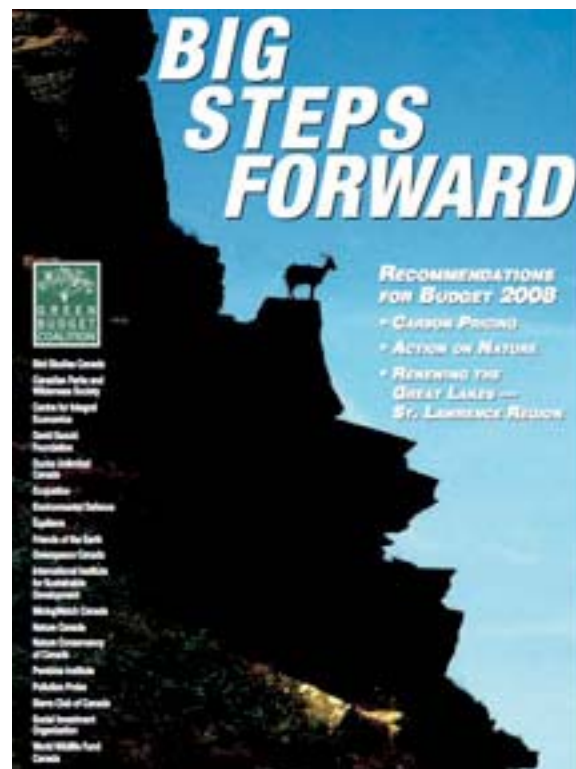


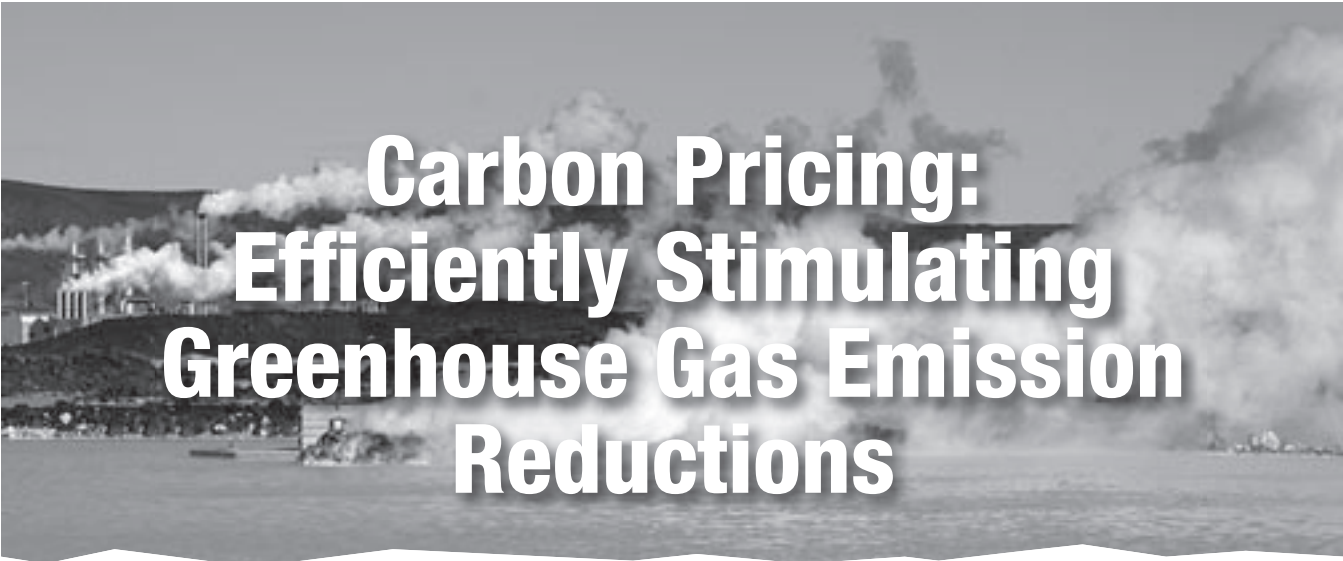
Carbon Pricing: Efficiently Stimulating Greenhouse Gas Emission Reductions

An excerpt from *Big Steps Forward: Recommendations for Budget 2008*



Clare Demerse, The Pembina Institute

November 2007



Carbon Pricing: Efficiently Stimulating Greenhouse Gas Emission Reductions

RECOMMENDATION SUMMARY:

Establish a price for greenhouse gas (GHG) emissions of at least \$30/tonne carbon dioxide equivalent (CO₂e) by 2009, and at least \$75/tonne by 2020.^{12, 13, 14} This price should be applied broadly in the Canadian economy, either through a tax or through a cap-and-trade system with a rapidly increasing proportion of permits auctioned. In either case, the revenues raised should be directed mainly towards investments in further actions to reduce GHG emissions, and also used to offset related cost increases for low-income Canadians.

