



Will We Squander Canada's Energy Resource Heritage?

Contributed by Robert Lyman © 2021. Robert Lyman's full bio can be read [here](#).

In August 2021 the Trudeau government published a discussion paper on a “people-centred just transition”. It proposed a process to involve communities in discussions about how to deal with the adverse economic effects of climate policies on them. It essentially took for granted the advisability of policies and related measures to phase out by 2050 the large-scale production and consumption of oil, natural gas and coal as part of a national effort to achieve “net zero” greenhouse gas emissions.

In many other articles, I have written about the flaws inherent in these policies. Frequently, people have asked me to summarize the cost of Canadian climate policies, and I have tried to do so while explaining the complexity of the issues. The following links reference some of my past articles.

<https://blog.friendsofscience.org/2019/10/20/what-is-climate-policy-costing-canadians-an-introductory-overview/?highlight=lyman>

<https://blog.friendsofscience.org/2021/06/09/magical-thinking-why-net-zero-is-neither-possible-nor-desirable/?highlight=lyman>

<https://blog.friendsofscience.org/2020/03/20/prosperity-foregone-a-summary/?highlight=lyman>

It was one thing to estimate the costs of climate policy when the federal government's declared goals were to reduce emissions by 17% from 2005 levels by 2020 or by 30% from 2005 levels by 2030. Then, it was mostly a question of assessing which sectors of the Canadian economy would be harmed or have their growth prospects limited, and the losses to the entire economy could in theory be measured in terms of hundreds of billions of dollars. The Trudeau government's adoption of a “net zero” emissions goal, meaning effectively eliminating the production and use of oil, natural gas and coal by 2050, took matters to a whole new level. Such policies entail the complete transformation of the energy economy and the removal of people's choices about which energy services to use. They will impose financial and economic costs that will run to the trillions of dollars. I do not have a model of the Canadian economy that would allow me to calculate with precision the magnitude of the climate policy costs or their apportionment to different sectors or regions. Then as now, I am left trying to illustrate the impacts on people's lives through the use of examples and anecdotes.

In simple terms, “net zero” climate policies require Canadians to forego the long-held economic benefits of using plentiful, reliable and low-cost energy resources and services.

These advantages have resulted in higher incomes and they have enhanced the viability and international competitiveness of Canadian business. Foregoing them would reduce our standard of living now and in the future. While this should be self-evident to anyone who understands the dynamics of the Canadian energy economy, it remains obscure to the general public. In other words, the average person just does not “get it” yet.

Consequently, this article will seek to present in more understandable terms the probable cost to Canada of one aspect of net zero climate policy – the plan to forego all future resource development of oil, natural gas and coal – in the words of the climate campaigners, to “*keep it in the ground*”.

Oil

Perhaps no part of Canada’s resource wealth is more vilified by international and domestic climate campaigners than the oil sands of Alberta and Saskatchewan. Almost all (97%) of Canada’s proven oil reserves are located in the oil sands.¹

Most Canadians have little or no idea of how large this resource is. The oil sands comprise 167.2 billion barrels of proven oil reserves,² meaning oil resources that can be profitably developed under today’s commercial and technological conditions. **Although the oil sands have been producing since the early 1970’s, only 10 billion barrels have been produced so far. Even more astounding, the ultimately recoverable (i.e. recoverable with future technologies likely to be available) reserves of crude oil in the oil sands are now estimated to be 315 billion barrels.**³ These resources are simply immense – they rival the conventional oil reserves of Saudi Arabia or the non-conventional oil reserves of Venezuela as the largest petroleum resources in the world.

Because of the oil sands, Canada is the fourth largest producer and third largest exporter of oil in the world.

What are the oil sands worth? There are different ways of answering that question. From the perspective of the companies that have invested in the development of the oil sands to date and want to earn money on their investment, there has been \$325 billion in capital investment so far.⁴ That, however, is just a small portion of their potential value to all Canadians if all of the proven reserves were to be developed and sold. That value will change over time as the size of the reserves and the level of international oil prices change.

Production from the oil sands is sometimes sold as bitumen and sometimes upgraded to synthetic crude oil. Today, the proportions are roughly 65% bitumen and 35% synthetic crude

¹ Natural Resources Canada, energy data and analysis, crude facts

² Natural Resources Canada, Oil Sands: Economic contributions

³ *ibid*

⁴ Natural Resources Canada, energy data and analysis, crude facts

oil. The price per barrel and consequent revenues from sale are much higher for synthetic crude oil, but so too are the capital and operating costs. In fact, capital and operating costs of oil sands production are much higher than those for conventional crude oil, which affects the net revenue, or actual economic value of the sales.

Today, the international oil price (Western Canadian Select) is about US \$65 per barrel, or about Cdn\$48 per barrel for bitumen and Cdn\$72 per barrel for synthetic crude oil. The 167 billion barrels of proven reserves have a potential gross revenue yield of US \$10.6 trillion, but a net revenue yield of perhaps one third of that.

Natural Gas

Climate policies would also require Canada to forego the development and production of our natural gas resources. What would that mean?

As of 2019, Canada was estimated to have 1,382 trillion cubic feet of conventional and unconventional natural gas resources, an amount equal to over 200 years of current annual demand.⁵ As in the case of oil sands, capital and operating costs must be considered in distinguishing the potential net revenues from natural gas sales. At current Henry Hub prices of US \$6.37 per thousand cubic feet, the potential gross revenues from the sale of those natural gas reserves, if they could be realized, would be about US \$8.8 trillion. Net revenue might be about one third less. I could not find any generally-accepted estimates of the capital that has already been invested in exploration and development of Canada's current natural gas industry, but as in the case of oil it must run to several hundred billion dollars.

