

Futile Folly

Canada's Climate Policy Goals in the Global Context

*"...extraordinarily expensive and dangerous political grandstanding...
Canadians deserve better."*

Contents

EXECUTIVE SUMMARY	2
Introduction	3
Greenhouse gas emissions are growing, not declining.....	3
The Source of Increased Emissions.....	6
Primarily the economic growth occurring in the developing countries	6
That growth is likely to continue	7
Developing Country Commitments at COP21 To Reduce Emissions	8
Cash for Climate Commitments.....	11
The developing country commitments were partly contingent on them receiving large funding from the OECD countries, which will not be forthcoming.....	11
Canadian GHG emissions constitute a tiny part of global GHG emissions	12
The IPCC Targets Are Impossible to Meet in any Case	13
Conclusion.....	14



Cover image licensed from Shutterstock.

Futile Folly

EXECUTIVE SUMMARY

All major political parties in Canada publicly accept the thesis that humans are causing potentially catastrophic global warming and that Canada must “take action” to reduce greenhouse gas (GHG) emissions, even if that imposes large costs on the Canadian economy. They implicitly accept the claims of proven science, low costs of mitigation and high environmental benefits.

This paper challenges one of those claims; that is, that emissions reductions by Canada will have a beneficial effect on global emissions trends or, assuming one accepts the thesis that humans are the primary influence on climate, global temperatures.

With verifiable facts and data, it demonstrates that:

- Global greenhouse gas emissions are increasing, not declining.
- The source of those increases is primarily the economic growth occurring in the developing countries.
- The growth of emissions in the developing countries far exceeds the reduction in emissions in the OECD countries.
- That growth is likely to continue.
- Many, if not most, developing countries will not honour their commitments at COP21, the United Nations Conference of the Parties on Climate Change in 2015, to reduce emissions; these commitments were political, not legal.
- The developing country commitments were partly contingent on massive funding by the OECD countries, which will not be provided.
- Canadian emissions constitute a tiny percentage of global emissions; and
- The emissions reductions that the Intergovernmental Panel on Climate Change claims are necessary to avoid calamity are so large as to be impossible to meet in political, economic and technological terms.

In short, the policies now being followed by federal and provincial governments in Canada amount to extraordinarily expensive and dangerous political grandstanding that will have no offsetting global environmental benefit.

FUTILE FOLLY

Introduction

All major political parties in Canada publicly accept the thesis that humans are causing potentially catastrophic global warming and that Canada must “take action” to reduce greenhouse gas (GHG) emissions, even if that imposes large costs on the Canadian economy. Rarely, if ever, does anyone challenge them to show how emissions reductions by Canada will have a beneficial effect on global emissions trends or, assuming one accepts the thesis that humans are the primary influence on climate, global temperatures.

This paper challenges their position. It will demonstrate, with verifiable facts and data, these points:

- Global greenhouse gas emissions are increasing, not declining.
- The source of those increases is primarily the economic growth occurring in the developing countries.
- The growth of emissions in the developing countries far exceeds the reduction in emissions in the OECD countries.
- That growth is likely to continue.
- Many, if not most, developing countries will not honour their commitments at COP21, the United Nations Conference of the Parties on Climate Change in 2015, to reduce emissions; these commitments were political, not legal.
- The developing country commitments were partly contingent on massive funding by the OECD countries, which will not be provided.
- Canadian emissions constitute a tiny percentage of global emissions; and
- The emissions reductions that the Intergovernmental Panel on Climate Change claims are necessary to avoid calamity are so large as to be impossible to meet in political, economic and technological terms.

Greenhouse gas emissions are growing, not declining

The BP Statistical Review of World Energy is one of the most authoritative sources of information available concerning energy supply, demand and emissions. In addition to its long record as an expert and reliable source of information, it has two additional advantages in this context. It is produced by a company headquartered in Europe, so those who produce it are sensitive to the views of the European Green movement and give favourable treatment to the analysis and

discussion of renewable energy sources; it thus cannot be realistically accused of bias. It also freely offers its background analysis and information for all to see. The BP Review for 2018 reports on carbon dioxide emissions from energy sources only, so its figures differ somewhat from those of other sources.