Revenue Implications

The revenue implications of a carbon pricing system will vary widely, depending on the breadth of GHG sources to which it applies and either (i) the tax level or (ii) on the stringency of the regulated target and the percentage of permits auctioned in a cap-and-trade system. As an example, if permits were auctioned to cover only 10% of GHG emissions from Canada's large emitters, at a price of \$30/tonne CO₂e, the auction would generate annual revenues for the Government of Canada of \$1 billion or more.¹⁵ If Canada eventually applied a tax of \$75/tonne to 80% of national emissions, revenues could amount to upwards of \$36 billion.¹⁶

Benefits for Canadians

- Lead to significant, sustained GHG emission reductions, thus helping to protect Canadians from dangerous climate change and to fulfil Canada's international treaty obligations,
- Spur the development of clean industrial production, with associated job creation, and the development of low-GHG technologies with export potential,
- Raise substantial revenue to fund further emission reductions, protect vulnerable Canadians from the impacts of related price increases and potentially reduce other taxes,
- Provide economic advantages to environmentally-leading businesses in all sectors,
- Provide increased financial benefits to individuals, businesses and organisations who reduce their environmental impact, and
- Improve air quality and reduce risks to human health.

12. Except where noted, \$ values in this recommendation are today's Canadian dollars.

13. \$30/tonne in 2009 and \$75/tonne are lower bounds. The Green Budget Coalition intends to refine its recommended carbon price schedule in line with the evolving understanding of what is needed to ensure Canada meets sufficiently ambitious national GHG reduction objectives.

14. The National Round Table on the Environment and the Economy (NRTEE) has found (see *Selecting the Right Price — Domestic Considerations*, below) that a carbon price of \$75/tonne in 2020 would be necessary to reduce Canada's energy-related GHG emissions to 17% below the 2003 level by 2020. The Green Budget Coalition believes that Canada needs to adopt a more ambitious GHG target for 2020; but if the NRTEE's scenario had not started from the low initial carbon price level of \$10/tonne in 2010, it might have been expected to produce a lower price in 2020.

15. $10\% \times 350 \text{ million tonnes} \times \$30/\text{tonne} = \$1.05 \text{ billion}$.

16. $80\% \times 600 \text{ million tonnes} \times \$75/\text{tonne} = \$36 \text{ billion}$.

Vision

Implementing this recommendation would be a significant step towards two long-term environmental goals:

- *Internalizing the environmental and human health costs of all pollution in Canada into market prices, and*
- *Ensuring Canada plays a leadership role in the global effort to prevent dangerous climate change through a massive scale-up of GHG reduction efforts by the federal government.*

This recommendation has **five main sections**:

- A. The case for carbon pricing
- B. Selecting the right price
- C. Carbon pricing principles
- D. Comparing the tax and trading options, and
- E. Important design considerations.

A. The Case for Carbon Pricing

The Imperative to Reduce GHG Emissions

In early 2007, a report from the world's most authoritative climate science body, the Intergovernmental Panel on Climate Change (IPCC), concluded that the "warming of the climate system is unequivocal" and is mainly due to human activities.¹⁷ A second IPCC report projected catastrophic consequences if GHG emissions are allowed to continue unchecked, while a third concluded that deep reductions in GHG emissions are technically feasible, affordable, and urgent.

Meanwhile, global warming has become a top political issue, with survey after survey finding that Canadians are concerned and want to see action to protect the climate. In May 2007, Environment Minister John Baird told a House of Commons Committee that the government "believes that the polluter should pay,"¹⁸ while, in June, Prime Minister Stephen Harper described climate change as "perhaps the biggest threat to confront the future of humanity today."¹⁹

As a developed country with one of the highest per-capita GHG emission rates in the world, Canada must be a leader in reducing GHG emissions both quickly

and deeply. The Green Budget Coalition believes that, to play a responsible part in the global effort to prevent dangerous climate change, the Government of Canada must put a price on carbon that applies broadly in Canada's economy as soon as possible. This would considerably strengthen the government's current "Regulatory Framework for Air Emissions" proposal, which has been shown to be too weak to meet its targets on its own.²¹

The Merits of Carbon Pricing

In his comprehensive review of the economics of climate change, Sir Nicholas Stern – a former chief economist of the World Bank – concluded that "[c]limate change is the greatest market failure the world has seen." Faced with this failure, one of the key policies Stern recommends is "carbon pricing, through taxation, emissions trading, or regulation, so that people are faced with the full social costs of their actions."²²

Climate change has enormous potential to damage Canada's environment, society and economy. Putting a price on carbon that reflects its true costs will help curb GHG emissions in the short-term, and will initiate a transformation of Canada's economy towards a low-carbon future. This should be done either through a regulated cap-and-trade system, or through a tax on carbon.

Fiscal instruments and market-based mechanisms — such as taxes or emissions trading — help meet environmental objectives at the lowest overall costs to the economy. They provide the flexibility to utilize the most appropriate measures for individual situations and create economic incentives to continue reducing pollution far beyond minimum standards.

