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CLIMATE CHANGE: CREDIT TRADING AND THE KYOTO PROTOCOL

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TABLE OF CONTENTS

Page

CANADA

LIBRARY OF PARLIAMENT
BIBLIOTHÈQUE DU PARLEMENT

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INTRODUCTION

The Government of Canada ratified the Kyoto Protocol in December 2002. The Protocol came into force on 16 February 2005, meaning that Canada is now bound to reduce its greenhouse gas (GHG) emissions to 6% below 1990 levels for the period between January 2008 and December 2012 (the Kyoto commitment period).

It has become clear, however, that Canada will not be able to meet this target by reducing emissions at home, and will be forced to purchase credits internationally if it is to live up to its commitment.(1) In addition, the government has begun to develop a domestic emissions trading scheme in order to help Canadian industries with binding targets reduce the cost of meeting them. This paper describes credit trading schemes and how they may operate within the context of the Kyoto Protocol, both internationally and domestically.

EMISSIONS TRADING SCHEMES

Emissions trading schemes (ETS) are market-based mechanisms that can reduce the costs of complying with regulations controlling the emission of pollutants. The best-known type of ETS is called a "cap and trade" system. In this kind of ETS, a regulatory body sets an overall target for reductions that acts as the "cap." Individual emitters are then allocated permits (there are different methods for allocation), the total number of which add up to the cap. Some emitters will be able to reduce their emissions at a lower cost than others. Those for whom the

(1) See the Seventh Report of the Standing Committee on Environment and Sustainable Development, *Finding The Energy To Act: Reducing Canada's Greenhouse Gas Emissions*, June 2005, http://www.parl.gc.ca/infocomdoc/38/1/parlbus/commbus/house/ENVI/report/RP1875334//envirp07/03-cov2-e.htm.

cost is high may decide that, rather than reducing their own emissions, it will be more economical to buy credits from other emitters that can reduce emissions more cheaply. The selling emitter would sell the credits for a greater price than it costs to reduce its emissions. Both companies therefore lower their costs of meeting a regulated target.

Thus, while a government authority sets the overall target, market forces determine the distribution of reductions among the emitters.(2) The overall emissions targets are therefore achieved at lower costs than would be the case if each emitter were simply told to reduce emissions by a certain amount, a method usually described as "top down" regulation.

EMISSIONS TRADING UNDER THE KYOTO PROTOCOL

A. International

The Kyoto Protocol target requires that industrialized countries and countries in transition to a market economy (together referred to as either Annex I countries in reference to the United Nations Framework Convention on Climate Change (UNFCCC), or Annex B with respect to the Kyoto Protocol) reduce their emissions to 5.2% below 1990 levels during the Kyoto commitment period.

The 5.2% target was achieved very soon after 1990 because of the economic collapse of the old East Bloc countries (countries in transition to a market economy), which resulted in their GHG emissions dropping in the order of 40%. That target continues to be realized, at least according to the latest available (2003) data. However, while that overall target may have been achieved, the GHG emissions of industrialized countries have increased by more than 9% since 1990.

Individual countries are assigned specific targets to help meet the Kyoto target. Clearly the industrialized countries, with few exceptions, are not on track to meet their targets. In order to help them do so, the Kyoto Protocol allows for them to purchase credits from other countries, though this measure is supposed to be "supplementary" to domestic GHG emission reductions. This will be done through one of the three Kyoto mechanisms, the *emissions trading*

(2) National Air Issues Co-ordinating Committee on Climate Change, Tradeable Permits Working Group, *Using Tradeable Permits to Help Achieve Domestic Greenhouse Gas Objectives: Introduction to Concepts, Options and Issues*, Ottawa, December 1998.

mechanism. The other two mechanisms are designed to create credits that then can be traded, if a country or industry so chooses:

- the *clean development mechanism* (CDM) allows developed countries to gain credit for projects with verifiable emission reductions in developing countries; and
- the *joint implementation* (JI) *mechanism* allows developed countries to gain credit through projects in another developed country, or in a country in transition to a market economy.

