming are invalid and, consequently, that the high costs of retooling their technologies and processes will lead to unjustified reductions in profits and competitiveness. Others who accept that global warming is a real threat, contend that the timeframes for emissions reductions set out in the Kyoto Protocol are too short for businesses to meet within their normal equipment replacement cycles, making the cost of compliance too high. Almost all businesses that may need to reduce their emissions prefer to comply voluntarily and on an incentive basis, rather than through regulations, taxes and mandatory compliance.²²

Even if these difficulties and objections are overcome, the Kyoto Protocol may be too little too late, since even full compliance with the Kyoto Protocol will slow global warming only slightly, approximately 4-7% or 0.1°C to 0.2°C, by 2100.²³

The Kyoto Mechanisms

Recognizing the difficulty of achieving emission reduction targets, the Kyoto Protocol identified three flexible mechanisms to help countries achieve their emission reduction targets. These are: International Emissions Trading, Joint Implementation and the Clean Development Mechanism. Together, they are known as the Kyoto Mechanisms.

International emissions trading is a market-based method of transferring credit for emission reductions achieved at source or through greenhouse gas sinks so that the purchasing country is able to meet its emission reduction commitments under the Kyoto Protocol. Under this mechanism, emission reduction credits will become a commodity with a market value, much as sulphur dioxide (SO₂) is today. International

gain credits that can be applied against emission reductions targets.

- CDM projects must support the sustainable development objectives of the developing nation where the projects will occur.
- Credits obtained through CDM between 2000 and 2008 can be used for early credit towards the initial Kyoto Protocol reporting period of 2008-12.
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How the Clean Development Mechanism Works

The CDM will help industrialized countries meet their greenhouse gas emissions reduction targets as set out in the Kyoto Protocol by allowing them to partially achieve these targets through investments in emissions reduction projects in developing countries. The investing country will receive Certified Emission Reduction credits (CERs) for projects that reduce greenhouse gas emissions below the baseline emissions of a previous process or facility. For example, replacing a coal-fired power station with one that uses renewable energy can reduce emissions and earn the investing

country CERs. For example, replacing a coal-fired power station with one that uses renewable energy can reduce emissions and earn the investing

Making these definitions and rules more specific will entail considerable debate at COP-6. For example, industrialized countries will likely apply criteria developed under the previous initiatives, although these vary from country to country. Few developing countries have developed criteria that could be applied to CDM. Developing countries will likely insist that CDM projects must provide several economic benefits, such as job creation, new services and spin-off products, poverty reduction and local economic development. They will also want to ensure that projects promote local environmental benefits, such as better air and water quality, in addition to the world-wide benefit of greenhouse gas reductions. They will likely also require that CDM projects be sustainable and not cause a negative environmental impact, such as removing land from agricultural use or creating toxic wastes, while reducing greenhouse gases. Projects must also not burden local communities.²⁸

Another matter that will be debated intensely at COP-6 is the issue of whether projects to create carbon sinks through forestry and agriculture-related projects will be eligible for CDM certification. The Kyoto Protocol is silent on this matter for CDM, although it allows these measures under the Joint Implementation initiative (JI). Countries in the European Union tend to oppose the inclusion of carbon sinks, while countries with large plantable tracts of land believe that it would be to their advantage to include forestry projects. Carbon sequestration through forestry or agriculture is attractive because it is easily and relatively cheaply implemented. Large-scale and long-term projects yield high levels of emissions reductions compared to many other emissions reduction projects. Countries opposed to carbon sinks tend to take this position because they believe forestry or agriculture-intensive countries have an unfair advantage over those with limited forestry options that must then

reduce emissions through more expensive means. They also note that these projects take many years to yield their sequestration benefits and that these benefits may not be permanent.

Additionality

Additionality is likely the most difficult eligibility criterion for CDM projects to meet. CDM projects must be "additional to any that would occur in the absence of the certified project activity."²⁹ In other words, the project will only be approved -- and credits granted -- if the reductions in greenhouse gas emissions can be quantified and verified as surplus to reductions caused by other factors, such as legislation, economic slowdowns, business development, non-CDM emissions reduction projects, etc. In short, eligible projects must prove that they are the source of emissions reductions and that they are not claiming benefits that occur from other causes.