The Green Budget Coalition strongly believes that Canada's future prosperity requires the integration of environmental and social values into market prices through strategic fiscal policy choices. In the case of carbon pricing, the federal government has a longstanding obligation to do exactly that: Canada is a signatory to a 2001 Organisation for Economic

¹⁷ IPCC Working Group I, Summary for Policymakers. Available at http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_SPM.pdf. p. 5, 10.

¹⁸ Testimony to the Standing Committee on the Environment and Sustainable Development, May 29, 2007.

¹⁹ Speech by Prime Minister Stephen Harper in Berlin, Germany, on June 4, 2007. Available at <http://www.pm.gc.ca/eng/media.asp?category=2&id=1681>

²⁰ In this document, the word "carbon" is a shorthand expression that includes all six of the greenhouse gases covered by the Kyoto Protocol (of which carbon dioxide is the largest component). The abbreviation "CO₂e" refers to "carbon dioxide equivalent," a standard measure which incorporates all six of these gases.

²¹ See the Pembina Institute's analysis of the regulatory proposal at http://pubs.pembina.org/reports/Reg_framework_comments.pdf, and also the C.D. Howe Institute's publication "Estimating the Effect of the Canadian Government's 2006–2007 Greenhouse Gas Policies", available from http://www.cdhowe.org/pdf/workingpaper_5.pdf.

²² Press note: "Publication of the Stern Review on the Economics of Climate change" (30 October, 2006). Available from http://www.hm-treasury.gov.uk/newsroom_and_speeches/press/2006/press_stern_06.cfm.

Co-operation and Development (OECD) environmental strategy that requires the government to create incentives for GHG emission reductions through “market-based instruments such as subsidy removal and green tax reform, tradable emission permits or quotas.”²³

The federal government has the legal and jurisdictional authority to put a price on carbon. If a price is set through a regulated cap-and-trade program, the government can draw on its authority to regulate toxic substances (a category that includes GHGs) under the Canadian Environmental Protection Act. The federal government has the authority to levy a carbon tax through its annual budget.

Canadian Precedents and Supporters

There is growing support for carbon pricing in Canada:

- The province of Québec recently announced that energy producers, distributors and refiners will be subject to a modest carbon tax as of October 1, 2007. The measure is expected to raise about \$200 million per year, which will be directed towards the province’s Kyoto Protocol implementation strategy.
- Starting in July 2007, heavy industry in Alberta will be subject to a GHG regulation that allows companies to meet their targets by paying a \$15/tonne CO₂e fee. The federal government has also announced plans for a regulation on heavy industry nation-wide that would take effect in 2010, again with a \$15/tonne compliance option (although access to this option would be capped, unlike in Alberta’s system).
- The Conference Board of Canada recently called for “various forms of carbon taxes” and “cap and trade systems” as some of the “three basic elements” of a Canadian climate policy.²⁴
- The Canadian Association of Petroleum Producers supports a “price signal applying as broadly as practical”, starting at about \$15/tonne CO₂e and escalating to \$50/tonne or more over the next 15 years (as long as all “major emitting countries” do likewise).²⁵

B. Selecting the Right Price

International Considerations

The IPCC’s comprehensive review of economic studies found that “an effective carbon-price signal could realize significant mitigation potential in all sectors”.²⁶ According to the IPCC, a carbon price of US\$50/tonne CO₂e would leverage global emission reductions of 20–35% below business-as-usual emission levels by 2030 in a scenario of rapid economic growth, or reductions of 27–52% below business-as-usual levels in a lower-growth scenario.²⁷ Even those reduction levels still fall significantly short of the minimum reductions needed to have a good chance of avoiding dangerous climate change.

Even at over \$75/tonne, the price of carbon is modest relative to the cost of climate change. In his review of climate change economics, Sir Nicholas Stern found that the “social cost of carbon” — the net economic costs of damage from unchecked climate change across the globe — is about US\$85/tonne (C\$82/tonne).²⁹ There have been a number of other estimates of the social cost of carbon, which vary depending on assessment of future impacts, treatment and analysis of risk, discount rates, equity weightings, and the type of economic approach used.

International markets have already started charging relatively substantial prices for carbon emissions. As of mid-October, the carbon price for “year 2008” credits in the European Union’s emissions trading market, which encompasses over 11,000 heavy industry facilities in the EU, was €23/tonne CO₂e (\$32).³⁰ Clean Development Mechanism credits under the Kyoto Protocol, which are awarded to projects that reduce emissions in developing countries, sold at an average price of C\$11/tonne in 2006.³¹

²³ OECD Environmental Strategy for the First Decade of the 21st Century (adopted by OECD Environment Ministers on 16 May 2001), p. 8. Available from <http://www.oecd.org/dataoecd/33/40/1863539.pdf>.

²⁴ News release: “Consensus needed on Basic Elements of Canada’s Climate Change Policy”. Conference Board of Canada, June 5. Available at <http://www.conferenceboard.ca/press/2007/climate.asp>.

