At Last!

The Costs and Benefits of Canada's Climate Plan

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Friends of Science Society

Contents

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At Last! THE COSTS AND BENEFITS OF CANADA'S CLIMATE PLAN

EXECUTIVE SUMMARY

In its 2022 Emissions Reduction Plan (ERP)[1], the Canadian federal government committed to the target of reducing greenhouse gas (GHG) emissions to at least 40% below 2005 levels by 2030. In 2023, the government released a progress report[2] updating its policy package and adding some details concerning its implementation.

In July, 2024 the Fraser Institute published an analysis[3] by Professor Ross McKitrick of the University of Guelph of the economic impact and GHG effects of the government's plan through 2030. In fact, the analysis does something that the federal government has consistently failed to do – offer a coherent and reasonably rigorous assessment of the costs and benefits of the federal climate measures. The Fraser Institute also published a companion two-pager[4] in which Dr. McKitrick evaluated the government's progress towards the 2030 target in terms of the three key "drivers"- GHG intensity, Canada's income and population.

As Canada is responsible for only 1.5% of global GHG emissions, the federal objective to reduce emissions by 40% would reduce global emissions by 0.6%, some or all of which will be offset by increased emissions elsewhere. **If Canada achieved the intended emissions reduction and maintained that reduction in future, the global average temperature would be reduced by 0.007 degrees C.** (seven thousandths of a degree Celsius) as of 2100 compared to a case in which Canada does nothing. (Again, this assumes that these emissions cuts would not be offset elsewhere).

Dr. McKitrick considers that the government exaggerated the costs of climate change and has presented them in a "misleading and overstated" way. The government also has over-stated the benefits of Canada's emission reductions.

Dr. McKitrick analyzed the emissions-reducing effects of the ERP by examining its three components: carbon pricing, the Clean Fuel Regulations (CFR), and the various regulatory measures. The total effect of the three components would be a reduction of 26.5%.

The ERP is projected to cost $6,700 per worker annually by 2030. It thus would impose significant economic burdens on Canadian households.

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[1] https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html
[2] https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030/2023-progress-report.html
[3] https://www.fraserinstitute.org/studies/canadas-progress-towards-meeting-2026-and-2030-ghg-emission-reduction-targets
[4] https://www.fraserinstitute.org/sites/default/files/canadas-progress-towards-meeting-2026-and-2030-ghg-targets.pdf

The two-pager's analysis examines three drivers of GHG emissions using the simple formula

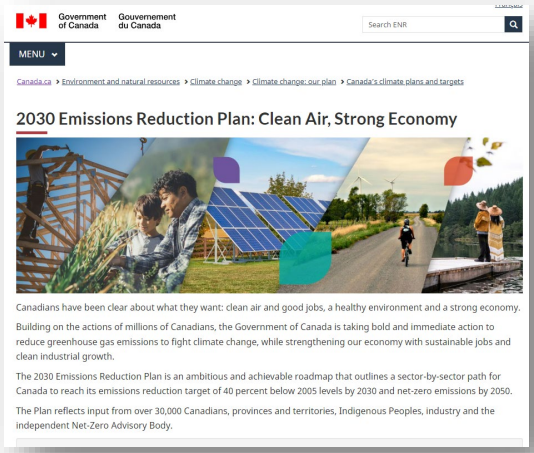
Emissions = GHG Intensity x Income x Population.

Dr. McKitrick states, *"On a compound basis, if population grows on average by 1.2% per year and real per-capita income grows by 0.7% per year, over the nine years from 2022 to 2030 they will contribute an increase of about 19% to Canada's GHG emissions. Hitting the 2030 target of -38% compared to current emissions will require emissions intensity to fall by 57% over nine years… A decline of 57% over nine years requires a compound annual average decline of 9.0%, more than six times faster than the rate achieved since 2001."*

Dr. McKitrick's analysis indicates that, despite the high costs and at best uncertain benefits of federal government climate measures, Canada probably will not meet its 2030 emissions reduction target. It remains to be seen whether the federal government will reconsider its present approach and at least establish a revised target that is feasible and more affordable.