Page 49 of the 2018 review shows the composition of global carbon dioxide emissions by country and region over the period 2007-2017. It can be read here:

<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf>

The following tables are drawn from the data provided.

Table 1 shows global carbon dioxide emissions by major geographic area over the period 2007 to 2017, in terms of millions of tonnes (Mt) of carbon dioxide equivalent.

Table 1

<u>Region</u>	<u>2007</u>	<u>2016</u>	<u>2017</u>	<u>Growth Rate</u>
	<u>Mt</u>	<u>Mt</u>	<u>Mt</u>	<u>2006-2016</u>
				<u>(%)</u>
North America	6862	6161	6121	-0.9
South America	1106	1327	1310	2.3
Europe	4689	4061	4152	-1.5
Russian CIS	2303	2212	2213	-0.3
Middle East	1530	2058	2112	3.6
Africa	966	1185	1205	2.5
Asia-Pacific	12623	16013	16339	3.1
World	30079	33018	33444	1.3

Source: BP Statistical Review of World Energy 2019

Points to note:

- **Global emissions rose by 3,365 Mt over the period. This represents a continuation of the trend that has existed since 1990, when governments first began setting political emission reduction targets.** Emissions growth has been slowing, and in fact, stayed

essentially flat in 2014 and 2015 (according to BP data) but resumed the increases in 2017 and will be shown again to have risen when 2018 statistics are available.

- The only regions that have reduced emissions continuously over the past decade are Europe, the Russian Commonwealth (CIS) countries and North America.
- The fastest growth in emissions has occurred in the Middle East and Asia-Pacific regions, although growth is occurring in all the developing country regions.

The International Energy Agency (IEA) offers another source of information on GHG emissions trends. In its *Global Energy and CO₂ Status Report 2017*, published in March 2018, the IEA stated that global energy-related CO₂ emissions reductions grew by 1.4% in 2017, reaching a historic high of 32.5 gigatonnes.

