Testimony to the Standing Committee on Environment and Sustainable Development House of Commons, Ottawa

Ross McKitrick*
Associate Professor
Department of Economics
University of Guelph

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1 Introduction

I am an Associate Professor of Economics at the University of Guelph, where I specialize in environmental economics and policy analysis. I am coauthor of one of Canada's best-known books on climate change[1] and I have published numerous scholarly articles and technical papers[2] on the economics of environmental policy. I have also published scientific articles on climate change-related topics, including papers on nonclimatic biases in meteorological data and trend detection in temperature series. My recent work diagnosing fundamental errors in the IPCC "hockey stick" graph (which is heavily used by the Government of Canada in public education on

* Note some revisions have been made April 12, 2005, as listed after the References.

climate change) was published in a top geophysics journal,[3] and has been discussed around the world, including citations in *Nature, Science*, and *The Economist*.

The background notes that guide these hearings make the following remarks about Canada's implementation of the Kyoto Protocol:

- "It is a key sustainable development issue for Canada about which there is a sense of urgency."
- "The government is not only willing to change its plan, but is looking for input into how to change its plan."

I respectfully suggest that the first statement is wrong. There is no *actual* urgency: the Kyoto targets and timetables are arbitrary and artificial. Canada was unprepared going into the Kyoto negotiations and agreed to an impossible target, whose costs far exceed any conceivable benefits. The failure to develop an acceptable plan since then only proves that the target is unworkable. Since 1997 the other Annex I signatories have examined their commitments and have come to the same realization, as they have either declined to ratify Kyoto, secured loopholes that effectively exempt them from taking action, or simply admitted they won't be in compliance. Even if fully implemented, Kyoto in its present form will yield no net global CO_2 emission reductions.[4] The treaty is a dead letter—at best it is a symbol of good intentions. It is therefore irresponsible of Canada to continue putting billions of dollars into futile attempts to implement a failed treaty that everyone else has already given up on. And we must be especially attuned to the unique risk that confronts Canada by binding ourselves to the Kyoto targets and timetable in light of the refusal of our NAFTA trading partners to do the same.

Therefore, in regard to the second point, the most important change to the 'plan', such as it is, is to extract ourselves as soon as possible from the legal obligations of Kyoto. Only by letting go of this unworkable timetable and target can we hope to devise a long term strategy on climate change that makes economic and scientific sense.

The fixation on Kyoto and the evident inability to obtain approval for a plan through normal Parliamentary procedures has apparently led to a decision[5] by the Government of Canada to declare carbon dioxide a "toxic substance" under the Canadian Environmental Protection Act. This action further undermines the Government's credibility by enshrining an obvious and transparent falsehood into environmental law. It threatens to bring the CEPA itself into disrepute by debasing the terminology of the Act and by abusing the regulatory discretion it authorizes.

It was a mistake to ratify Kyoto without an implementation plan. It was also a mistake to tell Canadians that the science of climate change is sufficiently settled as to necessitate a precipitous rush into a major economic restructuring with no regard to the costs Canadians will bear.[6] Fundamental questions remain about, among other things, the natural variability of climate, the physical processes behind observed changes in contemporary data, and whether the effects of any future anthropogenic climate changes would even be detectable against the background of our highly complex and variable climate system, let alone so hazardous as to justify Herculean experiments in controlling the weather. Also, recent research has shown that the IPCC carbon

emission scenarios for the 21st century are systematically biased upwards.[7] Current research on these issues, taken as a whole, does not provide a basis for aggressive CO_2 emission mitigation policies like Kyoto.

2 Emissions and Economic Growth

Canada has effectively decoupled particulate and sulphur dioxide emissions from energy consumption, through investments in scrubbers and other end-of-pipe emission control devices. But carbon dioxide emissions cannot be decoupled from economic activity so easily. Emissions are physically tied to fossil fuel consumption and therefore tend to follow economic growth very closely. Figure 1 shows greenhouse gas (GHG) emissions up to 2002, relative to the Kyoto target.