Several types of additionality must be demonstrated.³⁰ The most important of these are:

- Emissions additionality must demonstrate that greenhouse gas emissions are real. This will require reliable baseline emissions assessments, specific standards for quantitative monitoring and verification, and accredited certifiers. Project boundaries must be established to ensure a fair assessment of emissions reductions within a particular project and within an industrial sector so that reductions are not calculated incorrectly or offset by emission leakages or transfers elsewhere. As well, the ownership of the emissions reductions must be clearly established to ensure reductions are counted only once and by only one party. This type of additionality is of the highest priority and is mandatory if the CDM is to succeed in fulfilling its purpose.

- Financial additionality will ensure that new financial resources are invested in developing countries and that these resources are not just regular development assistance or other investments in disguise. This is a mandatory type of additionality.
- Regulatory additionality will ensure that projects are voluntary rather than required by laws or regulations. This may be difficult to assess fairly because many developing countries have environmental regulations that are not enforced. Whether projects will qualify for credits if they conform to unenforced regulations or laws to reduce greenhouse gas emissions remains under debate. Regulatory additionality is not mandatory, but must be given very important consideration so that businesses and countries are able to participate and compete fairly.
- Technology additionality means that the technology, resources or practices used in a CDM project must be advanced compared to those that might normally be used to address an emissions problem. Developing nations want innovative, new technology and do not want to end up with out-of-date technologies and processes. On the other hand, investors worry that introducing state-of-the-art technology will continually move back the benchmark for what would be considered additional under CDM. Also, they do not want each project to define a new standard because they want to repeat similar, later projects in the host country or in other developing countries to ensure they develop a profitable market, rather than a one-off project. This type of additionality is not mandatory, but must be a very important consideration in designing the implementation of the CDM.
- Investment additionality must ensure that CERs are not allotted to everyday business practices but result from investments that go beyond what is expected in the industrial sector or business environment. Projects that meet this requirement might be those that are implemented despite excessive red tape, a difficult labour climate, or low profitability, all conditions that can be assessed only subjectively. Investment additionality is a very important consideration when implementing the CDM to ensure that CDM projects go beyond the status quo.

Each of these types of additionality is difficult to quantify and assess, yet their successful resolution is essential before the CDM can go forward. Of the five listed above, emissions additionality and financial additionality are the most important and mandatory requirements that will allow the CDM to function as it was envisaged.

Supplementality

There is significant debate over how much CDM projects should supplement domestic actions. The Kyoto Protocol indicates that all emissions trading initiatives should be supplemental, but fails to define exactly what this means. Some nations worry that an overly broad definition of supplementality will allow

cheaper to undertake. On the other hand, removing this loophole could raise the cost of complying with the Kyoto Protocol and make countries unwilling to meet emissions reduction targets.

Transaction Costs

All CDM transactions -- from establishing a project's eligibility to trading credits and applying them against a nation's emission reduction target -- will incur overhead costs. The Kyoto Protocol stipulates that industrialized nations will bear these costs. Understandably, those paying for transactions will want to keep these costs to a minimum. If transactions are charged on a formulaic basis, costs would be minimized, but this method would likely reduce the accuracy of assessing emissions reductions or determining whether or not they are additional to what would otherwise occur. Attempts to assess CDM projects and credits more precisely will raise costs and decrease the interest of companies or countries in participating in CDM activities.³¹ Acceptable trade-offs must be found.

CER Accounting

To date, no accounting institution has been created to track newly created CERs, oversee exchanges and transactions and apply them to the emission reduction targets for industrialized countries. As well, the specific details regarding accounting for these credits remains unresolved. Rules remain to be established to define whether credits can be used in advance of certification, as in some emissions trading programs in the United States, or whether they will only be allowable after-the-fact. If credits can be used in advance of certification, liability becomes an issue should the project fail to deliver its expected emissions reduction, either through poor performance or misrepresentation of the

project's potential. If credits can be issued only after-the-fact, liability becomes a minor issue. The Kyoto Protocol is clear that industrial countries and companies, not the developing country, will bear the responsibility for liability if credits are disallowed.

