

May 15, 2023

## Should Canada Adopt the Norway Model for the Green Energy Transition?

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Canada, like Norway, is a major oil and natural gas producer and, like Norway, Canada is also taking major efforts to transition its economy towards a greener future.

Unlike Canada, however, Norway has managed to achieve a broad consensus within its political class and, more broadly, among its citizenry, for a model that aims to increase the production of certain fossil fuels in order to finance the transition towards cleaner energy.

Based on our analysis of what Norway has achieved, we feel that Canada should follow in Norway's footsteps and attempt to gain the political and social support needed to embark upon a similar strategy. However, it is important also to take into account the distinctive characteristics of Canada's economy while implementing such a strategy, particularly with regard to its mining and agriculture sectors. While these sectors have a relatively deep carbon footprint, they are vital to both the world's green energy transition and food security.

### Norway's Energy Paradox

In many ways, Norway has made substantial progress in moving towards a greener economy. About 95% of its power comes from hydroelectricity, with the rest coming from other renewables.

Norway is also a global leader in the transition to electric vehicles (EVs). In 2022, 20% of the cars on its roads and 80% of all new vehicles sold were EVs.<sup>1</sup> Norway will require all new vehicles sold to be zero emission by 2025.

To further reduce greenhouse gas (GHG) emissions, Norway has begun replacing gas and diesel with electricity to power its industrial and its oil/gas production.

Finally, Norway has made the ambitious commitment to reduce its own GHG emissions to 55% below its 1990 level by 2030. The ultimate goal is for a 90%-95% reduction from its 1990 level.

### *At the Same Time, Norway Is One of the World's Largest Exporters of Oil and Natural Gas*

Norway is the world's seventh-largest natural gas producer, meeting 3% of the global demand for gas.<sup>2</sup> It also supplies about 2% of the oil consumed globally, producing about 2 million barrels per day. Since the start of the war in Ukraine, Norway has displaced Russia as Europe's leading source of gas, accounting for one third of supply. Close to 90% of its oil and gas production is sent abroad. Oil and gas account for over half of the value of Norway's exports.<sup>3</sup>

In January, the government offered energy companies a record-high 92 new oil and gas offshore exploration blocks, a substantial increase from 28 in 2022.<sup>4</sup> It is argued this investment is needed to offset declining production from older fields.

In 2021, the European Union criticized Norway for declining to support its push to implement a moratorium on Arctic fossil fuel extraction. Today, the EU is dependent on gas from this region.

In 2022, Norway earned about US\$161 billion (equal to about 33% of its GDP) in income from oil and gas production, an increase of 150% in 2021.<sup>5</sup>

The government argues that any reduction in its oil and gas production would end up being replaced by exports from countries with a much deeper carbon footprint. It also points out that, unlike many other major oil and gas exporters, Norway is a democracy with a deep respect for human rights.

<sup>1</sup> "This chart shows how Norway is racing ahead on EVs," World Economic Forum, January 6, 2023