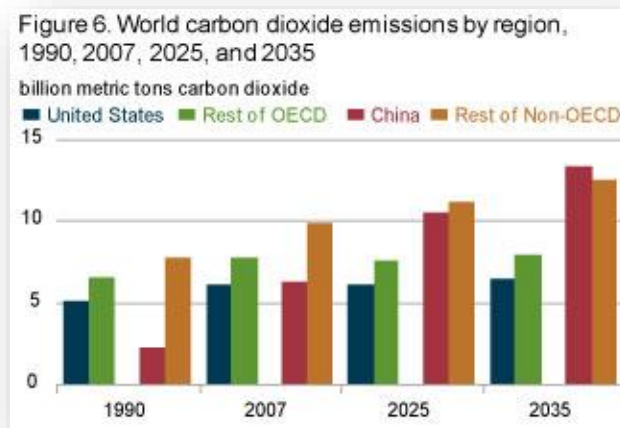
<https://www.iea.org/geco/>

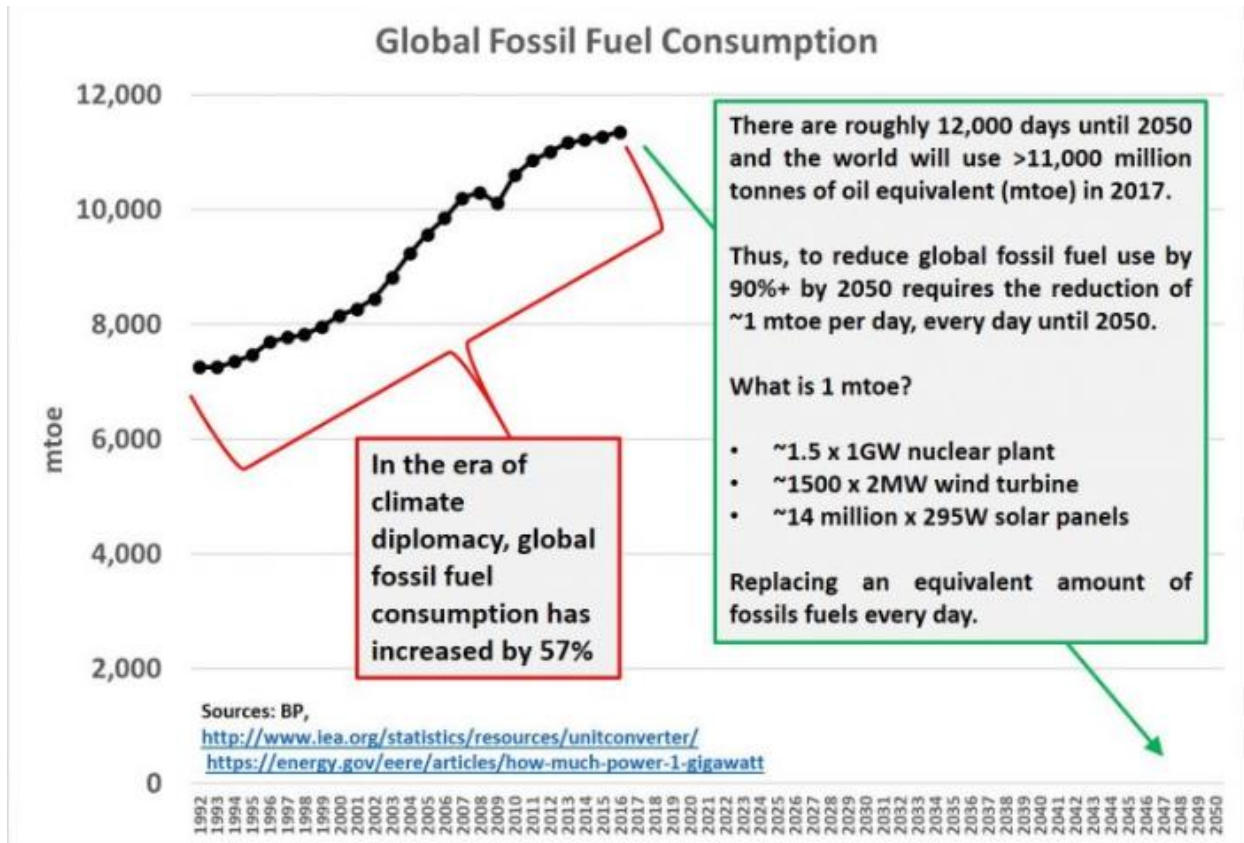
The United Nations Environment Program, which includes land-use change in its estimates of GHG emissions, issued an “Emissions Gap Report” in 2018, in which it acknowledged that total emissions reached a record high of 53.5 gigatonnes of carbon dioxide equivalent (GtCO₂e) in 2017, an increase of 0.7 GtCO₂e compared with 2016.

<https://www.unenvironment.org/resources/emissions-gap-report-2018>

US Energy Information Agency:

https://www.eia.gov/environment/emissions/ghg_report/ghg_overview.php





Source: Roger A. Pielke, Jr.

The Source of Increased Emissions

Primarily the economic growth occurring in the developing countries

Table 2 shows emissions trends according to major economic grouping. The Organization for Economic Cooperation and Development (OECD) includes 36 countries: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

Table 2

<u>Grouping</u>	<u>2007</u>	<u>2016</u>	<u>2017</u>	<u>Growth Rate</u>
	<u>Mt</u>	<u>Mt</u>	<u>Mt</u>	<u>2006-2016 (%)</u>
OECD	13630	12399	12448	-0.8
Non-OECD	16449	20619	20996	2.9
World	30079	33018	33444	1.3

Source: BP Statistical Review of World Energy

Points to note:

- The emissions growth from the non-OECD region totaled 4547 Mt, significantly exceeding the emissions decline in the OECD region of 1182 Mt. **In fact, non-OECD emissions grew almost four times as fast as OECD emissions declined.**
- **By 2017, the non-OECD region, formerly considered the “developing countries”, constituted 63% of global emissions.**

It is not difficult to understand why this should be so. The fastest growing economies in the world are in Asia and the Middle East. The governments of those countries are concerned to ensure that their economic growth is powered by secure and reliable sources of energy supply, and for many that means coal, oil and natural gas. Their quickly expanding middle classes yearn to have access to the energy services and products that people in the industrialized countries have long taken for granted, including cars and electrified homes. **For them, increasing the incomes and standards of living of their citizens is far more important than reducing GHG emissions.**

That growth is likely to continue

Table 2 showed the fast growth in energy use and emissions that has occurred over the 2007 to 2017 time period. There is no reason to believe that those trends will end now.

The United States Energy Information Administration, in its most recent International Energy Outlook to 2040, projected in its reference case that world energy consumption would increase from 575 quadrillion British thermal units (Btu) in 2015 to 663 quadrillion Btu by 2020 and then to 736 quadrillion Btu by 2040. **It also projected that, while energy demand in the OECD would grow by 9 per cent to 2040, non-OECD energy demand would grow by 41 per cent.** This is due

both to faster economic growth and much faster population growth (OECD population is actually projected to decline to 2040 due to low birth rates).

[https://www.eia.gov/outlooks/ieo/pdf/0484\(2017\).pdf](https://www.eia.gov/outlooks/ieo/pdf/0484(2017).pdf)

One prominent reason for the growth in energy demand, especially for oil, is the expected growth in motorization rates. For most of history, car ownership per thousand people (i.e. the “motorization rate”) showed profound differences between the wealthier countries of the OECD and the poorer ones in Asia and elsewhere. Even today, the motorization rate in the United States is 821, compared to a world average of 182. That, however, is changing rapidly, as the middle classes of China, India and Southeast Asia increase sharply in numbers and incomes. A decade ago, China’s motorization rate was under 50; today it is 118. India’s rate is 22; when its population of 1.2 billion becomes able to afford motorized transport, the effect on car sales will be dramatic. Consumers will be looking for the most economical choices and that is almost certainly not electric vehicles.

Developing Country Commitments at COP21 To Reduce Emissions

At the COP21 conference in December 2015, the Parties agreed not to set out in the agreement explicit goals to reduce emissions. Consequently, the COP21 agreement can be presented, especially in the United States, as not a treaty. **It contains very few binding legal requirements, there is no formula for determining what each country’s obligations are, and there are no legal penalties for non-compliance.** Rather, it represents a best-efforts political commitment to keep the level of GHG emissions below that which, in theory, might produce a two-degree Celsius increase in average global temperatures over those that prevailed in the pre-industrial period. So, no one knows for sure how much emissions would have to be reduced, and the countries did not agree on specific targets. One might fairly describe this as a failure. Significantly, though, the agreement included a political commitment to file with the United Nations Secretariat a series of five-year plans to reduce emissions. These five-year plans were to become the bases upon which stringent reductions would occur.

Article 2.2 of the Agreement is often ignored by the media but is central to the Agreement from the perspective of the developing countries. It states that, *“This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.”* This provision means that **the developing countries view their participation in the Agreement as conditional on the developed countries providing the money and the technology transfer they need to manage the extraordinary transition involved.**

Further, the Agreement exhorts the developed and developing country Parties to take different kinds of actions. Article 4.4 states that, *“Developed country Parties should continue to take the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emissions reduction or limitation targets in the light of different national circumstances.”* In other words, developed countries are encouraged to incur the economy-wide pain and cost, and developing countries are encouraged to do what they think they can afford.