²⁵ Presentation by Rick Hyndman of the Canadian Association of Petroleum Producers to CIBC World Markets (April 18, 2007), p. 5. Available at <http://www.capp.ca/raw.asp?x=1&dt=PDF&dn=119902>.

²⁶ IPCC Working Group 3 Summary for Policymakers (Climate Change 2007: Mitigation of Climate Change), p. 29. Available at <http://www.ipcc.ch/SPM040507.pdf>.

²⁷ Ibid, pp. 9-12.

²⁹ Stern Review, The Economics of Climate Change (Executive Summary), pp. xvi-xvii.

³⁰ See <http://www.europeanclimateexchange.com>.

Domestic Considerations

Because Canada is a major producer of oil and coal-fired electricity, there is a widely held view among governments and industry that carbon capture and storage (CCS) technologies will have to be used on a large scale to control Canadian GHG emissions.³² In this situation, a credible carbon price for Canada would need to be strong enough to make this technology economically attractive. According to the IPCC's Special Report on Carbon Dioxide Capture and Storage (*Summary for Policymakers*, 2005), "CCS systems begin to deploy at a significant level when CO₂ prices begin to reach approximately 25–30 US\$/tCO₂".³³ However, there are recent indications that the price to make CCS economic on a large scale in Canada may be closer to \$50/tonne.³⁴

In April 2007, the federal government set a target of reducing GHG emissions by 20% below 2006 levels by 2020. A report from the independent National Round Table on the Environment and the Economy found that reaching a target close to this would require a carbon price of \$75/tonne in 2020 (expressed in 2003 dollars). The Green Budget Coalition believes that Canada needs to adopt a more ambitious GHG target for 2020. On the other hand, if the NRTEE's scenario had not started from the low initial carbon price level of \$10/tonne in 2010, it might have been expected to produce a lower price in 2020. The analysis also found that the macroeconomic costs of carbon pricing are minimal — the report's worst-case scenario would see Canada's GDP 1.5% smaller than its business-as-usual level in 2050 — and that even those minimal economic costs can be reduced by implementing a carbon price more quickly and signalling that the price will rise over time.³⁵

Recommended Carbon Price Schedule and its Projected Impacts

As a result, the Green Budget Coalition believes that a Canadian carbon price of at least \$30/tonne CO₂e is essential by 2009. This initial price should be increased as quickly as possible so that it reaches at least \$75/tonne by 2020.

Notably, recent economic analysis of the effects of a carbon price on Canada's economy found that a price of \$30/tonne CO₂e would produce financial gains for most sectors in the short- and medium-term. Similarly, the economic modelling predicted that a carbon price of \$30/tonne would yield net gains to Canada's GDP by 2015.^{36, 37}

In rough terms, a \$30/tonne CO₂e price (whether implemented as a tax or through emissions trading with all of the permits auctioned) would add an about extra 3 cents/kWh to coal-fired electricity generators, and about an extra \$3 per barrel to the costs of oil sands production.³⁸ Coal-fired electricity and oil sands processing represent two extreme cases, as they are two of the most emissions-intensive production methods in use in Canada today. Yet even there, the cost increase created by a \$30/tonne carbon price does not represent a dramatic deviation from current prices: in the oil sands, \$3 is well within the range of recent price fluctuations in the global price of oil. Similarly, a \$30/tonne CO₂e tax fully passed on to consumers would increase gas prices at the pump by 7.2 cents per litre — a cost that, again, falls within the range of the price fluctuations we see regularly at the pump.³⁹

A tax of \$30/tonne CO₂e applied to fossil fuels used directly by households for transport, home heating and other uses would amount to about \$270 for the average family, or less than 0.5% of average annual household spending. While indirect costs passed on to consumers

³¹ The World Bank. *State and Trends of the Carbon Market 2007* (Washington, May 2007) p. 4.

³² Carbon capture and storage technology would allow a company to capture CO₂ emissions "at the end of the pipe", before they enter the atmosphere. The CO₂ would be shipped in a pipeline to a location where it could be stored underground permanently. This technology is already operating in pilot projects in North America, and has the potential to reduce GHG emissions significantly, although concerns remain relating to public safety and acceptance, permanence of storage, and monitoring and liability.

³³ Intergovernmental Panel on Climate Change, *Special Report on Carbon Dioxide Capture and Storage (Summary for Policymakers)*, 2005. Available from http://arch.rivm.nl/env/int/ipcc/pages_media/SRCCS-final/SRCCS_SummaryforPolicymakers.pdf, p. 11.

³⁴ Based on conversations in May–June 2007 with Canadian industry and academic experts.