The credits themselves fall into four categories under what are termed Kyoto Compliance Units:(3)

- *Assigned Amount Units* (AAUs) – Each Annex I Party that ratifies the Kyoto Protocol has a GHG emissions limitation commitment for 2008-2012, which is its "assigned amount." If a country's emissions are lower than that amount, it may sell the unused units.
- *Certified Emission Reductions* (CERs) – These are credits issued for emission reductions achieved by a project under the CDM. CERs can be used by an Annex I Party to help meet its emissions limitation commitment under the Kyoto Protocol. The credits issued for sink enhancements achieved by afforestation or reforestation projects under the CDM are either temporary CERs (tCERs), or long-term CERs (lCERs) that are subject to provisions to protect against possible reversals of the sink enhancements.
- *Emission Reduction Units* (ERUs) – These are credits issued for emission reductions or removals achieved by a project under the JI mechanism as defined in Article 6 of the Kyoto Protocol. ERUs can be used by an Annex I Party to help meet its emissions limitation commitment under the Kyoto Protocol. Each ERU equals 1 tonne of carbon dioxide equivalent (CO_2e).
- *Removal Units* (RMUs) – These are credits issued for net sink enhancements achieved by eligible activities under Articles 3.3 and 3.4 of the Kyoto Protocol. RMUs can be used by an Annex I Party to help meet its commitment under the Kyoto Protocol. Each RMU equals 1 metric tonne of CO_2e.

The Kyoto emissions trading mechanism is not yet functioning, but the CDM has begun. As of 21 December 2005, 59 CDM projects were registered on the UNFCCC Web site,(4) including a number of landfill gas capture projects, wind farms and manure management projects. Canada was involved in four of these.

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(3) Definitions are taken from the Government of Canada, "Offset System for Greenhouse Gases," August 2005, http://www.climatechange.gc.ca/english/publications/offset_gg/tech_e.pdf.

(4) http://cdm.unfccc.int/Projects/registered.html.

The CDM process has been criticized as too onerous, creating a bottleneck which decreases the availability of CERs. The Canadian government would like to use the CDM to help meet its domestic target and its commitments to transfer technology to the developing world. The issue of improving the CDM was discussed at the first Meeting of the Parties to the Protocol (COP/MOP-1), held in Montréal in November/December 2005. An improved CDM would increase the availability of CER units and therefore decrease their price. There is a concern, however, that, should the process for creating CERs be over-simplified, the environmental credibility of the projects could be reduced.

B. The Issue of "Hot Air"

As mentioned previously, the former East Bloc countries' GHG emissions have dropped by approximately 40% below 1990 levels. While these emission reductions are real, many consider them to be illegitimate because of the manner by which they were attained, i.e., as a coincidental by-product of economic collapse rather than through an effort to reduce emissions. The reductions were one-time events, and in and of themselves would not lead to long-term reductions. These former East Bloc credits are therefore often referred to as "hot air."

There are now strong political pressures in many developed countries to avoid purchasing these credits, because they are seen to be of little environmental benefit, as opposed to investing in new projects which could lead to longer-term reductions in emissions, particularly through technological innovation. The Canadian government has announced that "there will be no purchases of so-called 'hot-air.'"(5)

The Climate Fund that will be used for international credit purchases, however, will be used to invest in credits through the CDM and JI mechanism (CERs and ERUs) and through procedures for "greening" other internationally recognized Kyoto credits. Greening AAUs from countries in transition to market economies is seen as a way around the issue of "hot air." Essentially it would mean purchasing these credits subject to a contract stipulating that the money would be used for targeted environmental purposes only.

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(5) Government of Canada, *Project Green – Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment*, April 2005, http://www.climatechange.gc.ca/kyoto_commitments/, accessed 23 September 2005.

Russia has apparently recognized developed countries' reluctance to purchase its AAUs, and has announced that it will limit sales of emission credits to those linked to projects that reduce production of greenhouse gases.(6) Limited sales would also drive up the price of its credits.

C. The European Experience

Europe has the only mandatory ETS currently in operation. The ETS was established in 2004 through binding legislation(7) proposed by the European Commission and approved by all EU member states and the European Parliament. It began operation in January 2005. The scheme is based on six fundamental principles:

- It is a 'cap-and-trade' system.
- Its initial focus is on CO_2 from big industrial emitters.
- Implementation is taking place in phases, with periodic reviews and opportunities for expansion to other gases and sectors.
- Allocation plans for emission allowances are decided periodically.
- It includes a strong compliance framework.
- The market is EU-wide but taps emission reduction opportunities in the rest of the world through the use of CDM and JI, and provides for links with compatible schemes in third countries.(8)

The European Commission estimates that the ETS should allow the EU to achieve its Kyoto target at a cost of between €2.9 and €3.7 billion annually. This is less than 0.1% of the EU's GDP. Without the scheme, compliance costs could reach up to €6.8 billion a year.(9)

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(6) Matthew Carr, "Russia to limit its sales of emission credits: 'The main aim is ecology, not cash,' official says," *Edmonton Journal*, 26 August 2005.