Each country is bound to submit an Independent Nationally Determined Contribution (INDC), or five-year plan, indicating how it plans to reduce emissions and promote adaptation to climate change, and to update the plan every five years. In their INDCs, most of the developing countries differentiated between what they would do on an unconditional basis and on a conditional basis. The “condition” is that the developed countries pay the bill.

Contrary to the general perception of the media and politicians in Canada, in the INDCs submitted by China and India in 2015, **neither country committed to reduce emissions.**

China committed to “peak” its emissions by 2030 at the latest, lower the carbon-intensity of its GDP by 60 to 65% below 2005 levels by 2030, increase the share of non-fossil fuel energy sources to around 20% of primary energy supply by 2030, and increase its forest stock. Those goals, if reached, would result in carbon dioxide equivalent emission levels of 12.7 to 13.8 Gt by 2030, according to Climate Action Tracker. The carbon intensity targets on their own would lead to 2030 emission levels of 13.7 to 15.6 Gt of emissions.

China is notoriously poor in reporting statistics on actual performance and has no legal requirement to do so under the Paris Agreement. **Even if it did meet the carbon intensity target, its emissions by 2030 likely would be two to three times those of the United States.**

China has invested heavily in all forms of energy supply over the last decade. This has included replacing inefficient coal-burning power plants with more advanced ones, using more natural gas and nuclear energy and adding more wind and solar energy. **In 2017, China consumed just over half of the coal used in the world, and use of thermal coal increased by 12% over 2017 levels during the first half of 2018.**

India’s commitment in its NDC is to reduce the carbon intensity of its economy by 33-35% by 2030, compared to 2005 levels.

India still has over 300 million people without access to electricity. It has announced ambitious industrial development goals intended to increase national income and raise a substantial number

of its citizens from poverty. The country's focus over the past decade has been on developing coal: greatly expanding mining, facilitating transportation of coal and adding coal-fired power generation capacity. The capacity of coal and lignite-powered generating stations grew from about 60 gigawatts (GW) in 2005 to almost 200 GW in 2017. Renewables electricity generation capacity has also grown to about 50 GW by 2017. However, renewables only generate electricity about 30% of the time, while the figure for coal is 60%, and the Indian government's goal is to increase the utilization of coal-fired plants to 80%. The government also has announced ambitious plans to add more coal generating capacity. **During the period 2017 to 2022, around 50 GW of additional coal-fired generating capacity is already under construction and planned to be commissioned.**

India does not yet publish timely estimates of CO₂ emissions or growth rates. The last "official" figures are for 2010. There is, thus, no authoritative source for reliable projections. Almost all observers, however, expect India's emissions to grow significantly over the next few decades.

The U.K. Grantham Research Institute on Climate Change and the Environment published a report in October 2018 based on its review of the INDCs submitted by 157 countries to the United Nations (of the 197 countries that signed the 2015 Agreement). While all had submitted economy-wide targets for 2020 and 142 had done so for 2030, **only 21 had reflected the 2020 targets in laws and policies and 32 had set economy-wide targets in laws and policies for 2030 or beyond.**

<http://www.lse.ac.uk/GranthamInstitute/publication/targets/>

For those who see the imposition of carbon taxes as the preferred option for reducing emissions, the performance of different countries in introducing such taxes and raising them to levels that would reduce emissions is quite revealing. **Almost 90 per cent of the carbon tax or equivalent emissions trading systems now operating in the world are in Europe or North America.** The rates of those taxes vary widely but most fall into the range of U.S. \$5 to U.S. \$26 per tonne of carbon dioxide equivalent. Some regions in China have imposed carbon taxes at about the U.S. \$2 per tonne level. South Korea, Japan and Kazakhstan are the only other Asian countries with carbon taxes, and South Africa is the only country to do so in Africa.