Commitment to Adaptation

The Kyoto Protocol commits industrialized countries to using some of the proceeds from CDM projects to help vulnerable developing countries adapt to the impacts of climate change. To date, it is unclear what portion of these profits would be earmarked for this assistance.

Investment Risks

Clearly, the unresolved issues around the CDM weigh heavily on the minds of potential investors interested in participating in emissions reduction projects in developing countries. In addition, there is significant investor hesitation because investment risks will vary from project to project. A typical CDM project will likely be small or medium-sized, located in a developing country, and dependent on new or innovative technologies or processes. Each of these three factors may make finding appropriate financing a challenge.

unpredictable: current forecasts of the value of carbon ranges from \$0.50 to \$20 per tonne.³² Investors are justifiably wary of making investments where profits are uncertain. As well, since existing national and international laws do not define or recognize greenhouse gas reductions or credits, sellers and buyers may be in a legal limbo over credit ownership and the future rights to early action credits.³³

These market factors are magnified by the

traditional fossil fuels, such as coal, diesel and gas towards lower-emission alternative fuels, such as natural gas, or toward alternative energy sources, such as wind or solar power.

International Perspectives on

investments would be in addition to official development aid, not a replacement for it. Most developing nations are apprehensive that CDM projects will allow industrialized nations to earn credits for the easiest emissions reductions, often referred to as 'low-hanging fruit', leaving developing countries to achieve the more

Zedillo and his PRI party will be victorious in both.

Within this economic context, Mexico's demand for energy will rise rapidly in the next few decades.⁴¹ At the same time, Mexico recognizes

- Assist the Government of Mexico, the private sector and other stakeholders to assess the environmental, financial and social benefits of CDM
- Enhance the capacity of the Government of Mexico to seek, evaluate and approve CDM projects
- Support the establishment of institutional mechanisms that can inform and facilitate private sector project implementation
- Identify an initial set of CDM projects and support the private sector in its project development efforts.

For more information on Mexico, see the section on Mexican Actions to Facilitate the CDM, below.

International Markets

All developing countries are potential sites for CDM investments. The developing countries that will be most responsive are those that see CDM as augmenting their own sustainable development and economic objectives.

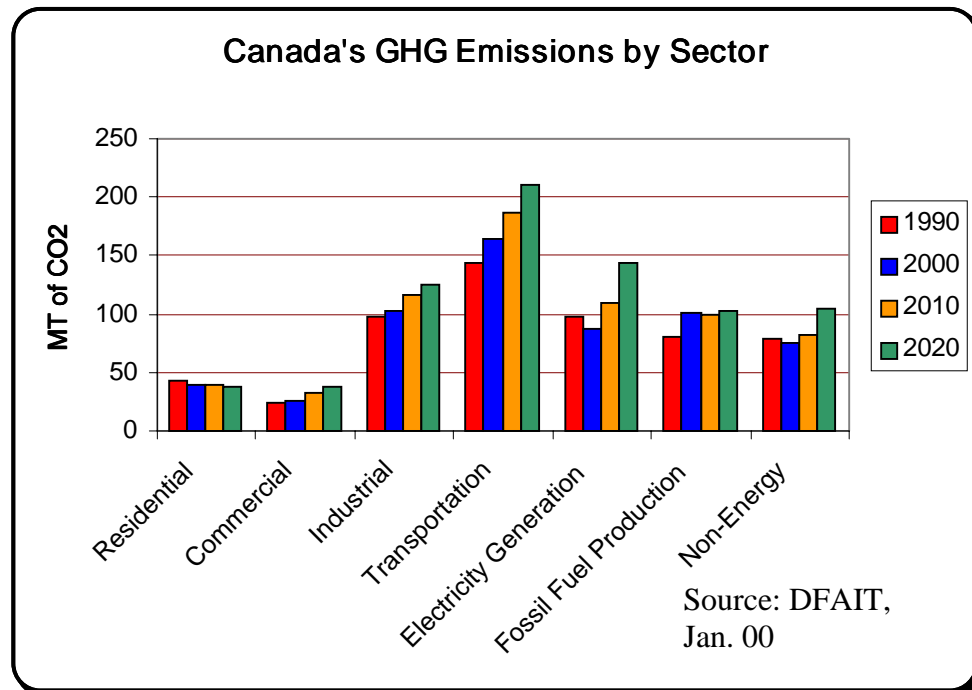
Of these, China, India and Brazil may offer the most significant early opportunities outside of North America. Together, these three nations account for 40% of the world's population and 18% of industrial CO₂ emissions.⁴⁷ Each of these countries has a rapidly growing population and a corresponding growth in annual CO

for reforestation, silviculture and sustainable forestry projects in all developing countries.