At Last! The Costs and Benefits of Canada's Climate Plan

In its 2022 Emissions Reduction Plan (ERP)[5], the Canadian federal government committed to the target of reducing greenhouse gas (GHG) emissions to at least 40% below 2005 levels by 2030. In 2023, the government released a progress report[6] updating its policy package and adding some details concerning its implementation.



https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-

In July, 2024 the Fraser Institute published an analysis[7] by Professor Ross McKitrick of the University of Guelph of the economic impact and GHG effects of the government's plan through 2030. In fact, the analysis does something that the federal government has consistently failed to do – offer a coherent and reasonably rigorous assessment of the costs and benefits of the federal climate measures. The Fraser Institute also published a companion two-pager[8] in which Dr. McKitrick evaluated the government's progress towards the 2030 target in terms of the three key "drivers"- GHG intensity, Canada's income and population.

In this article, I will offer a summary of the key findings and conclusions of Dr. McKitrick's analysis in terms that may make them more easily understood by those less familiar with economic terms. I will also offer some personal comments about the context in which Dr. McKitrick's findings might be viewed.

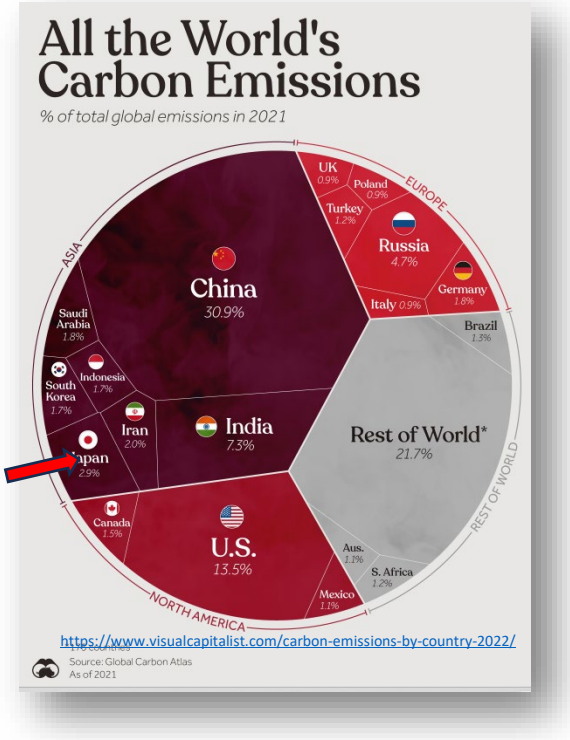
The Highlights

[5] https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html
[6] https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030/2023-progress-report.html
[7] https://www.fraserinstitute.org/studies/canadas-progress-towards-meeting-2026-and-2030-ghg-emission-reduction-targets
[8] https://www.fraserinstitute.org/sites/default/files/canadas-progress-towards-meeting-2026-and-2030-ghg-targets.pdf

The 2030 target involves a reduction by at least 40% from Canada's 2005 emissions by 2030. In the timeframe of the ERP, the target would entail a reduction from 700 million tonnes (Mt) of GHG emissions in 2019 to 439 Mt in 2030. Dr. McKitrick estimates that in fact the ERP will reduce Canada's emissions by about 26.5% between 2019 and 2030, reaching approximately 57% of the government's target. In other words, **the measures will not come close to meeting the government's declared objective**.

As Canada is responsible for only 1.5% of global GHG emissions, the federal objective to reduce emissions by 40% would reduce global emissions by 0.6%, some or all of which will be offset by increased emissions elsewhere.

If Canada achieved the intended emissions reduction and maintained that reduction in future, the global average temperature would be reduced by 0.007 degrees C. (seven thousandths of a degree Celsius) as of 2100 compared to a case in which Canada does nothing. (Again, this assumes that these emissions cuts would not be offset elsewhere).