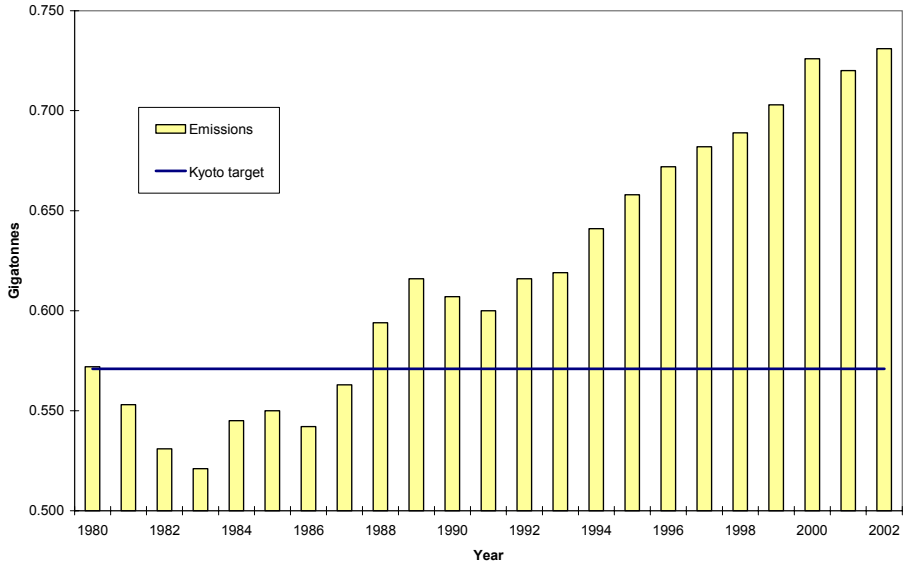

Figure 1

Canada's Greenhouse Gas Emissions since 1980.

Note the Kyoto target roughly equals the 1980 emissions level.

Source: http://www.ec.gc.ca/soer-ree/English/indicator_series/techs.cfm?tech_id=15&issue_id=4&supp=1#data

Total Greenhouse Gas (GHG) emissions can be factored into three components:

$$TOTAL\ GHG\ EMISSIONS = \left(\frac{Emissions}{GDP}\right) \times \left(\frac{GDP}{Population}\right) \times Population \qquad (1).$$

$\frac{Emissions}{GDP}$ is emissions per dollar of output, and is called the "**emissions intensity**" of the economy.

$\frac{GDP}{Population}$ is simply **average income**: the total value of output divided by the number of people.

Another way of expressing equation (1) is in terms of percentage changes:

$$\begin{aligned} \%\ Growth\ in\ Emissions = \ & [\%\ change\ in\ emissions\ intensity] \\ & + \\ & [\%\ change\ in\ average\ income] \\ & + \\ & [\%\ change\ in\ population] \end{aligned} \qquad (2)$$

Kyoto requires total GHG emissions to fall by about 30 percent over the next 3-5 years. But 2 of the 3 terms on the right side of (2) are positive for Canada, since income and population are both growing. That leaves emissions intensity to close the gap.

Figure 2 (next page) shows that GHG emissions intensity falls at an intermittent pace, responding to prices, technology changes, policies and changes in the mix of economic activity.

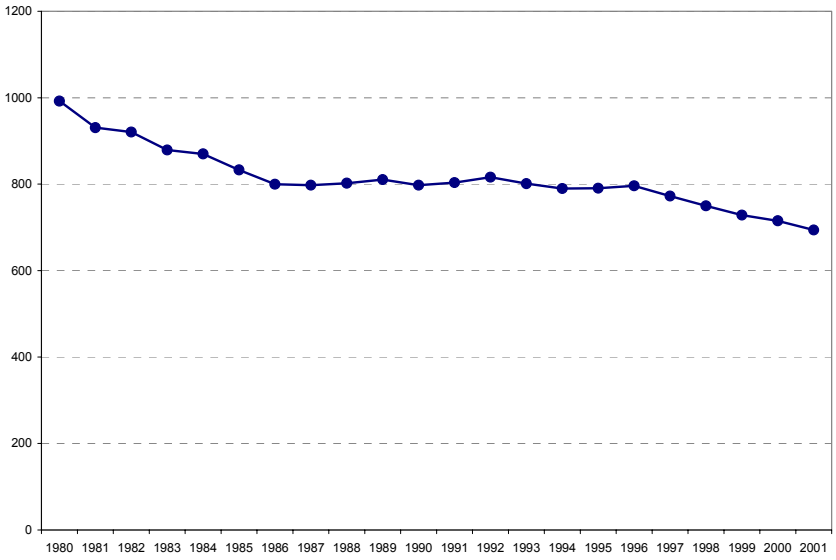

Figure 2

Emissions Intensity of GDP in Canada
(Tonnes/$millions GDP)

Sources: GHG as in Figure 1; GDP: CANSIM II SERIES V1992292

Between 1990 and 2002 emissions intensity fell by 1.2% per year, on average. Over the same period Canada's population grew by 1.0% per year on average, almost exactly offsetting the emission cuts due to falling emissions intensity.