Carbon Action Tracker, a project run by three climate action organizations, has been monitoring the efforts of 32 countries that together constitute 80 per cent of global GHG emissions in meeting their INDC commitments. In a 2018 report, it found that only two countries – Morocco and the Gambia – were "on track to meet the stringent IPCC goal of reducing emissions so as (in theory) to limit global temperature rises by 1.5 degrees C. The countries on track to meet the 2 degrees C. temperature limit set out in the COP21 Agreement were Bhutan, Costa Rica, Ethiopia, the Philippines and India. (The inclusion of India is bizarre, for reasons explained previously.)

In other words, largely due to the emissions growth in the developing countries, the world will miss the COP21 emission reduction targets by a country mile.

Cash for Climate Commitments

The developing country commitments were partly contingent on them receiving large funding from the OECD countries, which will not be forthcoming

Paris Climate Agreement									
Estimated Payment Obligations									
Countries as of Annex II of Climate Agreement	GDP in billions of USD	GDP in % of total GDP	Year 2020	Year 2025+	Breakdown of EU net payment shares without Brexit (2015)				
			Contribution to \$100bn target (annually)	Contribution to \$400bn target (annually)		Year 2020 \$100 bn	Year 2025+ \$400 bn		
European Union	EU	16.833	39,98 %	\$39,98 bn	\$159,91 bn				
Japan		4.383	10,41 %	\$10,41 bn	\$41,64 bn				
Germany	EU	3.364	7,99 %	\$7,99 bn	\$31,96 bn	32,88%	\$13,14 bn	\$52,58 bn	
United Kingdom	EU	2.858	6,79 %	\$6,79 bn	\$27,15 bn	26,47%	\$10,58 bn	\$42,33 bn	
France	EU	2.419	5,75 %	\$5,75 bn	\$22,98 bn	12,70%	\$5,08 bn	\$20,31 bn	
Italy	EU	1.821	4,32 %	\$4,32 bn	\$17,30 bn	6,06%	\$2,42 bn	\$9,69 bn	
Canada		1.553	3,69 %	\$3,69 bn	\$14,75 bn				
South Korea		1.378	3,27 %	\$3,27 bn	\$13,09 bn				
Australia		1.231	2,92 %	\$2,92 bn	\$11,69 bn				
Spain	EU	1.193	2,83 %	\$2,83 bn	\$11,33 bn	0,00%	net-receiver		
Netherlands	EU	750	1,78 %	\$1,78 bn	\$7,12 bn	8,50%	\$3,40 bn	\$13,59 bn	
Switzerland		670	1,59 %	\$1,59 bn	\$6,36 bn				
Sweden	EU	571	1,36 %	\$1,36 bn	\$5,42 bn	5,06%	\$2,02 bn	\$8,09 bn	
Belgium	EU	531	1,26 %	\$1,26 bn	\$5,04 bn	3,20%	\$1,28 bn	\$5,12 bn	
Norway		500	1,19 %	\$1,19 bn	\$4,75 bn				
Austria	EU	437	1,04 %	\$1,04 bn	\$4,15 bn	1,97%	\$0,79 bn	\$3,15 bn	
Denmark	EU	346	0,82 %	\$0,82 bn	\$3,29 bn	1,82%	\$0,73 bn	\$2,91 bn	
Finnland	EU	272	0,65 %	\$0,65 bn	\$2,58 bn	1,12%	\$0,45 bn	\$1,79 bn	
Ireland	EU	250	0,59 %	\$0,59 bn	\$2,37 bn	0,00%	net-receiver		
Greece	EU	235	0,56 %	\$0,56 bn	\$2,23 bn	0,00%	net-receiver		
Portugal	EU	230	0,55 %	\$0,55 bn	\$2,18 bn	0,00%	net-receiver		
New Zealand		199	0,47 %	\$0,47 bn	\$1,89 bn				
Luxembourg	EU	65	0,15 %	\$0,15 bn	\$0,62 bn	0,22%	\$0,09 bn	\$0,35 bn	
Iceland		17	0,04 %	\$0,04 bn	\$0,16 bn				
Total		42.106		\$100 bn	\$400 bn	100,00 %	\$39,98 bn	\$159,91 bn	

IPCC scientists agree that the \$100bn target will not affect climate change in a significant manner. According to estimates by Climate Fairshares, however, 400 billion US dollars are required annually. For EU-Countries add both figures. Germany by 2020: 7,99 + 13,14 = \$21,13bn, from 2025 on it is 31,96+52,58 = \$84,54bn annually!