Dr. McKitrick considers that the government exaggerated the costs of climate change and has presented them in a "misleading and overstated" way. The government also has over-stated the benefits of Canada's emission reductions.

Dr. McKitrick analyzed the emissions-reducing effects of the ERP by examining its three components: carbon pricing, the Clean Fuel Regulations (CFR), and the various regulatory measures. He did not analyze the costs of the many subsidies in place.

The carbon tax is projected to reduce emissions by 18% from 2019 levels by 2030. The CFR would bring them down an additional 6.1 %. The regulations would bring them down a further 2.4%. Thus, the total effect of the three components would be a reduction of 26.5%.

In the base case (i.e. without the ERP), Dr. McKitrick estimates that the Canadian economy will grow by 27.8% from 2019 to 2030. The implementation of the ERP would reduce the growth of the economy by 6.2 %.

He forecast Income per worker, adjusted for inflation, to stagnate for most of the decade and actually decrease by 1.5% from 2022 levels by 2030.

The ERP is projected to cost $6,700 per worker annually by 2030. It thus would impose significant economic burdens on Canadian households.

Comments

The Methodology

The McKitrick paper is based upon the use of two tools of economic analysis with which many people may not be familiar – benefit/cost analysis and the use of a general equilibrium model of the Canadian economy.

Benefit/cost analysis is used by companies and governments to compare the financial and non-financial advantages and disadvantages of an investment over time. It thus depends for its accuracy on many factors, including an accurate estimate of the actual costs, the ability to quantify non-financial considerations in dollar-equivalent terms, and agreement on how to value costs and benefits over time (i.e. the "discount rate"). If the benefits exceed the costs, the decision maker should proceed with the investment; if they do not, he or she should not proceed.

Benefit/cost analysis relies heavily on estimates and forecasts. To the extent that these are uncertain or unknown, the results may be less reliable. Despite these uncertainties, applying benefit/cost analysis is far preferable to deciding upon major investments or expenditures of public funds when one has no idea of whether the benefits will exceed the costs.

General equilibrium analysis involves the use of computer models to assess the consequences of policies and/or investments on the entire economy. It is done using economic models, which are themselves simplified and artificial versions of reality. The models are helpful in understanding the functioning of the economy and the results of policies and expenditures on such things as economic growth, inflation, incomes and employment. They require enormous amounts of information about the trends in the economy and the likely nature of the policy or expenditures being analyzed. They are expensive to design, build and operate. Finally, the models assume that markets will adjust through changing prices to "equilibrium" status over time.

For all their sophistication, benefit/cost analysis and general equilibrium analysis are just ways to project what will happen in future. The uncertainties are so many and the potential for "surprises" so great that no one should view the outcomes of such analysis as precise. **They are beneficial to the extent that they help identify and shine light on considerations that might otherwise go unknown, and they help decision makers better to assess potential changes in income and employment in terms of their orders of magnitude. They fulfill the important function of adding more discipline and rigor to the decision-making process.**

According to the federal government's 2023 progress report on the EPR, it has implemented 140 measures, many of which involve expenditures and costs in the tens of billions of dollars. It is extraordinary that the federal government has decided to proceed with such a large and costly set of climate-motivated measures without undertaking the type of analysis that Dr. McKitrick has.

The government has not listed or provided details concerning many of the measures that it has undertaken. This makes it much more difficult for an independent observer to accurately assess the costs and benefits of the measures. Consequently, Dr. McKitrick's analysis was based on limited information about the measures and on several assumptions.