Average real income grew on average by 1.8% per year from 1990 to 2002. Adding up these rates of change (1.8 + 1.0 – 1.2) yields the +1.6% average annual increase of GHG emissions observed from 1990 to 2002, totaling 20.5% over the period.

As long as Canada's population growth approximately cancels out declining emissions intensity, total GHG emissions will grow at roughly the same rate as average real income (see Figure 3).

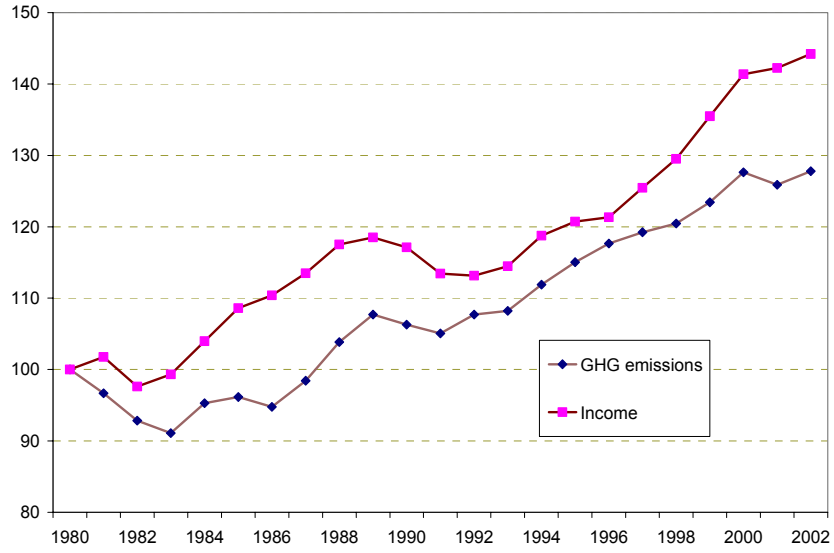

Figure 3

Total GHG Emissions closely track average real income in Canada
(scaled so 1980=100)

If the Government of Canada intends to meet the Kyoto target through domestic emission reductions of 25% over the next five years, based on historical experience it should expect a 5.3% reduction in real income per capita every year between now and 2010.

Even if emissions intensity could be made to fall twice as fast as its long term historical trend rate, it would still imply[8] an annual reduction in GDP per capita of 4%.

Some economic modeling exercises[9] have suggested the costs would be less severe. However they often make unrealistic assumptions about the ability of the economy to instantly substitute among energy sources at no cost, and they sometimes do not take into account population growth. Also, in some of the federal government's analyses of previous Kyoto plans the modelers were instructed to build in assumptions that extensive voluntary emission-reducing action will be undertaken by the public at no cost. Experience has shown that these assumptions are invalid.

To summarize: if average income grows by about 1.8% per year and population grows by 1% per year, emissions intensity would have to fall by 2.8% per year from now on just to *cap* emissions at their current rate. This is more than twice the long term historical rate of decline in Canadian GHG emissions intensity. To reach the Kyoto target is economically infeasible. The only countries that can seriously contemplate such a goal are those whose economy has collapsed or whose population is rapidly declining. Assuming this Committee does not aspire to such outcomes for Canada, sticking to the Kyoto timetable and target is not an option.

3 A Caveat About Vehicle Regulatory Strategies

The Government of Canada has proposed to regulate a 25% improvement in motor vehicle fuel efficiency. This is an arbitrary and punitive target. The following points need to be borne in mind when assessing whether the scheme will even yield emission reductions (let alone whether there are sufficient benefits to justify such reductions).

- The rule will, by necessity, only apply to new cars. It will therefore raise the price of new cars relative to used cars. So it will slow down the replacement of older cars currently on the road. Since cars typically get dirtier and less fuel-efficient as they age, the fleet-aging effect may wipe out any of the intended emission reductions.

- People who want to buy a new SUV or minivan will likely not opt for a new small car as a result of this policy. Instead they will opt for a *used* SUV or minivan.

- The best way to improve the fuel efficiency of the vehicle fleet is to make the purchase of new cars as inexpensive as possible. The Government of Canada could improve the fuel efficiency of the motor vehicle fleet simply by removing all remaining barriers to the import of new motor vehicles.