³⁵ National Round Table on the Environment and the Economy. June 2007. Interim report to the Minister of the Environment, pp. 11, 14. <http://www.nrtee-trnee.ca/eng/publications/ecc-interim-report/Clean-Air-Interim-Report-e.pdf>

³⁶ According to the economic modelling cited here, the gains in GDP occur for two main reasons. First, the carbon price increases prices of goods but consumption remains relatively stable in the short term. (For example, many people would continue buying similar levels of fuel for their vehicles in the short run even if the price of gas increased.) Secondly, the carbon price spurs investment in GHG-reduction technologies, and that investment produces GDP growth.

³⁷ MK Jaccard and Associates Inc. *Cost Curves for Greenhouse Gas Emission Reduction in Canada: The Kyoto Period and Beyond* (Sept. 29, 2006). pp. vi–vii.

³⁸ Assuming typical emission rates of 100 kg/barrel of CO₂ for oil sands production and 1 kg/kWh for coal-fired power.

³⁹ Based on an emissions rate of 2.443 kg CO₂e per litre of gasoline.

would be higher than this, the total impact of a broadly applied tax at this rate would represent less than 1.5% of an average household's annual spending.⁴⁰

C. Carbon Pricing Principles

In Budget 2005, the Government of Canada identified five key principles that it would use to assess any environmental taxation proposal. Those are:

- Environmental effectiveness,
- Fiscal impact (how the proposal would affect the government's revenues),
- Economic efficiency,
- Fairness (across sectors, regions, and population groups), and
- Simplicity of administration.⁴¹

Using the above list as a starting point, the Green Budget Coalition has established four principles that form the fundamentals of a credible carbon-pricing policy. These are:

1. The "polluter pays" principle. In Budget 2005, the government defined "polluter pays" as meaning that "the polluter should bear the costs of activities that directly or indirectly damage the environment. This cost, in turn, is then factored into market prices."⁴² Minister Baird re-affirmed the government's commitment to this principle in 2007.⁴³ ("Polluter pays" incorporates the principles of *environmental effectiveness*, *economic efficiency*, and *fairness*.)

2. Protecting low-income Canadians from related increases in their living costs, without reducing the system's incentive to reduce emissions. A carbon price would be expected to increase many costs, including the cost of heating a home or filling a car's tank with gas. The Green Budget Coalition believes that low-income Canadians must be protected from any increase in their living costs caused by a carbon price. The government can choose from many policy options to achieve this goal, including rebates, reductions in other taxes, and targeted incentives

(for example, a rebate to landlords who improve their units' energy efficiency.) Such measures should be designed in such a way that they do not cancel out the incentive to reduce emissions that carbon pricing provides. (Protecting low-income Canadians in this way incorporates the principles of *fairness* and *environmental effectiveness*.)

3. Rising carbon price over time. There is a strong consensus amongst experts and political leaders that, over the longer term, we must make deep reductions to global GHG emissions. Developed countries like Canada — with high per capita emissions, high wealth and significant historical responsibility for emissions — will need to reduce GHG emissions to at least 80% below 1990 levels by 2050. As noted above, the IPCC's economic analysis found that a carbon price of \$30/tonne CO₂e would not be enough to cut emissions that deeply.

Companies are now building new facilities that can last for 40 years or more. To ensure that new infrastructure is designed with the lowest possible emissions level, governments must send a strong signal that carbon emissions will carry a price from now on, and that its price will only increase over time. (A rising and predictable carbon price incorporates all five of the Budget 2005 principles.)

4. Assisting affected workers in the transition to cleaner production. A carbon pricing policy can be expected to result in a decline in the production of some highly polluting sectors while accelerating the growth of cleaner sectors. Assistance must be provided to ease the transition for affected workers. (A transition fund for workers draws on the principles of fairness and economic efficiency.)⁴⁴

⁴⁰ Calculation based on tripling the \$10/tonne carbon tax proposed by the Canadian Centre for Policy Alternatives. "Strength in Numbers: 2007 Alternative Federal Budget," p. 79. Available from http://policyalternatives.ca/documents/National_Office_Pubs/2007/AFB2007_Strength_in_Numbers.pdf

⁴¹ The five principles are found in Annex 4 (A Framework for Evaluation of Environmental Tax Proposals) in the Budget Plan 2004. Annex 4 is available from <http://www.fin.gc.ca/budget05/bp/bpa4e.htm>.

⁴² Ibid, p. 319.

⁴³ In testimony to the Standing Committee on the Environment and Sustainable Development, May 29, 2007.

⁴⁴ Any financial costs of such assistance could be financed from carbon pricing revenues.

D. Comparing the Tax and Trading Options

As noted above, the government could choose to put a price on carbon through either a cap-and-trade

system or a carbon tax, or through a hybrid system that uses both. Table 1 provides a comparison of the two approaches.