At a previous conference of the Parties to the Framework Convention on Climate Change (UNFCCC), it was agreed to establish a Green Climate Fund to which the “Annex 2” countries would contribute. The Annex 2 countries are all OECD countries. **The commitment was that, by 2020, their contributions would be at least \$100 billion per year.** Countries could not agree on how the payment obligations would be apportioned or how contributions from the fund would be distributed among countries. **After six years of operation, the total contributions to the Green Climate Fund are less than \$20 billion.**

The departure of the United States from the COP21 Agreement means that the country with one third of the national income of the OECD group will not contribute to the Green Climate Fund, so roughly \$33 billion per year would have to be made up by other donors. **With the United States in the Agreement, Canada's share of the Green Fund contribution would have been over U.S. \$3 billion per year.** At a time of fiscal austerity and increasing indebtedness in most OECD countries, it seems virtually certain that the \$100 billion per year goal will not be met, and that the developing countries will exercise their "conditional" commitments accordingly.

Canadian GHG emissions constitute a tiny part of global GHG emissions

In 2016, Canada GHG emissions were 704 megatonnes (Mt) of carbon dioxide equivalent, which is equal to 1.6 per cent of global emissions.

China's GHG emissions in 2016 were 9,114 Mt (according to British Petroleum data). In other words, China emits more in one month than Canada does all year. The average growth in emissions in China over the past decade is 202 Mt per year. Thus, Canada's total emissions represent about three and a half months of China's emissions growth. **If someone one could instantaneously wipe Canada off the map, so that it produced zero emissions forever after, this would have a modest-to-negligible effect on global carbon dioxide concentrations in the atmosphere in 2100, and it would make no difference whatsoever as to whether the IPCC emissions reduction targets (i.e. 1.5 degrees or 2 degrees C.) were met.**

Let that sink in.



Image licensed from Shutterstock.

The IPCC Targets Are Impossible to Meet in any Case

COP21 endorsed the objective set notionally in previous UNFCCC conferences that the world should aim to reduce emissions so that the risk of average global temperatures rising more than 2 degrees C. over pre-industrial levels was reduced. **Why 2 degrees? It is an arbitrary number, set against an arbitrary baseline, and virtually impossible to measure accurately in practice.** That alone should have warmed the public in most countries against accepting it as a preeminent policy goal. The costs to the global economy of attaining such a goal are enormous, even if it were attainable.

Feasibility and attainability are, it appears, minor considerations in the world of climate policy. In October 2018, the Intergovernmental Panel on Climate Change issued Special Report 15, which introduced an even higher level of catastrophism and urged even more hysteria about the urgency of reducing emissions. It found that global warming is likely to reach 1.5 degrees C. between 2032 and 2050 and will bring species extinction, weather extremes and risks to food supply, health and economic growth. It urged that governments take urgent action to reduce global GHG emissions by 45 per cent from 2010 levels by 2030 and to reach net zero (i.e. emissions offset by geological or biomass sequestration) by 2050.

A 45 per cent emission reduction by 2030 would mean a 2030 global emissions level of 17.3 gigatonnes (Gt) of carbon dioxide equivalent. Both China and India expect their emissions to grow significantly in the period to 2030. It is highly probable that together they will account for