Past Experience

emissions reductions, emissions trading gives companies a positive incentive to reduce emissions. Emissions trading transfers certified emissions reduction credits from sellers who are able to reduce emissions cheaply to buyers who have only limited options or who would incur higher capital investment costs for reducing their own emissions relative to the cost of purchasable credits. In this win-win transaction, sellers make a profit and buyers are able to apply the credits to their emissions reductions targets and meet their own or regulated emissions reduction targets. Companies are also better able to promote economic efficiency and better resource planning.

Emissions traders have the most experience trading SO₂ emissions, which are governed by the Clean Air Act in the United States and administered by the Environmental Protection Agency. Under this legislation, electrical utilities must produce one SO₂ Emission Allowance for every tonne of SO₂ emitted. The goal of the legislation is to reduce annual SO₂ emissions by 10 million tonnes below 1980 levels over the program's life. By 2000, two million tonnes of NO_x should also be reduced. Together, these reductions constitute the EPA's program to combat acid rain. SO₂ emitters receive permits, called Emissions Allowances, that allow them to emit specific quantities of SO₂. These permits can be sold, purchased or held, but at the end of each year each emitter must hold permits that at least equal its annual emissions. Utilities then have a choice of purchasing an Emissions Allowance foeld, buTc0.0boutT^{0.0013} Tc0.0002 Tw1(g)9.8U15.32 324.6 Tmt



National Strategy Development

In 1998, Canada began efforts to develop a national climate change strategy. Canada is seeking the full participation of the provinces and territories to develop, implement and manage a national climate change strategy. In developing a national climate change strategy, no region of the country will be asked to bear an unreasonable burden of action. Sixteen expert committees, known as Issues Tables, were established in 1998 to report on various elements required to meet the targets set by the Kyoto Protocol.⁵⁴ These Issues Tables have prepared foundation papers describing the current state of each sector or issue. They are now in the process of finalizing or presenting option papers that present a range of short-term to long-term options for reducing emissions, as well as estimating their social, economic, environmental and health benefits. Based on this process and a review by a Joint Committee of

federal and provincial energy and environment ministers, elements of the national strategy were scheduled to be outlined in the Spring 2000, with a draft strategy and first business plan expected by the Fall 2000. However, this schedule has not been met and has been extended indefinitely because the process has become bogged down.

Budget 2000

Canada's Budget 2000 will set aside \$520 million over the next four years to address climate change issues, about half of what environmental lobbyists were hoping for. Canada has established a Sustainable Development Technology Fund, worth \$100 million in 2000/01, to stimulate the development of new technologies that reduce greenhouse gas emissions, such as fuel cells and wind turbines. Research centres, the private sector and institutes will qualify for funding. The budget also provides \$210 million over

three years for the Climate Change Action Fund.
The Green Municipal Investment Fund will lend

investments. This project has the support of the highest levels of government in Canada, Mexico and the United States.

CDM/JI Office

Canada's federal government has established the Clean Development Mechanism/Joint Implementation Office within the Department of Foreign Affairs and International Trade to build Canada's capacity for implementing the CDM

Greenhouse gas reductions from all sources, both mobile and stationary, qualify as PERT projects as long as they are real, quantifiable, surplus to current emissions reduction activities and credited only once. As a result, local communities will benefit from cleaner air; globally, fewer greenhouse gas emissions will enter the atmosphere. The companies involved will earn emissions reduction credits that can be applied against future voluntary reduction commitments or sold to other companies.⁵⁵ Ten percent of the credits are permanently retired to ensure that the environmental benefit resulting from the pilot projects remains intact.

PERT was modeled on similar emissions trading programs in the United States that are currently used to trade nitrous oxide (N₂O) and volatile organic compounds (VOCs).⁵⁶ About 20 companies are currently involved in PERT.