<sup>2</sup> "Norway 2022: executive summary," International Energy Agency

<sup>3</sup> "Exports of oil and gas," Norwegian Petroleum 2023

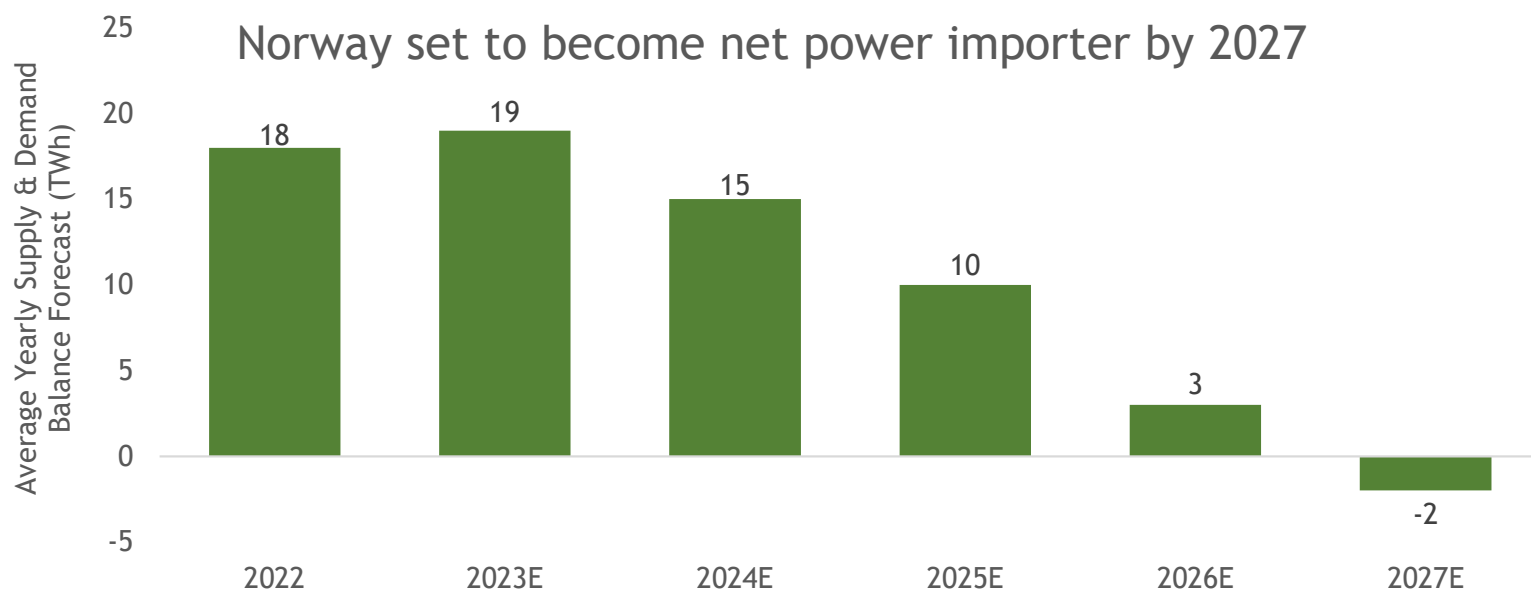
<sup>4</sup> "Norway plans to offer record number of Arctic oil, gas exploration blocks," Reuters, January 24, 2023

<sup>5</sup> "Welcome to a new era of petrodollar power," The Economist, April 9, 2023

However, Norway is having difficulty meeting its green energy targets. Various studies, including some commissioned by the government, warn that the country is on track to reduce its GHG emissions only by about 25% by 2030, well off its 55% target.<sup>6</sup>

### Challenges on the Electricity Front

Norway's plan to increasingly replace fossil fuels with electricity to power its industrial and its oil and gas production risks seeing the country go from being a net power exporter to a net power importer by 2027, according to the country's national grid operator.<sup>7</sup> Though Norway hopes to develop significant offshore wind capacity by 2040, it has yet to begin issuing permits to this effect. Meanwhile, onshore wind projects are facing opposition across the country.<sup>8</sup>



Source: NBF, "In big power producer Norway, plans for greener industry meet resistance," Reuters, March 3, 2023

### Energy Exports Allow Norway to Massively Finance Its Green Energy Transition

The subsidies provided to buyers of electric vehicles is but one example. Norway imposes hefty import duties and registration taxes on vehicles, making them significantly more expensive than in most other countries. By waiving these duties for EVs, Norway for all intents and purposes subsidizes these purchases to a degree that many other countries cannot afford. Moreover, EV owners in Norway enjoy free parking, lower fees for regional toll roads and cheaper charging stations.<sup>9</sup>

The subsidies related to the purchase of an EV were estimated at US\$25,000 per vehicle in 2022.<sup>10</sup> What's more, gasoline taxes are among the highest in the world, whereas electricity taxes are very low.