Table 1

	Emissions cap-and-trade	Carbon tax
Certainty Offered		
	In theory, offers certainty about the quantity of GHG reductions. In practice, governments may set a price ceiling (or “safety valve”), a practice that reduces certainty about GHG reductions.	In theory, offers certainty about the price of carbon. In practice, governments may decide to adjust tax rates frequently, thus reducing price certainty.
Environmental Effectiveness		
Polluter pays?	Yes, if targets are stringent, permits are auctioned and offsets are only offered for incremental GHG reductions.	Yes, as long as the tax level is appropriate and tax exemptions and reductions are not offered.
Ease of increasing the carbon price or the quantity of reductions	Relatively easy to increase the quantity of reductions by decreasing the number of auctioned and gratis permits. However, the resulting effect on the carbon price would be uncertain.	Relatively easy to increase the carbon tax rate to a desired price level. However, the effect on GHG emissions of the new price level would be uncertain.
Use and recipient of carbon price revenues	Money spent on offset credits ⁴⁵ (credits generated from emission reduction projects outside the cap-and-trade system) remains in the private sector, is spent on immediate emission reductions, and can be a mechanism for financing emission reductions in poorer countries. Money spent on auctioned permits goes to government and may be spent on emission reductions.	Money spent on paying carbon taxes goes to government and may be spent on emission reductions. A carbon tax could allow for the purchase of offset credits ⁴⁶ as a means to reduce taxable emissions, and to ensure that some money is redirected to immediate emission reductions, including reductions in poorer countries.
Economic Efficiency		
Applicability to individuals	By creating a market, provides a single marginal price for emission reductions, maximizing economic efficiency. However, this is only true when governments use absolute targets; intensity targets result in different types of reductions being priced differently. Not easy to apply directly to individuals (except through “carbon credit cards”). Can be applied indirectly to individuals using an “upstream” system.	A common tax rate on all sectors provides a single marginal price for emission reductions, maximizing economic efficiency. However, if governments set different tax rates/exemptions for different sectors, the unique marginal price would be lost. Easily applied to individuals directly, but effectiveness in encouraging emission reductions will likely depend strongly on visibility.
Simplicity of Administration		
	Can be designed to be simple (e.g., by auctioning 100% of permits) but allocating some permits free of charge would undermine the system’s simplicity.	Can be designed to be simple, but sectoral exemptions or variations would undermine the system’s simplicity.
Important Design Considerations		
Means of addressing distinct sectoral pressures	Flexibility to allocate permits free of charge according to sectors’ “ability to pay”. Allocation of free permits tends to be contentious, and can be vulnerable to lobbying.	Flexibility to recycle revenue in a way that reflects sectors’ needs. Revenue recycling has the potential to be contentious, and can be vulnerable to lobbying.
Consistency with international GHG reduction regime	The current international regime (Kyoto Protocol) is a cap-and-trade architecture.	Some argue that it will be easier to achieve international agreement on an effective future regime (post-2012) based on carbon taxes.

⁴⁵ Determining the “additionality” (or incrementality) of offset credits — to ensure they represent genuine emission reductions — can be challenging.

⁴⁶ See previous footnote.

From an environmental perspective, the most appealing feature of a cap-and-trade system is the certainty it can provide about the level of GHG reductions it will produce. The system starts by placing a limit on GHG emissions, and (as long as government officials monitor the system properly and it does not make use of “safety valves” that allow for increased emissions if the market price rises above a certain threshold) companies are forced to deliver those reductions, whether through improved performance on-site or by purchasing credits on the market.⁴⁷

A carbon tax cannot offer certainty about the volume of reductions without policy intervention, because companies are not compelled to reduce their emissions; they are only compelled to pay a tax on them. However, a carbon tax of \$30/tonne CO₂e, for example, would create a strong economic incentive for companies to make any emission reductions that cost less than \$30/tonne, in order to avoid paying the tax. If a carbon tax is stringent enough, it can deliver GHG reductions just as effectively as a cap-and-trade system — but only if government directs the tax revenues it raises to near-term emission reductions to the same extent as occurs under a cap-and-trade system.

As noted above, governments have already started taking steps to set a price for carbon. In Canada, Québec has imposed a modest carbon tax, while Alberta and the federal government are establishing systems of intensity targets with limited emissions trading components. Internationally, several European countries have adopted some form of carbon taxes, while the EU as a whole has a cap-and-trade system for heavy industry. The Kyoto Protocol’s “flexible mechanisms” allow countries to invest in emission-reduction projects overseas, and also permits emissions trading between countries. So a government seeking to set a bold, economy-wide carbon price would not have to start from scratch.

E. Important Design Considerations

Auctioning Permits in a Cap-and-Trade System

In a cap-and-trade system, a company must hold a permit, or allowance, for each tonne of carbon it emits. Their quantity permits represent their “cap”; companies whose emissions are above their cap can then “trade” with others to get the extra permits they need. One of the crucial design questions that governments face is how best to allocate these emission permits, as they will be in substantial demand in any stringent cap-and-trade system.

The Green Budget Coalition recommends that companies pay for at least a portion of these permits through an auction, and that the government aim to auction all permits in short order (by 2020 at the latest).

