

Energy Illiteracy Must Not be Enshrined in Law

A Response To “An Open Letter
on Climate Accountability
Litigation in Canada”

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On June 24, 2019 a group of Canadian law professors published an [‘open letter’](#) in which they supported proposals asking federal, provincial and local governments to *“take legal and other action to recover a share of the local climate costs from global fossil fuel companies, as a means of shielding taxpayers from the full range of current and future costs resulting from climate change”*. This open letter is a response to that appeal.

The law professors err on six specific points. I will show that:

1. Carbon dioxide is not pollution.
2. The purchase and sale of oil, natural gas and coal constitute free transactions made by sellers and buyers, who are well informed about the implications of their decisions.
3. The products sold and purchased have major societal benefits that far exceed the alleged adverse effects.
4. In fact, forcing fossil fuel producers to cease selling their goods and services would, given the lack of alternatives, have major adverse effects on society and the economy.
5. Canadian environmental law does not support the actions they propose.
6. Actions taken to harm Canadian fossil fuel companies would have at most a negligible effect on the global environment.

Carbon Dioxide is Not Pollution

Carbon dioxide is an invisible, odorless gas that is harmless except in extremely high concentrations. It does not cause smog or smoke. Humans breathe out 100 times the carbon dioxide that we breathe in, created as our bodies use sugars. Carbon dioxide is essential to the process of photosynthesis in plants. It also is produced by natural sources like volcanoes, hot springs and geysers, animals (including fish), decay of organic materials, the combustion (i.e. burning) of fossil fuels, and as a by-product of some industrial processes like baking and brewing.

Plants and algae use light to photosynthesize a compound called carbohydrate from carbon dioxide and water. Carbon dioxide is the primary source of carbon life; in other words, without carbon dioxide, there would be no life on earth.

The quality of the air we breathe is sometimes impaired by certain contaminants, and it helps to know what these are. The main ones are:

- Particulate matter: Particulates are tiny drops of liquid and solid particles, the size of dust or smaller, suspended in the air. They come mainly from agriculture, construction and dust

from roads, although various industrial sources play a role. Along with ozone, it is a major component of smog and, at high levels, can harm human health.

- Nitrogen oxide: Nitrogen dioxide is a reddish-brown toxic gas with an irritating smell. Exposure to high levels of nitrogen dioxide can cause breathing problems and reduced lung function, and it is a component of acid rain.
- Ground-level ozone: Low-level ozone is a colourless gas that is formed through a chemical reaction of nitrogen oxides and volatile organic compounds in sunlight. The major sources of nitrogen oxides and volatile organic compounds are transportation, oil and natural gas production, electricity generation, home heating and even the burning of firewood. At high levels, ground-level ozone can cause breathing problems, lung damage, and asthma attacks in humans and damage to sensitive vegetation.
- Sulphur dioxide: Sulphur dioxide is a colourless and toxic gas that smells bad. It is caused both by natural sources and by human activity, the most important of which are smelting and refining, electricity generation, heating, and oil and gas production and other industries. Sulphur dioxide in high concentrations can contribute to breathing and heart problems, especially among infants and the elderly.
- Carbon monoxide: Unlike carbon dioxide, carbon monoxide is a highly toxic gas that is caused by the incomplete burning of oil, natural gas and coal. High levels of carbon monoxide can cause dizziness, unconsciousness, and even death.

So, carbon dioxide does not affect air quality. It is, in effect, plant food. Those who call it air pollution are trying to present carbon dioxide as something it is not, in order to further a political agenda.

Free Transactions Made by Sellers and Buyers

The purchase and sale of oil, natural gas and coal constitute free transactions made by sellers and buyers, who are well informed about the implications of their decisions.

Fossil fuels (i.e. oil, natural gas and coal) are not purchased for their intrinsic value but rather for the energy services that are offered by their conversion through combustion into a wide range of energy products and services. These products and services include heat for cooking and for residential warmth; light; power for industrial and metallurgical uses; and electric power generation, by which the energy of primary fuels is converted into electricity that serves thousands of daily consumer needs.