As of this year, however, the government is rolling back some of its financial aid. This includes the 25% VAT exemption on new EVs now applying to only the first 500,000 Norwegian crowns (or about US\$47,000) of the purchase price.<sup>11</sup> The government hopes that this will not overly impact demand for EVs because their adoption has reached a critical mass.

In comparison, the Canadian federal government is offering up to \$5,000 in tax rebates for buying an EV. To be eligible, the manufacturer's retail price must be less than \$55,000 for passenger vehicles and less than \$60,000 for station wagons, pickup trucks, and minivans. The provinces, too, offer incentives. These range from \$4,000 per vehicle in British Columbia to \$7,000 in Quebec.<sup>12</sup>

<sup>6</sup> "Norway's embrace of the petrostate paradox sets example for Canada's 'just transition' promise," The Globe and Mail, February 17, 2023

<sup>7</sup> "In big power producer Norway, plans for greener industry meet resistance," Reuters, March 3, 2023

<sup>8</sup> "Norway energy commission urges haste in power expansion," Reuters, February 1, 2023

<sup>9</sup> "This chart shows how Norway is racing ahead on EVs," World Economic Forum, January 6, 2023

<sup>10</sup> "Bjorn Lomborg: The muddled reality of electric cars," Financial Post, December 1, 2022

<sup>11</sup> "Norwegian EV policy," Norsk, 2023

<sup>12</sup> "Does buying an electric vehicle make financial sense?" CTV, February 28, 2023

## Norway's Sovereign Wealth Fund

Oil and gas revenues have also allowed Norway's sovereign wealth fund to grow to US\$1.3 trillion, a staggering amount for a nation with only 5 million inhabitants. The government draws on the fund's annual earnings to finance about 20% of the state budget.<sup>13</sup>

## Lessons for Canada

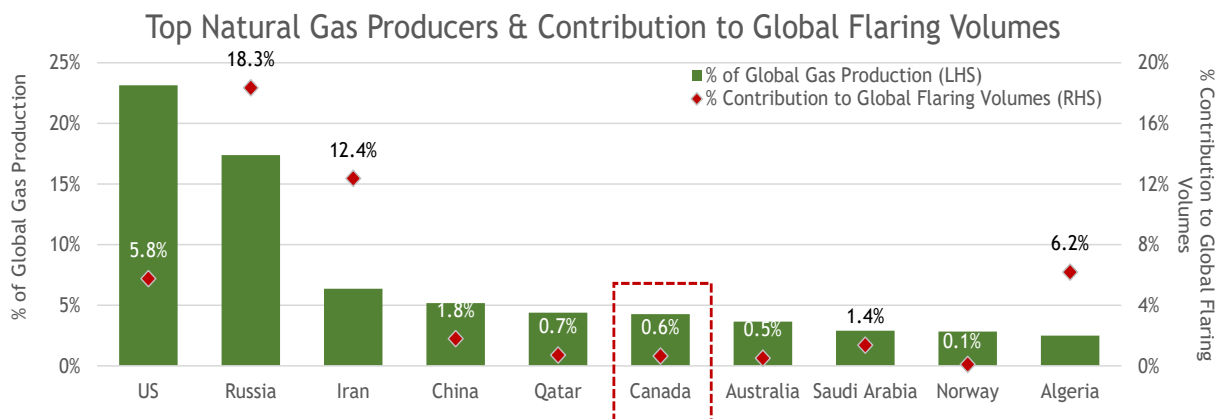
Norway and Canada have a lot in common. Both have largely green electricity grids and are major producers of fossil fuels. Canada is the world's fourth-largest producer of oil (4.6 million bbl/d), and sixth-largest producer of natural gas.<sup>14</sup> Hydroelectricity, nuclear and wind account for 61%, 12% and 6% of its power, respectively. In 2021, oil and natural gas accounted for about 20% of Canada's exports.

In our opinion, the Canadian government should follow Norway's lead and make it a priority to support oil and gas production, using the highest possible environmental standards, in order to finance the decades-long transition to green energy.