In 2019, Canada produced 16.6 billion cubic feet of natural gas per day.⁶ Every year, Canadian industry invests about \$4.5 billion in new gas supply development and production.

Oil and Gas

According to Natural Resources Canada, the oil and gas sector accounts for about 5.2% of Canada's gross domestic product annually. When the output of industries that supply goods and services to the oil and gas sector are added to that total, the direct and indirect contribution of the sector is 7.7% of GDP. Over ninety percent of government revenues from energy is collected from the oil and gas industry; the rest is from electricity. According to the Canadian Association of Petroleum Producers (CAPP), the oil and gas industry provided an average of \$10 billion per year to governments from 2017-2019.

The importance of the oil and gas industry to provincial government revenues varies considerably across Canada. While in 2017 they amounted to only 2.3% of Ontario government revenues, in Saskatchewan they amounted to 23.2%, in Alberta 29.8% and Newfoundland and

⁵ Natural Resources Canada, energy data and analysis, Natural Gas Facts

⁶ ibid

Labrador 29.4%.⁷ Moreover, the oil and gas sector accounted for 30% of Alberta's GDP and over 23% of Saskatchewan's GDP in 2017. In other words, while the industry is an important source of economic activity and government funds across Canada, it is absolutely critical in three provinces – Alberta, Saskatchewan and Newfoundland and Labrador.

Coal

Coal is one of Canada's largest energy resources and yet one of its least utilized. There are 6.6 billion tonnes of recoverable coal reserves.⁸ Canada has anthracite, bituminous, sub-bituminous, and lignite coal deposits. More than 90% of Canada's coal deposits are located in western provinces, which provides a strategic advantage because of the close proximity of west coast ports. In the early part of 2021 international coal prices were below US\$70 per tonne, but recently they have reached \$230 per tonne due to a global shortage. **Canada's coal reserves, if they could be sold at current prices, could this yield about US \$1.5 trillion in gross revenues.**

Canada produced 62 million tonnes (Mt) of coal in 2018. 51% of the coal produced was thermal (i.e. used for electricity generation and heat in Industry) and 49% was steel-making coal.⁹ As Canada's 5th most valuable mined commodity, coal is an important economic contributor and adds billions of dollars in direct and indirect impacts each year. The industry also benefits Canadians through employment, investment in physical infrastructure, taxes and royalties.

Infrastructure

It requires a large and expensive energy infrastructure to transport the energy resources Canada produces to domestic and export markets.

Oil and natural gas are transported mostly by pipelines, which are the safest and most efficient way to move them. There are more than 840,000 kilometres of pipelines across Canada. I found no authoritative estimates of how much has been invested in this extensive infrastructure. One can only guess at the magnitude, given that almost every new major pipeline project costs in the range of \$6 billion to \$12 billion, and sometimes more. According to the Canadian Energy Pipeline Association, transmission pipelines alone have generated about \$1 trillion in economic benefits to Canada's GDP since 2005.

Almost all coal and an increasing amount of oil are transported to markets by rail. In fact, coal is one of Canada's top bulk commodities transported by rail and handled by our ports, with railways each year transporting between 30 and 40 million tonnes to west coast ports.¹⁰ Over the last decade, Canadian National and Canadian Pacific railways have invested many billions of dollars in infrastructure and fleet upgrades, largely to handle coal shipments.

⁷ Steven Globerman and Joel Emes, *Investment in the Canadian and U.S Oil and Gas Sectors: A Tale of Diverging Fortunes*, Fraser Institute, 2019

⁸ Natural Resources Canada, Minerals and Metals Facts, Coal Facts

⁹ *ibid*

¹⁰ <https://www.coal.ca/coal-resources/about-the-coal-industry/transportation-ports/>

What Does This Mean?

To sum up the previous sections, if they could be sold at present international prices Canada's fossil fuel reserves would yield gross revenues of about US \$21 trillion. While it is far more difficult to assess the likely net revenues that could result from their sale, it could easily be in the range of Cdn\$13 trillion. The infrastructure to move it to market, including pipelines, railways and ports probably adds at least \$300 billion.

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Accepting the net zero policy goals would treat this enormous source of national wealth and potential future prosperity as something to be discarded. How does one possibly convey the magnitude of the income and wealth that would be foregone?

How much is Cdn \$13 trillion?

- If you could somehow spend one million dollars a day, it would take over 35,600 years to spend \$13 trillion.
- There are about 50,000 hospitals in the OECD countries, each of which probably cost about \$250 million. Their total value is thus roughly \$12.5 trillion, about the same as the potential present market value of Canada's fossil fuel resources.
- The distance from the earth to the Sun is 149 million kilometres. If you paid one dollar per kilometre, with \$13 trillion you could travel to the Sun and back (i.e. 298 million km) about 43,600 times.
- With \$13 trillion, you could pay off Canada's entire national debt 13 times.
- With \$13 trillion, you could give \$1,733 to every person on the planet.
- **With \$13 trillion, you could give every Canadian \$342,000.**

For such a colossal, never-before-in-history disposal of any country's wealth and heritage, we would at best remove 1.6% of the world's annual greenhouse gas emissions, an amount that would be soon replaced by the constantly growing emissions in Asia. In short, foregoing \$13 trillion in resource income would simply fuel an enormous and pointless sacrificial fire on the altar of climate theology, with no real effect on either global GHG emissions trends or climate.

Think of that the next time someone tells you that achieving "net zero" would be good for Canada.