Fossil fuel producers do not produce and sell their products in the off-chance that someone might need them. They do not need to advertise their products to convince consumers that heat, light, cooking energy and power are needed. The driving decision is that of the consumer.

Using oil as an example, petroleum has been known to humans throughout history and was occasionally used for lighting and other simple purposes. It was not until the mass production of the automobile in the early twentieth century that petroleum production and consumption significantly increased. To this day, the production and sale of hydrocarbons is closely related to the level of each

country's economic development and income, as it is consumers' buying power that drives the economics of production.

By attempting to place on fossil fuel suppliers the sole responsibility for the use of their products, the law professors have the cause-and-effect relationship exactly reversed. They might as well seek to have governments penalize their citizens for wishing to have the modern energy services that the availability of fossil fuels makes possible.

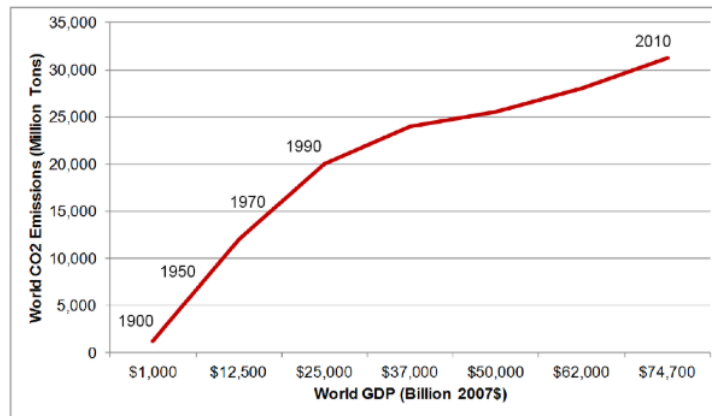
Societal Benefits Far Exceed Alleged Adverse Effects

The products sold and purchased have major societal benefits that far exceed the alleged adverse effects.

The economic, social and environmental benefits to humanity from the use of fossil fuels has been extensively documented in the academic literature, and a recent excellent summary of these was published in the publication, [*Climate Change Reconsidered II: Fossil Fuels*](#).

The role played by fossil fuels in the historic rise in human prosperity is revealed by the close correlation between carbon dioxide emissions and world gross domestic product. This is shown in the following graph:

Figure 1: Relationship between world GDP and CO₂ emissions



Source: U.S. Energy Information Administration, International Energy Agency, U.S. Bureau of Economic Analysis, and Management Information Services, Inc.

Fossil fuels were responsible for such revolutionary technologies as the steam engine and the cotton gin, early railroads and steamships, electrification and the electric grid and the computer and internet revolution. The spread of electrification in turn has transformed the modern world, making possible many of the devices, services, comforts and freedoms we take for granted. Fossil fuels are also essential for fertilizer production and the manufacture of concrete and steel.

A similar level of human prosperity is not possible by relying on alternative fuels such as solar and wind power. Wind and solar power are intermittent and unreliable, more expensive than fossil fuels, cannot be deployed without the use of fossil fuels to build them and to provide back-up power, cannot power most modes of transportation, and cannot increase the dispatchable capacity of electricity generation sufficiently to meet more than a small part of the rising demand for electricity.

The high power density of fossil fuels enables humanity to meet its ever-rising need for food and natural resources while using less surface space, thereby rescuing wildlife habitat from development. In 2010, fossil fuels and hydro power required less than 0.2% of the Earth's ice-free land, and nearly half that amount was surface covered by water for reservoirs. Fossil fuels required roughly the same surface area as devoted to renewable energy sources (solar photovoltaic, wind and biofuels) and yet delivered 110 times as much power.¹

The syllogism of those who contend that rising carbon dioxide concentrations in the atmosphere will lead to climate catastrophe appears to be: climate change has potential dangers; climate change is happening now; therefore, the climate change potential dangers requires urgent decarbonization action. This is not the most convincing of logic because (quite apart from ignoring the benefits of climate change), the conclusion requires that we ignore the probabilities of the potential dangers coming to fruition.