Just as Norway is doing, this would allow Canadian oil and gas to partially replace the oil and gas produced by countries with little to no regulatory oversight on environmental standards, and/or a dismal human rights record. Norway also takes credit for reducing emissions when it sells its oil and natural gas to countries that would have otherwise used dirtier sources of fossil fuel, such as coal.<sup>15</sup> Canada should do the same. IHS Markit estimates that if just 20% of Asia's coal-fired power plants were converted to natural gas, global emissions would be reduced by more than Canada's annual emissions.<sup>16</sup>

Canada is among the world's lowest emission producers of natural gas. Reasons for this include the geological location of its reserves, relatively modern and efficient facilities and a significant reduction in methane emissions, which the U.S. Environmental Protection Agency estimates is over 25 times more potent than carbon dioxide at trapping heat in the atmosphere.<sup>17</sup> The main cause of methane in the energy sector is leaks and intentional releases of natural gas from equipment and infrastructure used in the production, transportation, and distribution of fossil fuels (commonly known in the industry as flaring and venting).

The chart below examines the amount of natural gas that was intentionally released and combusted (known as flaring) by the world's leading gas producers in relation to their share of global gas production. This includes the natural gas flared from oil production in these countries as well. The volume of global gas that is flared is equivalent to 75%–80% of Canada's natural gas production. Since 2015, Canadian natural gas production has risen 14% while flared volumes have fallen by 50%.<sup>18</sup> The World Bank estimated in 2022 that gas flaring was responsible for as much as 12% of the greenhouse gas emissions released by the global energy sector.<sup>19</sup>



Note: data label represents respective contribution to global flaring volumes

Source: NBF, Canada Energy Regulator, BP Statistical Review 2022, Global Gas Flaring Reduction Partnership and World Bank 2022

<sup>13</sup> "With Russia's Exit, Norway Becomes Europe's Energy Champion," New York Times, April 6, 2023

<sup>14</sup> "Canada's Oil and Natural Gas Production," Canadian Association of Petroleum Producers, 2023

<sup>15</sup> "Norway model shows 'Just Transition' is bad policy," Edmonton Sun, January 15, 2023

<sup>16</sup> "Why the world needs more Canadian natural gas," Financial Post, April 23, 2023

<sup>17</sup> "Importance of Methane," The United States Environmental Protection Agency, June 2022

<sup>18</sup> "Marketable Natural Gas Production, Canada Energy Regulator, April 6, 2023 & Global Gas Flaring Reduction Partnership, The World Bank, 2022

<sup>19</sup> "Financing Solutions to Reduce Natural Gas Flaring and Methane Emissions," World Bank, March 28, 2022

Given the current global geopolitical landscape, western policymakers must also analyze the risk of oil production being increasingly concentrated in OPEC+ countries. During the transition period away from oil, it may be beneficial to increase reliance on allied countries like Norway and Canada.

Canada currently aims to bring emissions down 40 to 45% below its 2005 levels by 2030. Like Norway, however, it is currently on track to fall well short of this target.

Finally, Canada also faces challenges in building up its clean-energy electricity infrastructure. The Conference Board of Canada estimated that it could cost the country more than \$1.7 trillion to produce the clean power needed to meet its 2050 clean energy targets. Even Quebec, a hydroelectricity powerhouse, will likely have to increase annual generating capacity by 50% reach its 2050 targets.<sup>20</sup> To achieve its climate objectives, Canada will have to do two things in particular. First, it needs to streamline the permit issuing process. The approval of electricity-related infrastructure is currently subject to 90 different regulations at the federal level alone.<sup>21</sup> Second, it will have to win public opinion over on major projects. More on this in the next section.