[Greenhouse Gas Emissions Trading Pilot](#)

The Greenhouse Gas Emission Reduction Trading (GERT) pilot project is a demonstration project that will provide practical experience in greenhouse gas emissions reduction trading. Established in 1998 as a partnership between industry and government, GERT is providing knowledge about the environmental and economic benefits of emissions trading, as well as practical, technical, administrative and legal knowledge about how to implement an emissions trading system in the future.

Projects eligible for inclusion in GERT must reduce emissions through fuel-switching or improving energy efficiencies, avoiding emissions increases by using renewable energy sources or sources emitting less carbon, or absorbing or sequestering emissions. Projects are submitted to a technical committee to ensure they create real, measurable and verifiable emissions reductions in addition to those

required by law and to ensure that they follow other rules established in this pilot program.

GERT projects can be located anywhere in the world, but either the buyer or the seller must be Canadian. If a project is located outside Canada, the buyer can report the emissions reduction for credit only in Canada, not in the host country as well. Also, international agreements, such as the CDM, will govern the crediting of the emissions reduction for compliance purposes. To date, GERT has matched 5 pairs of buyers and sellers.

[Voluntary Challenge and Registry Inc.](#)

The Voluntary Challenge and Registry (VCR) is an association of about 800 Canadian companies and organizations, representing most of the companies that emit greenhouse gases in Canada. Originally a government incubated program established in 1994, the VCR is now a private-public partnership that promotes and assesses the effectiveness of a voluntary approach to reducing greenhouse gas emissions to address climate change. It has a mandate to record and document industry participation in emissions reduction, development of action plans, best practices and achievements. It also promotes these achievements and facilitates the transfer of knowledge throughout the association so that participants can adopt best practices more easily. The VCR is based on the premise that voluntary industry participation in greenhouse gas emissions reduction is preferable to compliance with mandatory regulations and legislation.

Participants are able to register and submit action plans on-line. As of March 2000, 687 action plans had been registered with the VCR and 260 companies had also submitted progress reports.

American Actions to Facilitate the CDM

American Perspective

The United States is a strong supporter of the CDM because it is a market-driven mechanism that lowers the cost of reducing emissions and increases the flexibility allowed to achieve these goals. In particular, the United States supports the CDM because it increases the participation of developing countries in the reduction of greenhouse gas emissions. The United States insists that developing countries must have meaningful involvement in emissions reductions before it will ratify the Kyoto Protocol and has passed Senate Resolution 98 to ensure by law that the Protocol is not ratified until this occurs. The United States views the CDM positively as a mechanism that will move developing countries toward the meaningful participation in reducing greenhouse gas emissions.

Overall, the American response to climate change initiatives is to prefer a market-driven approach that uses incentives and voluntary participation rather than legislation and

with economies in transition, such as formerly communist countries. The PCF will function somewhat like a mutual fund. Contributions made by the private sector and governments will be invested in CDM and JI projects to reduce greenhouse gas emissions as described in the Kyoto Protocol. Investors will receive a pro rata share of verified and certified emissions reductions that can then be applied against emissions reduction targets set by the Kyoto Protocol. Although it is known as the Prototype Carbon Fund, it will be a financial mechanism for investing in projects that reduce emissions of all six greenhouse gases identified in the Kyoto Protocol.

The Prototype Carbon Fund will fund about 20 medium scale emissions reduction projects around the world. It will invest in emissions reduction projects that can be achieved at reasonable cost and independently validated. Most of these projects will focus on renewable energy development, either through switching fuel sources, changing to cleaner technologies, or a combination of both. The PCF expects to achieve five million tonnes of carbon emission reductions, or almost 20 million tons of CO₂ emissions reductions, if the fund achieves its \$150 million limit and if carbon emissions have a value of about \$20/tonne or CO₂ emissions have a value of \$5/tonne.⁵⁷