The Findings

The alleged benefits of emissions reductions are portrayed by the federal government in terms of the "costs of climate change". These, in turn, are described in the 2023 progress report less in terms of the potential changes in average global temperatures and more in terms of weather events. The progress report claimed that wildfires are more common today than in the past, which is not true.[9] It also claims that it spends about $1 billion annually fighting wildfires that are "entirely" attributable to climate change. Further, it claims that the June 2021 Pacific Northwest heat wave was the result of climate change, and that analysis of the

[9] https://wattsupwiththat.com/2023/08/29/canada-forest-fires-trend-has-gone-down-since-2000-data-defy-alarmist-claims/

Intergovernmental Panel on Climate Change (IPCC) indicates that flooding will increase in Canada in future. Dr. McKitrick refutes all of these claims.

Minister Guilbeault at UN Climate Week 2023,
exploiting wildfires to advocate for a global price on carbon.

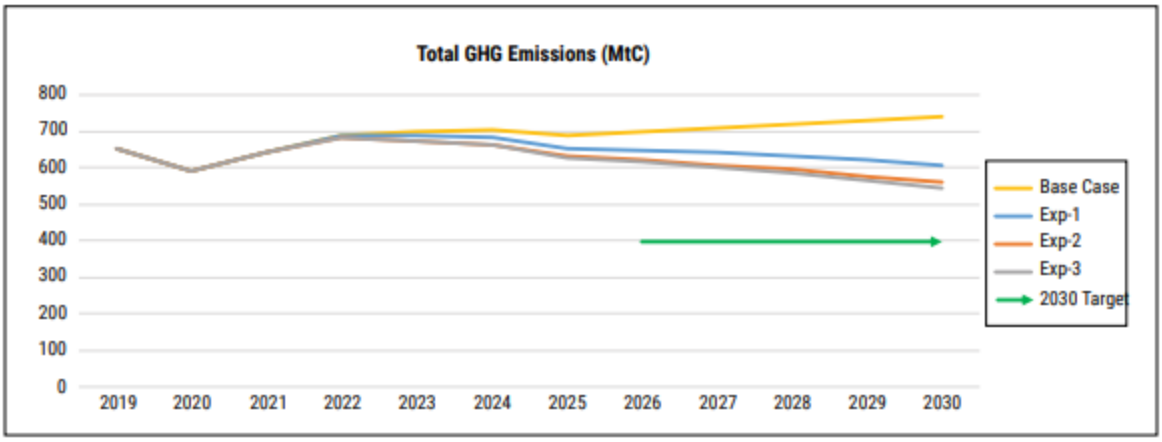
Dr. McKitrick notes **that the federal progress report offers little information about the costs of the current or proposed climate policies. Instead, it described the measures mainly in terms of their alleged benefits to Canada, not their costs.**

The results of Dr. McKitrick's modelling of the emissions-reduction effects of the federal government's policies were summarized in the "Highlights" section of this article. It is notable that he finds the carbon pricing system to be the "cheapest" option, the Clean Fuel Regulations to cost more than the carbon pricing (perhaps because of the fact that the revenues to the government from the CFR are not recycled directly back to the economy) and the regulatory measures to be the most expensive.

Table 4.1 indicates the results of the modelling of the effects of federal government climate policies on national income (i.e. GDP), employment and GDP per worker by province and territory.

The most surprising results perhaps are that the largest projected losses of income and income per worker are in Ontario, Newfoundland and Saskatchewan, not Alberta. The largest projected reductions in employment are in Ontario (1.5%), Prince Edward Island (1.3%) and New Brunswick (1.2%.

Figure 4.1: GHG Emissions under the ERP Policy Groups and the 2030 Target



Source: Author's calculations.