By capping GHG emissions, governments create a new market commodity. In the United States, a Congressional Budget Office study estimates that the GHG-reduction proposals currently before Congress would create between US\$50 billion and US\$300 billion per year (in 2007 dollars) in value by 2020.⁴⁸ In Canada, the value of permits at \$30/tonne CO₂e for 400Mt of heavy industry emissions — roughly the total heavy industry emissions projected by 2010 — would be \$12 billion. If the government turns those permits over to industry free of charge, a significant portion of that value could be passed on to companies as windfall profit.⁴⁹

In fact, some companies did exactly that in the European Union’s Emissions Trading System, which allocated permits free of charge and then saw electricity companies pass on the costs of reducing emissions to consumers while reaping windfall profits from the carbon market. As a result, European Union (EU) governments are now considering allowing 100% auctioning of carbon permits in the system after 2012.⁵⁰

The Regional Greenhouse Gas Initiative (RGGI), an emissions trading system for CO₂ from power plants

⁴⁷ One exception to the certainty of GHG reductions from cap-and-trade occurs when governments set targets in terms of emissions intensity instead of absolute emissions. Intensity targets require companies to reduce their GHG emissions relative to their production. But if a company’s production grows faster than expected, the actual emissions level when meeting its targets will be higher than expected. It is preferable, therefore, not to use the term “cap-and-trade” in connection with intensity targets, since they do not represent a real cap.

⁴⁸ Congressional Budget Office. Trade-Offs in Allocating Allowances for CO₂ Emissions. April 25, 2007, p. 2. Available from http://www.cbo.gov/ftpdocs/80xx/doc8027/04-25-Cap_Trade.pdf.

⁴⁹ This windfall profit would not occur in all sectors. Where companies have the ability to pass on the costs of GHG reductions to consumers (for example, by charging higher electricity prices), they can treat the value of permits as windfall profits. In sectors where the price of a commodity is set globally — as it is in the oil and gas industries — the higher costs that come from reducing emissions cut into profit margins.

⁵⁰ “Europe Moves to Make Big Polluters Pay for Emissions” (New York Times, June 5, 2007). Available from <http://www.nytimes.com/2007/06/05/business/worldbusiness/05emissions.html>.

in nine North-eastern US states due to begin trading in 2009, mandates a minimum of 25% auctioning.⁵¹ However, the state of Connecticut has already announced plans to auction over 50% of its permits, and other states are also contemplating going beyond the minimum auction level.⁵²

The revenues that accrue to government from even a modest amount of permit auctioning would be substantial. A 10% permit auction at a price of \$15/tonne CO₂e would generate annual revenues of roughly \$600 million for the federal government (based again on 400Mt of heavy industry emissions). These revenues can then be “recycled” in ways that increase the emission reductions delivered by the system and that reduce its economic costs.

Given the experience of the EU’s system, and the support for auctioning permits in the United States through the RGGI, Canada’s government should auction a rapidly increasing proportion of the permits if it opts to set a carbon price through a cap-and-trade system. During the transition period to full auctioning, the government should allocate permits according to the principles of environmental fairness and economic feasibility.⁵³

Revenue Recycling

Clearly, both a carbon tax and a cap-and-trade system with auctioned permits could raise significant revenues for governments in Canada. A well-designed carbon pricing system will use these revenues for two primary purposes:

- 1) Investing in a massive scale-up of efforts to further reduce GHG emissions (investments should be made in a way that prevents large transfers of wealth between Canada’s regions), and
- 2) Ensuring that low-income Canadians are protected from related increases in their living costs, and that impacts on affected workers are mitigated.

In her Fall 2006 report, the federal environment commissioner called for a “massive scale up of efforts” by the federal government to combat climate change.⁵⁴ Meeting the commissioner’s challenge will mean an unprecedented increase in the scope and

impact of government climate change initiatives. While private sector investment can accomplish some of this, especially under a cap-and-trade system, a truly “massive” scale-up will require an order-of-magnitude increase in government spending that reflects the seriousness of the global warming challenge. Charging a price for carbon emissions is the perfect way to raise needed revenues while sending an economic signal that will also serve to reduce emissions in and of itself.

The Green Budget Coalition believes that emission-reduction activities should receive the bulk of the revenues raised by any carbon-pricing system. Government investments in areas such as low-impact renewable energy, energy efficiency, public transit, or sustainable agriculture and forestry have a real potential to reduce Canada’s emissions above and beyond what will occur as a result of the carbon price. Investments should be made in a way that prevents large transfers of wealth between Canada’s regions.

Protecting low-income Canadians from any related increases in living costs due to carbon pricing is an equally important principle (see Section C, above), and the Green Budget Coalition supports directing a significant portion of revenues raised through carbon pricing to that end. The Green Budget Coalition also supports a Green Jobs Investment Fund or a Just Transition program for affected workers to help Canada to adapt competitively to a low-carbon future, and to help mitigate the impacts on affected workers. All such measures should be designed in such a way that they do not cancel out the incentive to reduce emissions that carbon pricing provides.