(7) *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.*

(8) European Commission, *EU emission trading – an open scheme promoting global innovation*, Brussels, 2005, p. 6, http://europa.eu.int/comm/environment/climat/pdf/emission_trading2_en.pdf, accessed 23 September 2005.

(9) *Ibid.* One Euro is the equivalent of about C$1.4.

While the initial price for trading was approximately €8 per tonne, this price climbed to three times that amount by July 2005. At the time of writing, the price was €21.5 per tonne.

D. Trading in Canada

Moving Forward on Climate Change, the Canadian climate change plan, foresees a credit trading system for large final emitters (LFEs), currently defined by the government as facilities with:

- annual average emissions of 8 kilotonnes of CO_2e per establishment or more; and
- annual average emissions of 20 kilograms of CO_2e per $1,000 gross production or more.

However, the government's July 2005 "Notice of Intent to Regulate Greenhouse Gas Emissions by Large Final Emitters" stated that the definition of LFEs could be changed.

The emission reduction target for the LFE system is set at 45 megatonnes (Mt; one megatonne equals one million tonnes) as measured by an intensity[(10)] reduction against a business-as-usual baseline. Thus the reductions are not absolute; theoretically, if the LFE sector performs better than the baseline, overall emissions may rise. There is therefore no firm cap. LFEs can receive credits that count against their respective targets by investing in the GHG Clean Technology Fund up to a maximum of 9 Mt for the sector, meaning that 36 Mt of annual reductions may be generated by the LFE sector against Canada's Kyoto target.

The government intends to regulate LFEs under the *Canadian Environmental Protection Act, 1999*. Part 11 of the Act gives the Minister the power to put in place market-based instruments, including tradeable units. The government intends to use Part 11 to create a tradeable permit scheme for LFEs, so that LFEs can purchase or sell credits to reduce the cost of compliance with the regulations. The government has promised to limit the costs incurred to $15 per tonne, but it has not established how such a price assurance mechanism would operate.

The LFE sector target of 45 Mt per year will not create a very large market, and many companies will be in the position of purchasing credits as opposed to selling. This lack of liquidity means that the cost of credits could be very high. To help LFEs, the government is allowing them to use Kyoto compliance credits (the CDM and JI mechanism) against their targets. It has also begun designing an offset system that will allow any GHG emission

(10) Intensity is a measure of a quantity of GHG emissions produced by an amount of economic output.

reduction project not covered by the LFE regulations to generate credits. These credits could then be sold to the LFE sector to help those facilities meet their targets.

While the offset system was initially designed solely to help LFEs, the government has decided that it will also purchase these credits and retire them against Canada's target. The offset system is now intended to generate almost half of the emission reductions required to meet Canada's Kyoto target. Offsets often discussed by the government include no-till farming and wind farms that are not supported by the Wind Power Production Incentive.(11)

The system for international trading would also greatly expand opportunities to reduce emissions at lower costs. Integrating the Canadian system into the international trading scheme under the Protocol may be problematic, however, particularly given the Canadian government's $15-per-tonne price assurance, which other countries do not offer.

CONCLUSION

The "cap and trade" system has been used successfully in the United States to reduce the costs of meeting regulatory requirements for sulphur dioxide emissions associated with acid rain. Largely based on this success, the developed world fought hard to include such a trading scheme in the Kyoto Protocol with respect to GHG emissions.

Many schemes are now in place or are being planned. The European Union has begun its trading scheme and Canada is planning its system. The northeastern U.S. states are planning one as well for GHGs, though they would not operate under the Kyoto Protocol unless sub-national governments were allowed to join. The clean development mechanism of the Kyoto Protocol has also begun to generate credits. The international scheme has now been given approval to go ahead, given that the decisions bearing on it were approved at the COP/MOP-1.

Canada's planned system is different from the European scheme and contains some elements such as the $15-per-tonne price assurance that may make it difficult to integrate into the international scheme. Global trading in emissions credits has not yet begun and there will be much to be learned as it proceeds. Nonetheless, giving a value to GHG emissions is an important step toward encouraging the integration of emission reductions into corporate planning.

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(11) Apparently any project supported by other climate change programs of the government will not be eligible for offset credits.