A good way to assess the costs of very different measures is to calculate their cost per tonne of emissions avoided. **Dr. McKitrick calculates that the proposed increases in carbon taxes will cost around $290 per tonne initially but the cost would decline to $229 per tonne by 2030. Adding in the Clean Fuel Regulations raises the cost initially to $776 per tonne, although that declines to $459 per tonne by 2030. Adding in the cost of regulations increases the cost to $795 per tonne by 2030.** These figures are well above the government's own estimate of the social cost of carbon (SCC, or the value of the marginal benefits to the world of each tonne of GHG emissions avoided), which begins at $247 in 2020 and rises to $294 per tonne (in 2021 dollars) as of 2030. The government's SCC relies upon an emissions scenario (RCP8.5) known to be scientifically invalid for the purpose and to produce inflated numbers.[10]

Hence, Dr. McKitrick observes that the ERP *"clearly fails a cost-benefit test even when using the federal government's exaggerated SCC as a measure of the marginal benefits."*

In my view, Dr. McKitrick probably has under-estimated the costs of the federal government's policies. His assessment of the "regulatory component" of the government's measures included only the costs of the proposed subsidies for Carbon Capture and Underground Storage (CCUS), restrictions on oil and gas sector methane emissions, the Clean Electricity Standard, the corporate average fuel economy standards, the Building Energy Efficiency Standards, and the proposed restrictions on fertilizer use. These leave out most of the other measures, which I have listed elsewhere[11], including the enormous costs of potentially foregone development of Canada's oil, natural gas and minerals resources. The paper does not address the costs and benefits of the over 300 provincial and territorial government climate measures already in place or planned. Given the absence of information and data, this would be an almost impossible task. It also does not attempt to address the longer-term costs and benefits of the federal goal of attaining "net-zero" GHG emissions by 2050.

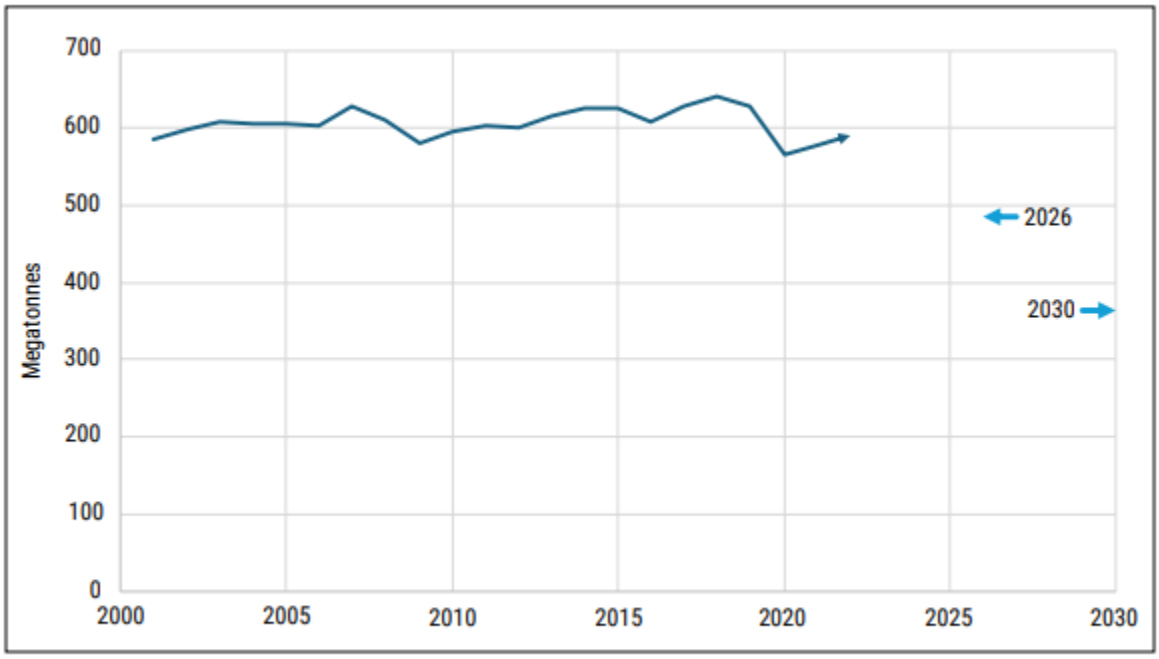
[10] https://financialpost.com/opinion/junk-science-week-social-cost-of-carbon-game
[11] https://blog.friendsofscience.org/2024/05/23/burdensome-ideology/

The Companion Two-Pager

The two-pager's analysis examines three drivers of GHG emissions using the simple formula Emissions = GHG Intensity x Income x Population.