Further Considerations

In setting a price on carbon, the government will also have to consider carefully how best to:

- Convince industry that the carbon price signal is for the long term — and that companies must plan multi-billion dollar, multi-decade investments accordingly,
- Link to existing and emerging emissions trading regimes outside Canada,
- Explore mechanisms that address the competitiveness concerns of Canadian

⁵¹ The RGGI’s key documents are available from <http://www.rggi.org/agreement.htm>.

⁵² See Comments of IETA Working Group on 100% Auctioning in Connecticut’s Model Rule, p. 3. Available at <http://www.ct.gov/dep/lib/dep/air/climatechange/ietacomm.pdf>.

⁵³ For an example of how this could be done, please see the Pembina Institute’s publication *Fair Share, Green Share: A proposal for regulating greenhouse gases from heavy industry*, available at <http://pubs.pembina.org/reports/FairShareGreenShare.pdf>.

⁵⁴ Report of the Commissioner of the Environment and Sustainable Development, Fall 2006, Chapter 0: The Commissioner’s Perspective, p.11. Available from <http://www.oag-bvg.gc.ca/domino/reports.nsf/html/c20060900ce.html>.

sectors that could become more vulnerable to international competitors facing less stringent GHG policies. These measures should simultaneously aim for strong GHG reduction action by our trading partners and sustainability in Canada's energy production sector, while addressing the particular circumstances of developing countries,

- Ensure that penalties under a cap and trade system are effective — and considerably higher than the average price for carbon,
- Implement compensating measures as needed to ensure fairness between large emitters and others⁵⁵,
- Consider the relative advantages of “upstream” and “downstream” cap-and-trade systems
- Balance regional equity, and
- Integrate an offsets system, which creates an incentive for emission reductions outside of the sectors covered by a cap-and-trade system or a carbon tax.

Several other detailed design questions for a cap-and-trade system are discussed in *Reducing Industrial Greenhouse Gas Emissions with Regulated Targets-and-Trading Systems*, a Green Budget Coalition backgrounder prepared for Budget 2007.⁵⁶

Green Budget Coalition members would be happy to work with federal officials on the detailed policy response to these and other design questions.

Alternative and Complementary Policies

The Green Budget Coalition further recommends the following measures (*all detailed later in this document*) be adopted in the 2008 budget, for their potential to complement the above recommendation in achieving a massive scale up of efforts on climate change and in internalising the environmental and human health costs of pollution into market prices.

Renewable Energy: Developing and Implementing a Comprehensive Strategy and Energy Efficiency: Setting and Achieving Targets together outline the next steps necessary for a massive scale up in the deployment of renewable energy and energy efficiency. Such a strategy would play an important role in reducing GHG emissions and other harmful air and water pollution, in providing security around energy supplies and energy prices, and in stimulating the renewable energy and energy efficiency sectors' growth, employment and capacity to capitalize on growing markets worldwide.

Sustainable energy policy also requires continued action to level the playing field between renewable and non-renewable resources. Over time, federal fiscal policies related to natural resources (including taxes, royalties, fees, and subsidies) should be fully amended to ensure that any resource extraction or production in Canada requires net payments to Canadians — through their governments (federal and provincial) — reflecting those resources' true value, today and in the future, and at a level which is fair relative to other resources. The next step is to cancel both the “Super flow-through-share” program for mining exploration in Canada and the 10% corporate mineral exploration and development tax credit, and to eliminate the 100% accelerated capital cost allowance (ACCA) for mining. See *Preserving Minerals for the Future: Ending Counterproductive Support Programs*.

The Switch Green: Energy Star Appliance Feebate (included in the *Energy Efficiency* recommendation) would further internalise the environmental and human health costs of pollution into market prices, and reduce the energy consumption of home appliances in Canada, by utilising a feebate structure to eliminate or narrow the price gap between efficient and inefficient appliances. It would reduce greenhouse gas emissions by 275 thousand tonnes per year, reduce household energy costs by \$80 million annually, and reduce water consumption and the pollutants that cause smog.

The successful internalisation of environmental and human health values into the economy also requires structural measures to permanently and effectively integrate environmental considerations into all relevant federal policy and policy-making processes. The best next step towards this goal is to fully implement the recommendations of the National Round Table on the Environment and the Economy on establishing ongoing national indicators regarding Canada's natural capital, building on the federal efforts to date. See *Better Indicators: Integrating Environmental Values into Policy*.

Contacts:

Clare Demerse
Pembina Institute
819-483-6288, ext. 24
clared@pembina.org

Pierre Sadik
David Suzuki Foundation
613-594-5845
psadik@davidsuzuki.org

⁵⁵ This will be necessary if, for example, large emitters receive gratis permits under a cap-and-trade system (i.e., the carbon price applies only to their marginal emissions) while smaller emitters face a carbon tax applying to 100% of their emissions, or if some emitters can use lower-priced offsets not available to individuals.

⁵⁶ Available at <http://www.greenbudget.ca/2007p/1.html>.