The PCF will support both CDM and JI projects around the world. About 20 projects in developing countries and countries with economies in transition will be selected. The portfolio will be diversified so that it is balanced between CDM and JI projects, geographic regions and different project types. Investments will be distributed so that no project receives more than 10% of the fund's assets, and no host country receives more than 20% of the funds' assets. To distribute investments across geothermal, wind, solar and small-scale hydro energy projects, a maximum of 25% of the fund's assets will be invested in any single type

of technology. Land use projects will be limited to 10% of the funds and will not be located in a developing country until the issue of the eligibility of greenhouse gas sinks for CDM credits is resolved. All projects must be consistent with the Kyoto Protocol's rules and procedures, relevant national criteria for Kyoto Mechanisms projects, and the PCF's objectives and operating principles, among other criteria.⁵⁸

The first project funded by PCF will be a solid waste management project in Liepaja, Latvia. PCF financing will allow Latvia to replace open municipal waste dump sites with sanitary landfills. Methane from the landfill will be captured through energy cell technology and used to replace fossil fuel generated electricity for the Latvian power grid. As a result, 90% of municipal waste will be recycled and the lifetime of the landfill extended indefinitely, waste treatment will be lower cost, land use will be minimized and the residue will be used for compost. In return, PCF investors will gain the rights to emission reductions based on a negotiated price that includes a profit and a payment schedule acceptable to all parties.

As a prototype fund, the PCF is the first international fund of its kind. The World Bank intends the fund to serve as a stimulus to emissions reduction investments and hopes that it will act as just one of many such funds in the market. This pilot fund will operate on a 'learning by doing' basis and will demonstrate how public and private agencies can participate as partners in the emissions reduction market. The PCF will collect, analyze and distribute this knowledge to governments, the private sector, NGOs and other stakeholders with the intent that the most successful and cost-effective aspects of the PCF can be replicated in other funds. As a practical learning experience, the PCF will contribute to the ongoing negotiation of rule and procedures for funding project-based emissions reductions projects. At this time, the World Bank anticipates that this prototype fund

will conclude in 2012 and that it will be replaced by funds set up by host countries, commercial and development banks and other agencies once they have developed confidence in the emissions trading market.

All World Bank member countries and any company or agency located in these countries can participate in the PCF. Governments are limited to investing US\$10 million and companies are limited to US\$5 million. To date, Finland, the Netherlands, Norway and Sweden, Canada and nine utilities and trading houses⁵⁹ have committed US\$100 million to the PCF, which is capped at US\$150 million. Canada announced in its most recent budget that it is committing \$15 million (US\$10 million) to the fund.

[United Nations Conference on Trade and Development](#)

The United Nations Conference on Trade and Development (UNCTAD) is the primary agency of the United Nations for trade and development for developing countries and countries undergoing economic transition. UNCTAD has a mandate to assist countries to face the challenge of globalization. In particular, it has been studying the issue surrounding greenhouse gas emissions trading for the past decade. To prepare for the implementation of the Kyoto Protocol and the Kyoto Mechanisms, including CDM, UNCTAD has established the International Emissions Trading Association (IETA) to provide full emissions trading back-up services, including internet trades and certification.

[United Nations Environment Program](#)

The United Nations Environment Program (UNEP) coordinates the environmental work of the United Nations. It plays a unique role as an

advocate for environmental concerns within the international system, forming partnerships with governments, non-governmental agencies, the private sector, the scientific community, national and regional bodies, women and youth. It serves as a catalyst to the sustainable development agenda around the world. UNEP has a very broad international mandate that includes everything from the safe use of biotechnology to disaster relief. In the area of climate change, UNEP is responsible for implementing the World Climate Assessment and Response Strategies Program (WCIRP) as part of the international World Climate Program. It supports activities that assess the impacts of climate change and identifies responses to reduce global vulnerability to climate change. As a co-founder of the Intergovernmental Panel on Climate Change (IPCC), UNEP is responsible for assessing the international state of the climate.⁶⁰ UNEP has been active since it was established in 1972 as a result of the Stockholm Conference on the Human Environment.

[United Nations Industrial Development Organization](#)

The United Nations Industrial Development Organization (UNIDO) is an international organization operating under the auspices of the United Nations that develops industrial capacity in developing countries. UNIDO has been providing technical assistance, training, technology transfer and financing to small and medium-scale industrial projects since 1966. It currently invests more than \$150 million annually to oversee 425 projects in 62 developing countries. UNIDO is actively involved in climate change mitigation through its work to improve the environmental infrastructure of developing countries. Its activities are guided by national industrial priorities to provide energy at an affordable cost. UNIDO assesses industrial energy needs, identifies market barriers and opportunities and

Some Other Resources: Non-Governmental Organizations

Hundreds of non-governmental agencies exist around the world to provide public information on climate change and advocate for action. Of these, five have been selected for mention because of their effectiveness and their potential to provide information and assistance on Clean Development Mechanism projects.

conditions through the cumulative impact of local actions.