From 2001 to 2022 Canada's total GHG emissions from fuel use trended up at 0.4% per year until the pandemic, dropped by 10% and are slowly returning to trend.

Figure 1.1: Canadian CO_2 Emissions 2001–2020 in Megatonnes—2026 and 2030 Emission Targets Indicated



Source: Energy Institute, 2024; author's calculations.

GHG intensity declined over the period at a rate of -1.4% per year. This reflects long-term global improvements in technology and energy efficiency, but also (surprisingly not noted by McKitrick) the significant loss of manufacturing activity in central Canada. The government's progress report projects that GHG intensity will continue to decline at its historical rate through 2035.

The income trend is +0.7% per year.

The population trend until recently was +1.2% per year but recent federal immigration policy raised it to +3.0 % per year in 2023.

Dr. McKitrick sees the longer-term income and population trends adding about 1.9% per year to emissions, and intensity trends reducing emissions by about -1.4% per year, leading to a "base case" increase of +0.5% per year.

The consequences for federal climate policy are profound.

"On a compound basis, if population grows on average by 1.2% per year and real per-capita income grows by 0.7% per year, over the nine years from 2022 to 2030 they will contribute an increase of about 19% to Canada's GHG emissions. Hitting the 2030 target of -38% compared to current emissions will require emissions intensity to fall by 57% over nine years. Since it only fell by 32% over the entire 2001-2022 interval this is an unprecedented undertaking and is contradicted by the projection in the federal government's 2023 Progress Report that intensity will continue to decline at its historical rate. A decline of 57% over nine years requires a compound annual average decline of 9.0%, more than six times faster than the rate achieved since 2001. It will be apparent over the next two years if an acceleration of this magnitude can be achieved by the federal plan."

STRIKERS FROM UNEMPLOYMENT RELIEF CAMPS EN ROUTE TO EASTERN CANADA DURING THE "ON TO OTTAWA TREK"

Library and Archives Canada, C-029399

https://www.historymuseum.ca/history-hall/great-depression/

If, for example, Canada's population growth returns to its historical trajectory and grows by about 10% between 2022 and 2030 (i.e. immigration levels drop sharply from current levels), and GHG intensity begins falling at double its historic rate (thus declining by 33% over the same period), real per-capita income would have to decline by 15% from 2022 to 2030 for emissions to reach the 2030 target. If these optimistic conditions are not present (i.e. if population continues growing faster than the historic rate and GHG intensity continues to fall at its current rate), the required decline in Canadians' incomes necessary to meet the 2030 target would be near Depression-levels.

Dr. McKitrick's analysis indicates that, despite the high costs and at best uncertain benefits of federal government climate measures, Canada probably will not meet its 2030 emissions reduction target. It remains to be seen whether the federal government will reconsider its present approach and at least establish a revised target that is feasible and more affordable.

About the Author

Robert Lyman is an economist with 27 years' experience as an analyst, policy advisor and manager in the Canadian federal government, primarily in the areas of energy, transportation, and environmental policy. He was also a diplomat for 10 years. Subsequently he has worked as a private consultant conducting policy research and analysis on energy and transportation issues as a principal for Entrans Policy Research Group. He is a frequent contributor of articles and reports for Friends of Science, a Calgary-based independent organization concerned about climate change-related issues. He resides in Ottawa, Canada. Full bio.

About Friends of Science Society

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens that is celebrating its 22nd year of offering climate science insights. After a thorough review of a broad spectrum of literature on climate change, Friends of Science Society has concluded that the sun is the main driver of climate change, not carbon dioxide (CO_2).

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