There is no doubt that the Industrial Revolution has had some seriously adverse effects on the natural environment, primarily through ocean, land and atmospheric pollution, deforestation, land degradation, urbanization and intensive farming (coupled with over-hunting and over-fishing). However, climate change, while a convenient scapegoat, has not been the cause of these negative ramifications of industrialization. The combustion of fossil fuels plays only one part in the increasing emissions of carbon dioxide, the magnitude of which is uncertain. Instead, it has been net-beneficial for humans and the environment and has led to soaring global incomes and much longer life expectancy.

Penalizing Essential Fossil Fuel Producers Would Cause Major Adverse Effects

In fact, forcing fossil fuel producers to cease selling their goods and services would, given the lack of alternatives, have major adverse effects on society and the economy.

If the logic of the law professors is that, by penalizing fossil fuel companies, governments will force them to stop supplying their customers with the energy the customers demand, (or effectively extort money for municipalities to finance a hodgepodge of 'climate change events' and disasters) it is appropriate to consider what would be the consequences if this tactic succeeded. Fossil fuels now meet about 70% of Canada's energy requirements, with the balance being met predominantly by nuclear power, hydro-electricity and small amounts of wind and solar energy.

As I documented in a paper published last year by the Global Warming Policy Foundation², it would take several decades for the world to transition to a non-fossil fuel economy. There are no

¹ Vaclav Smil. Energy Transitions: Global and National Perspectives. Praeger, 2nd edition, 2016

² <https://www.thegwpcf.org/content/uploads/2019/02/Lyman-2019.pdf>

technologically proven and affordable alternatives to the use of oil in most transportation modes, and even if there were, it would take several decades for them to replace oil fuels. Natural gas is extremely important as a source of energy for residential and commercial heating, crop drying and power generation. Forcing companies to not sell it would literally cause millions of Canadians to “freeze in the dark”. Electrical energy cannot be economically stored by bulk power systems, except through water storage using reservoirs – that simply is not practical across the country. The available renewable energy power sources, wind and solar energy, are intermittent, meaning that they produce only when the wind blows or the sun shines respectively, and not when the power is needed. Without backup fossil fuel generation, renewables would be extremely unreliable, which would lead to frequent blackouts and brownouts. As much of modern industry critically depends on absolutely reliable electricity supply, forced reliance on renewable energy would lead to the departure of many manufacturing firms.

The absence of alternatives to fossil fuels is especially apparent in the transportation sector. Electric vehicles, for all the hype surrounding them, constitute 1% of the Canadian light duty vehicle fleet and are far more expensive than vehicles powered by internal combustion. There are no all-electric heavy-duty trucks. No oil products would mean no aviation fuel and no fuel for marine vessels. How would we move people and freight long distances and to remote areas?

It takes no time at all to realize that the logical implications of forcing an end to fossil fuel sales would be to severely impair the Canadian economy and to deprive Canadians of the energy services upon which our freedom of movement and quality of life depend.

Canadian Environmental Law Does Not Support the Actions Proposed

The law professors compare the proposed penalties on fossil fuel suppliers to the ones imposed by Canadian law to cigarette sales, as though the emission of carbon dioxide had clear and present adverse effects on the health of Canadians. As pointed out previously, carbon dioxide emissions are pervasive and any adverse effects are more than offset by the beneficial ones.