The ICLEI is currently running two international campaigns: the Local Agenda 21 Initiative that works with local governments to develop and test sustainable development plans; and the Cities for Climate Protection campaign

and their local and regional impacts, and to monitor and verify emissions reductions.

Companies wishing to invest in CDM projects must first develop a corporate plan for managing their greenhouse gas emissions, and then develop rationales, policies and priorities for investing in projects that would provide CERs. They must identify, research and assess potential projects according to project type, geographic region and the trading system involved, in addition to assessing the contribution these projects will make toward their corporate goals and their need for CERs. Multinational corporations can establish CDM initiatives within their climate change action plans by supporting CDM projects within and between their own subsidiaries to earn emissions reduction credits and to learn about how CDM works by implementing it within the corporate family.

Ongoing CDM linkages and partnerships must be created between industrialized and developing countries between appropriate levels of government, financial resources, industrial participants, monitoring and certification agencies and other stakeholders. To begin, bilateral arrangements between pairs of industrialized and developing countries, such as Canada and Mexico, could accelerate both action and learning about emissions reductions through the CDM.

Representatives of all levels of government, potential investors, industries with an interest in reducing their greenhouse gas emissions, clean technology industries, non-governmental organizations and other key stakeholders need to become informed about CDM and regularly kept updated about progress in implementing it.

Act Now

The Clean Development Mechanism represents a significant opportunity for industrialized countries to invest in low-cost emissions reductions projects that will assist them in meeting their emissions reduction target as established by the Kyoto Protocol. For developing countries, the CDM represents an opportunity to participate in the global effort to minimize climate change while attracting investment in clean technologies that will meet national sustainable development objectives. Certainly, there are risks, as there are with all new business ventures. But CDM opportunities can be identified now and initial policies can be set. Those who act early to develop projects will be the first to realize the corporate benefits of participation because the Clean Development Mechanism represents the best opportunity available for industrialized and developing countries to work together in an unprecedented way to address the negative impacts of climate change.

Article 12 of the Kyoto Convention

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 I 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

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.

Glossary

Activities Implemented Jointly (AIJ) are pilot projects for emissions trading between industrialized and developing countries established under the first Conference of the Parties (COP-1) to the UNFCCC in 1995. As a demonstration project, it was used to assess the potential and pitfalls of jointly developed international projects that would reduce emissions in a host country for credit in the investing country. Unlike projects accepted under CDM, emissions reductions from AIJ projects were not credited against national emissions reduction targets. Most AIJ is being phased out or converted to CDM.

Additionality is the reduction of greenhouse gas emissions over and above a baseline and that would not occur otherwise without the implementation of the project.

Annex 1 Countries are industrialized countries that are trying to reduce their greenhouse gas emissions voluntarily to a percentage below 1990 levels in the UNFCCC. The countries include all OECD countries that were members in 1992. Very similar to Annex B countries. See Annex B Countries and OECD.

Annex II Countries are the same industrialized countries as Annex I with the exception of the 11 Countries in Economic Transition.

Annex B Countries are industrialized countries listed in the Kyoto Protocol that have committed to reducing their GHG emissions. Annex B consists of all countries listed in Annex I of the UNFCCC, except Turkey and Czechoslovakia. New countries include Croatia, the Czech Republic, Liechtenstein, Monaco, Slovakia and Slovenia. Non-Annex I countries can get on the Annex B list by committing to an emissions reduction target.

AOSIS. The Alliance of Small Island States is a group of 42 island and coastal nations vulnerable to a rise in sea levels because their land masses are close to sea level. These nations share public policy positions on climate change. They include: American Samoa, Antigua and Barbuda, Bahamas, Barbados, Belize, Cape Verde, Comoros, Cook Islands, Cuba, Cyprus, Dominica, Federated States of Micronesia, Fiji, Grenada, Guam, Guinea-Bissau, Guyana, Jamaica, Kiribati, Maldives, Malta, Marshall Islands, Mauritius, Nauru, Netherlands Antilles, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Seychelles, Singapore, Solomon Islands, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Surinam.

such as the frequency and intensity of storms, caused by changes to the concentration of greenhouse gases in the atmosphere.