APPENDIX Fiscal Instruments for Emissions Control

The Government of Canada has proposed a tradable permits system for controlling GHG emissions from large final emitters. While tradable permits represent an improvement on command-and-control standards, there are a number of technical issues that need to be carefully assessed before proceeding with their implementation.

- The theory that establishes the efficiency of tradable permits assumes that they are used *instead of*, not *in conjunction with* other regulatory measures like energy efficiency mandates, technology requirements, etc. If a tradable permits system is going to be implemented the Government needs to identify the regulations it is established in lieu of and make sure they do not apply to the large final emitters.

- Allowing trades in emission permits can improve the allocation of emission reduction activity among emitters, as can (in principle) emission taxes. However, analysis of the US experience with tradable permits has disclosed an important hidden cost to tradable permits. Both emission taxes and emission permits raise consumer prices and reduce real wages. In so doing they generate what are called *tax interaction effects*,[10] which refers to the fact that large-scale emission control policies exacerbate distortions in factor markets attributable to existing factor income taxes. Emission taxes generate revenue for the government which can be used to partly offset the tax interaction costs. But a system of tradable permits, in which the permits are freely distributed to emitters, does not generate revenue and hence the overall policy cost is larger. The tax interaction effects can be quite large. The Bovenberg and Goulder study cited in reference 11 estimated that a cap-and-trade system for CO_2 emissions, in the context of an economy with an average 40% income tax, generates economic costs that start at 55 US$ per ton of emission reduction, and rise quickly as the emissions control target gets steeper. By contrast a revenue-neutral carbon tax generates economic costs that average about $25 per ton. The tax interaction effect accounts for the difference.[11]

- Creating a cap-and-trade system by freely distributing permits creates a “carbon cartel” that will enjoy a large, regressive transfer of wealth. If 30 million permits are issued and they end up valued at $50 each, the market will be worth $1.5 billion. This is *not new wealth*, it is a transfer of wealth from households to the shareholders of the large final emitters. The costs to households take the form of higher consumer prices and lower real wages.

ENDNOTES

[1] *Taken By Storm: The Troubled Science, Policy and Politics of Global Warming*. Christopher Essex and Ross McKitrick, 2002. Toronto: Key Porter Books

[2] See http://www.uoguelph.ca/~rmckitri/research/papers.html.

[3] McIntyre&McKitrick *Geophysical Research Letters* Vol. 32, No. 3, L03710 10.1029/2004GL021750 12 February 2005; also see McIntyre&McKitrick (2005) *Energy and Environment* 16(1) pp. 69-100.

[4] Böhringer&Vogt (2005) *Canadian Journal of Economics* 36(2) 475—494.

[5] "Liberals to use anti-pollution laws to regulate gas emissions" *Globe & Mail* March 17, 2005.

[6] E.g., Action Plan 2000 states (p. 15): "Our scientific understanding of climate change is sound and leaves no doubt that it is essential to take action now to reduce emissions." The April 2002 '4 Options' Discussion Paper states "Moreover, the 20th century was the warmest century of the last millennium. The 1990s were the warmest decade of the last century. The years 1999 and 2001 were the warmest years yet. And the first three months of 2002 were the warmest since records began." Etc.

[7] See McKitrick&Strazicich, "Stationarity of Global Per Capita Carbon Dioxide Emissions: Implications for Global Warming Scenarios", University of Guelph Department of Economics Discussion Paper 2005-3 for a review and explanation.

[8] $(1+0.01-0.012-0.053)^5 = 0.75$; $(1+0.01-0.024-0.04)^5 = 0.76$.

[9] See survey in McKitrick&Wigle "The Kyoto Protocol: Canada's Risky Rush to Judgment" C.D. Howe Institute Commentary (October 2002).

[10] Parry, Williams&Goulder (1999). *Journal of Environmental Economics and Management* 37: 52—84.

[11] Similar cost estimates are also obtained in Bovenberg&Goulder (1996) *American Economic Review* 86(4) 985—1000; Brown (1998) *Federal Reserve Bank of Dallas Economic Review* 4th Quarter, pp. 26—35.

Revisions made April 12, 2005:
- Footnote 5, "April 17, 2005" amended to "March 17, 2005".
- 2nd bullet point on page 8, Sentence 8, amended from "The study cited in reference 7 estimated…" to text as shown;
- Same sentence, "…economic costs that average 55 US$ per ton…" changed to "…economic costs that start at 55 US$ per ton…"