## The Canadian Mining Sector, Also, Can Drive the Green Revolution

One way Canada stands apart from Norway in that it possesses significantly larger reserves of minerals, including cobalt, nickel, and other valuable commodities. This leaves Canada well positioned to play a key role in meeting the global demand for minerals essential to making the shift to green energy possible. Mining is already a crucial part of Canada's economy. It accounted for 14% of total exports in 2021.<sup>22</sup>

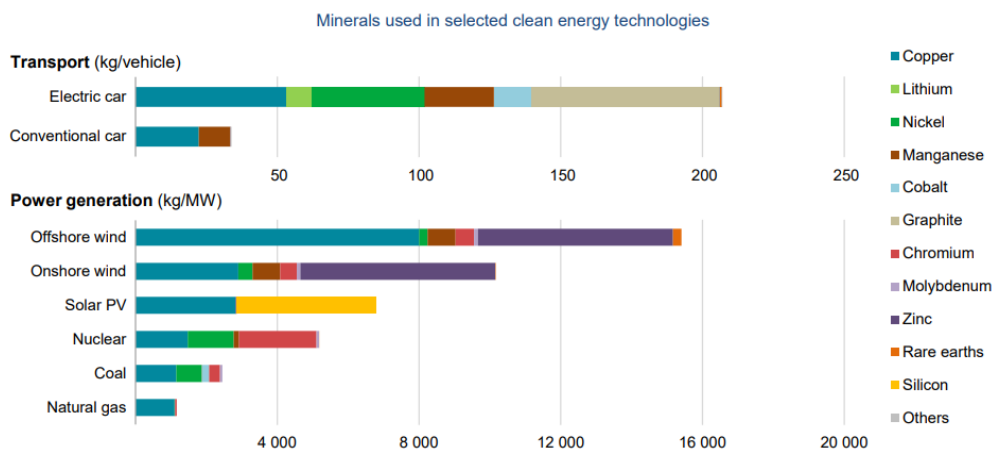
However, for Canada to take on this role, it will be necessary for mining and green-energy-related projects to come online much sooner than is currently the case.

Throwing billions in subsidies at the industry will do little if it continues to take many years for projects to get the green light. This entails changing not only regulations, but public opinion as well.

Changing public opinion would require the support of policymakers at the federal, provincial, and municipal levels, as well as influential figures in the business, environmental, and indigenous communities, to publicly endorse this strategy. It would be important to emphasize, also, that mining in Canada is done under much stricter environmental standards than is the case in most other regions of the world. This would translate into a net benefit for the environment.

The chart below highlights the critical role many minerals will play in the transition to greener energy. Their importance was driven home recently by the CEO of Siemens Energy, a major producer of windmills: "Never forget, renewables like wind roughly need 10 times the material [compared to] what conventional technologies need."<sup>23</sup>

### The rapid deployment of clean energy technologies as part of energy transitions implies a significant increase in demand for minerals



Source: "The Role of Critical Minerals in Clean Energy Transitions," International Energy Agency, World Energy Outlook Special Report, May 2021

<sup>20</sup> "Quebec faces big electricity shortfall after wooing U.S. to buy cheap hydro power," Bloomberg, April 27, 2023

<sup>21</sup> "Five things to know about Canada's electricity overhaul as budget spurs clean tech," Canadian Press, March 30, 2023