Global Warming is the increase in the mean global temperature of the atmosphere. It is a subset of climate change.

Greenhouse gases (GHG): The six greenhouse gases targeted by the Kyoto Protocol are:

- Carbon dioxide (CO₂) is released by burning fossil fuels and decay. It is considered the main contributor to global warming.
- Nitrous oxide (N₂O) is released by burning fossil fuels and organic materials but comes mostly from soils and the oceans. Present in low concentrations, it enters the atmosphere primarily through soil cultivation and the use of fertilizer.
- Methane (CH₄) is produced when organic materials in wetlands, rice paddies, landfill sites and animal feces decay in an oxygen-free environment.
- Perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆) are humanly created gases used for manufacturing and as propellants.

In addition to the gases being reduced under the Kyoto Protocol, commonly occurring gases, such as water vapor (H₂O) and naturally occurring ozone (O₃).

Commitment Periods are the 5-year periods during which GHG emissions reduction targets are to be met, averaged out over the five years. The first commitment period is 2008-12.

Conference of Parties (COP) is the supreme body of the UN Framework Convention on Climate Change. Meeting yearly, COP promotes and reviews the implementation of the Convention and

Countries with Economies in Transition are formerly communist countries that are in the process of moving to a market economy. They are classed with EU, Japan and the U.S. as Annex I parties to the UNFCCC. They face smaller emissions reductions targets than industrialized countries.

Developing Countries: Also known as Less Developed Countries (LDC) or popularly as Third World Countries, developing countries are becoming industrialized but lack resources or infrastructure to fully industrialize at this time.

Emissions Trading is a market-led, incentive-based mechanism where either credits or permits are traded like a commodity.

Fossil fuels are energy sources, such as coal, petroleum and natural gas, that have been created through by pressurizing dead organic materials over time. They are high in carbon content, which is released when burned or consumed.

Industrialized countries are also known as Annex I or Annex B countries under the Kyoto Protocol. They are politically stable countries with a long-lasting industrial economy. With high levels of capital and natural resources, these countries have high economic and environmental sustainability.

Issues Tables are study groups established by the Canadian government to analyze 16 issues related to climate change: 1) Agriculture and Agri-Food; 2) Analysis and Modeling; 3) Buildings; 4) Credit for Early Action; 5) Electricity; 6) Enhanced Voluntary Sector; 7) Forest Sector; 8) Industry 9) Kyoto Mechanisms; 10) Municipalities; 11) Public Education and Outreach; 12) Science, Impacts and Adaptation; 13) Sinks (Carbon Sequestration); 14) Technology; 15) Tradable Permits; 16) Transportation.

Joint Implementation (JI) is a market-led initiative in which industrialized countries form bilateral agreements to reduce GHG emissions

Nitrogen oxide (NO_x) is a generic reference to both nitric oxide (NO) and nitrogen dioxide (NO₂). NO_x is one of the most significant electricity-related pollutants.

OECD is an acronym for the Organization for Economic Cooperation and Development. It includes Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Korea, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

Supplementality refers to whether countries reducing greenhouse gas emissions through projects in host countries are accomplishing this above their domestic energy policies to achieve their GHG reduction targets.

Technology transfer, within the climate change context, is the process of shifting energy-efficient technology and processes from industrialized nations to developing countries or countries with economies in transition.

Tradable emissions permits are licenses to release a specific amount of a pollutant that can be bought, sold or held. It is used in environmental regulation policies to allow pollution sources flexibility in how they achieve emissions reductions within an overall limit on emissions allowed by a country or industry. Large emitters can purchase permits from smaller emitters to meet their target allowances.

United Nations Framework Convention on Climate Change (UNFCCC) is the foundation of international policies to combat climate change. The UNFCCC has the purpose of stabilizing GHG concentrations so that the global

ecosystem can adapt and so that global warming is slowed or prevented.

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