By “Canadian Law” I am presuming that the professors are at least partly referring to the *Canadian Environmental Protection Act, 1999*. That legislation provides the Canadian federal government with instruments to protect the environment and human health, and established strict timelines for managing substances found toxic under the act. Substances that are determined to be “toxic” under CEPA are recommended for addition to the List of Toxic Substances of the act. Under CEPA, both the Minister of Environment and Climate Change and the Minister of Health are responsible for developing a list of substances that must be assessed to determine whether they are “toxic” or capable of becoming “toxic”. This list is known as the Priority Substances List (PSL). CEPA requires that substances on the PSL be assessed within five years of their addition to the list. The assessment process is a lengthy and rigorous one. Generally, a substance that is found to be “toxic” under section 64 of CEPA – through a Priority Substances List assessment of the substance, a

screening assessment or the review of a decision by another jurisdiction – is recommended for addition to the List of Toxic Substances (Schedule 1) of CEPA.

Substances may also be added to the List of Toxic Substances in Schedule 1 of CEPA through section 90(1) of the act without having gone through a Priority Substances List Assessment, a screening assessment, or the review of another jurisdiction’s decision if, on the recommendation of the ministers of Environment and Health, the Governor in Council (i.e. the Canadian federal Cabinet) is satisfied that the substance is toxic. In other words, a substance can be designated as “toxic” on the basis of a political decision without going through the rigorous assessment process normally prescribed.

Carbon dioxide was added to Schedule 1 of CEPA in November 2005, by a political decision based on the recommendations of the Minister of Environment and Health. According to the Government of Canada website, the Ministers’ recommendations were, in turn, based largely on the findings of the Third Assessment Report of the Intergovernmental Panel on Climate Change and the subsequent IPCC Fifth Assessment Report. The findings of these IPCC reports have been challenged extensively (^{3 4}).

The IPCC reports, however, did not justify action by one country. The alleged threat to human health is based on computer model projections of conditions that may apply globally a century or more hence.

The use of CEPA as a legal instrument to suppress Canadians’ energy consumption would fail basic tests of logic and public interest. Greenhouse gas emissions arise from the use of energy and from the use of other products and services that have energy “embedded” into them as a result of the use of energy to make the products and services or to transport them. The sources of GHG emissions, in other words, are almost every action that Canadians take in their daily lives and are closely related to the patterns of economic activity in a modern economic state. This is just as true for the “renewable” energy sources that supposedly will be used to replace the fossil fuel energy sources that are the principal targets of emissions reduction policies and instruments, such as emissions charges. Wind turbines and solar energy panels are themselves highly energy-intensive products; they would not exist without oil and gas and coal.

As humans themselves are sources of GHG emissions just by exhaling (every exhaled breath contains 38,000 parts per million CO₂), not to mention belching and flatulence, are all human activities now to be considered toxic and subject to severe restrictions by the Canadian government? Such an interpretation and use of Canadian law would defy logic and immediately invite a large number of appeals.

³ Steve McIntyre of ClimateAudit on CO₂ Endangerment Finding
<https://climateaudit.org/2011/10/04/epa-the-endangerment-finding-was-not-a-highly-influential-scientific-assessment/>

⁴ 85 papers show CO₂ has minuscule effect – links to peer-reviewed journals within
<https://notrickszone.com/2018/12/10/the-list-grows-now-85-scientific-papers-assert-co2-has-a-minuscule-effect-on-the-climate/>

Negligible Effect on Global Environment

Actions taken to harm Canadian fossil fuel companies would have at most a negligible effect on the global environment.

Human-induced global warming, to the extent that it exists, is essentially a global problem. The sources of the emissions, and their effects, will be global in nature.

It should be obvious that no one country can “solve” this problem (to the extent that it even is a problem). This point is doubly verified by the trends in global emissions.