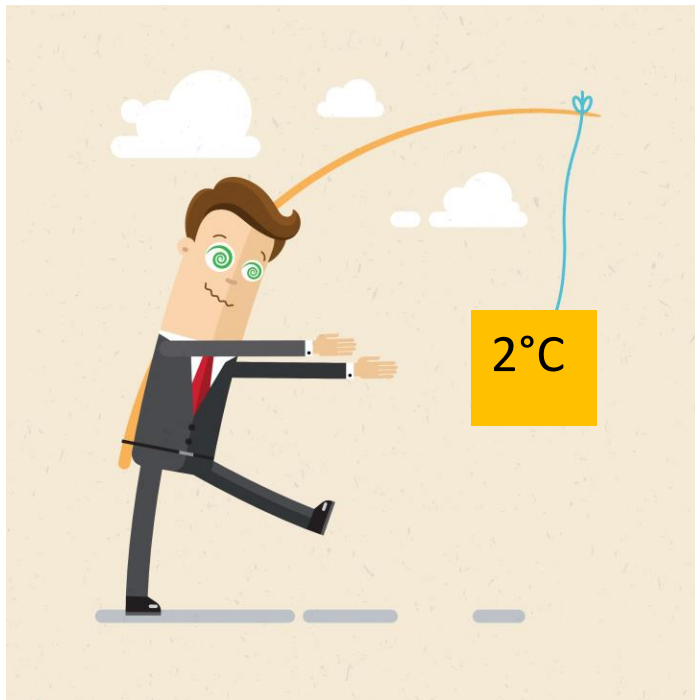


Image licensed from Shutterstock.

over 23 Gt in 2030. So, **even if all 195 other members of the COP21 Agreement (including the United States) somehow eliminated all of their GHG emissions by 2030, this would achieve much less than the IPCC claims is necessary to avoid “disaster”.**

But wait, it gets worse. Special Report 15 says that the cost of mitigating CO₂ emissions in 2030 is about U.S. \$880 per tonne of CO₂ equivalent. **It also indicates a global carbon tax of U.S. \$880 per tonne is necessary by 2030. The benefit reaching the emissions reduction goal, according to the report, is U.S. \$15 per tonne, for a loss of U.S. \$865 per tonne.**

The IPCC report makes no mention of the fact that \$880 per tonne exceeds the annual average income of about half the people in the world.

It also pays no attention to the limits at which energy systems can “decarbonize” due to technology, infrastructure, cultural and political factors, a topic I addressed in a recent report published by the Global Warming Policy Foundation.

<https://www.thegwvf.org/energy-policy-needs-to-transition-to-reality/>

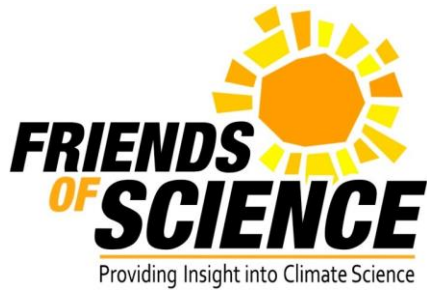
Conclusion

I have not discussed here the scientific issues, specifically whether humans are primarily responsible for climate change, whether the climate is changing at a dangerous rate, or whether the IPCC’s modelling can be relied upon accurately to assess the consequences of rising carbon dioxide concentration levels a century from now. There are others far more qualified than I to address these issues.

In this paper, I have demonstrated that, even if the scientific claims of the IPCC and others are correct, the growth in global emissions are unstoppable, and that even very expensive mitigation efforts in Canada cannot and will not affect them sufficiently to make a difference.

In short, the policies now being followed by federal and provincial governments in Canada amount to extraordinarily expensive and dangerous political grandstanding that will have no offsetting global environmental benefit. Canadians deserve better.





About the Author

Robert Lyman is an Ottawa energy policy consultant, former public servant of 27 years and a diplomat for 10 years prior to that.

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens who are celebrating its 16th 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 (CO₂).

Friends of Science Society
P.O. Box 23167, Mission P.O.
Calgary, Alberta
Canada T2S 3B1
Toll-free Telephone: 1-888-789-9597
Web: friendsofscience.org
E-mail: [contact\(at\)friendsofscience\(dot\)org](mailto:contact@friendsofscience.org)
Web: climatechange101.ca