- As documented in several places, including notably the most recent report of the British Petroleum Statistical Review of World Energy 2019, global GHG emissions grew from 33,242.5 megatonnes (Mt) in 2017 to 33,890.8 Mt in 2018, or 648.3 Mt. This pattern of growth has only briefly abated since the global warming issue arose in 1990.
- Global emissions seem virtually certain to go on increasing due to economic development in the non-OECD countries, a fact confirmed by the projections of every major source of analysis concerning world energy supply, demand and emissions, including the U.S. Energy Information Administration, the International Energy Agency, EXXON and British Petroleum.
- Based on their performance to date, it is clear that the ten largest GHG emitters in the world, comprising 78% of the world’s emissions, will fail even to meet the relatively modest emission reduction commitments they made at the United Nations 21st Conference of the Parties to the Framework Convention on Climate Change in 2015.⁵
- Canada’s emissions constitute 1.6% of the global total. Nothing that Canadians do, including ceasing to exist, will have any more than a negligible effect on global emissions and climate.

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⁵ <https://blog.friendsofscience.org/wp-content/uploads/2019/08/PROMISES-VS-PERFORMANCE-Final.pdf>

About the Author

In a nutshell, I have spent over forty years as an economist, manager and consultant working on a broad range of energy and environment public policy issues, mainly for the Canadian federal government. The following is a point form summary of my experience.

Robert Lyman - in his own words:

- After graduation with an Honours degree in International Relations (Economics, Political Science and History), I joined the former federal Department of External Affairs. I served as a Canadian diplomat for ten years, with postings in Caracas, Venezuela and Washington, D.C.
- My assignment in Washington occurred during a period when both Canada and the U.S. were heavily regulating oil and natural gas markets and prices, and there were several outstanding issues to be resolved concerning cross-border oil and gas trade and pipelines, including whether the Mackenzie Valley Pipeline should be built. This gave me an opportunity to learn a great deal about energy and trade regulation and pricing issues.
- After leaving the foreign service, I worked as an economist in the Energy Policy Branch of the Energy, Mines and Resources department during the acrimonious negotiations over oil and gas policy before and after the publication of the National Energy Program.
- I worked for two years in Finance Canada analyzing and advising on energy expenditure issues related to the federal Budget.
- After that, I led a group of economists responsible for analysis of international oil prices and market conditions.
- For two years, I worked on Executive Interchange as the Ottawa representative of the Canadian Gas Association at the time of natural gas deregulation.
- In the late 1980s, I was the Senior Director of Energy Policy when climate change issues first arose; I was heavily engaged at that time in implementation of the Offshore Accords with Newfoundland and Nova Scotia and with the negotiation of the resource aspects of aboriginal land claims.
- I was the first federal co-chair of the Federal-Provincial Committee on Climate Change.
- I was the Senior Director of Oil Policy from 1995 to 2002 when the fiscal regime governing oil sands development was being expanded, and I worked closely with Finance Canada on the key issues. At that time, I led the first federal work assessing the public policy that should govern carbon dioxide capture and geological storage.

Continued...

Throughout my public service career, I worked for eight Prime Ministers: Pierre Trudeau, Joe Clark, John Turner, Brian Mulroney, Kim Campbell, Jean Chretien, Paul Martin and Stephen Harper. I was proud to perform my public service duties in a non-partisan way.

- I managed the group providing expert advice on the potential for emissions reduction in the oil industry during the Climate Change Table Process prior to the Kyoto Accord.
- I was the Director General, Environmental Affairs, in Transport Canada from 2002 to 2006, leading the analysis and policy development with respect to emissions reduction in the transport sector, development and implementation of climate programs, and promotion of technology development to reduce emissions in the transport sector.
- As a consultant from 2006 on, I performed major studies for Transport Canada on the implementation of the new Navigable Waters Protection Act, on the governance of the offshore oil shipping regime and on the development of a seamless regulatory regime to govern the prevention of and response to ship-source oil spills.
- I have written extensively on energy and climate-related issues, including several articles for the Friends of Science Society and a major paper on the factors affecting energy transitions for the U.K. Global Warming Policy Foundation.
- Throughout my public service career, I worked for eight Prime Ministers: Pierre Trudeau, Joe Clark, John Turner, Brian Mulroney, Kim Campbell, Jean Chretien, Paul Martin and Stephen Harper. I was proud to perform my public service duties in a non-partisan way.