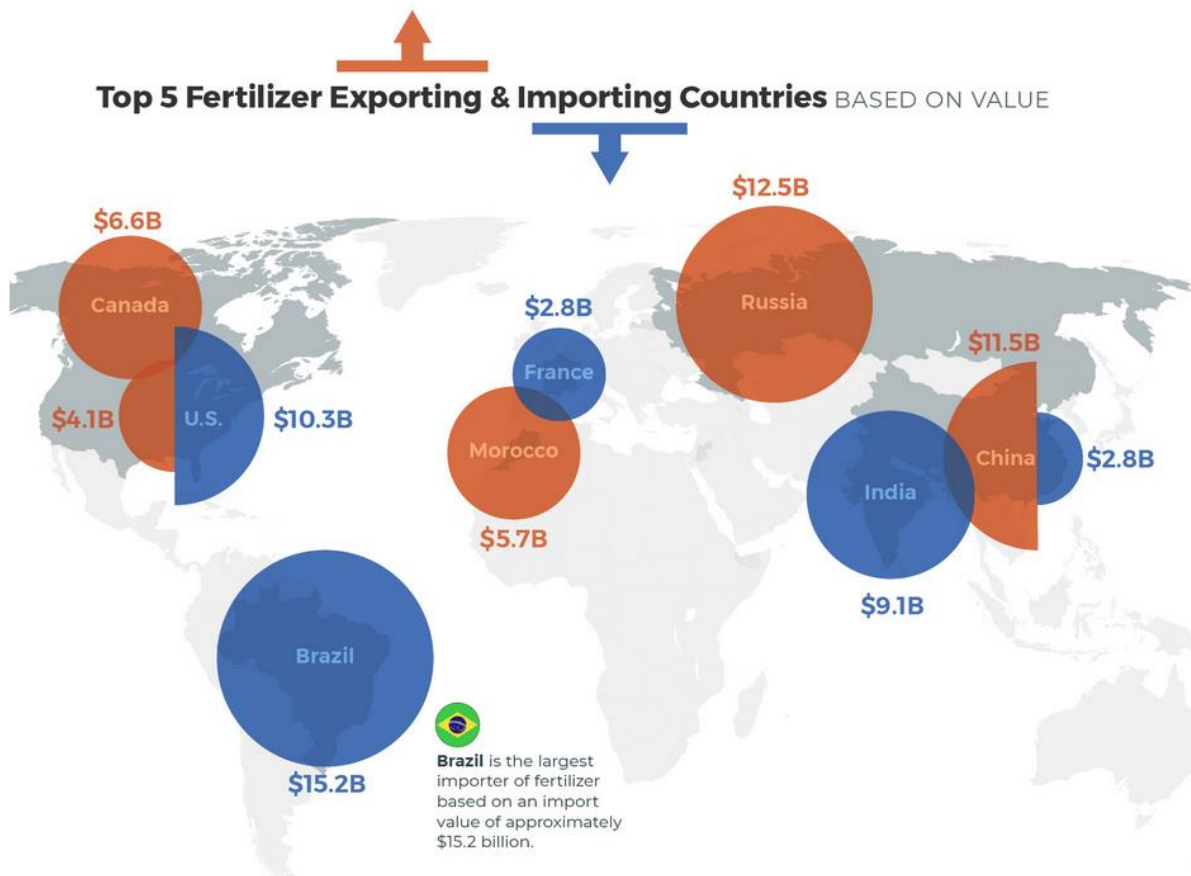
<sup>22</sup> "Natural resources comprise more than half of Canada's exports compared to 1% for 'clean tech'," Fraser Institute, December 28, 2022

<sup>23</sup> "The energy transition will fail unless industry fixes wind power issues, Siemens Energy CEO says," CNBC, November 17, 2022

## Canada's Agricultural Sector Plays a Significant Role in Global Food Security

Another differentiating factor between the two countries is Canada's much larger agriculture sector. In 2021 Canada was the world's fifth-largest exporter of agricultural products, while Norway did not even rank in the top 20.

One prominent example highlighting Canada's importance in this sector is its position as the world's third-largest exporter of fertilizer.<sup>24</sup> This ranking also factors in Canada being the top exporter of Potash, which is used primarily in fertilizers (approximately 95%) to increase crop yields. In 2021, Canada accounted for 38% of the world's exports of Potash.<sup>25</sup>



Source: "The Fertilizer Market: 4 Things Investors Need to Know in 2023," Visual Capitalist, May 2, 2023

Given Russia's dominant position in this industry, Canada's role as a key global supplier of fertilizer and related inputs has become even more essential to ensuring food security.

## It Is Also Important to Not Overlook the Governance (G) in the ESG Equation

Governance, as the World Bank defines it, encompasses the many traditions and institutions that allow a country's leaders to exercise authority. How governments are selected, how they are monitored, and how they are replaced are some key elements. Other important factors used to assess quality of governance include the ability of a country's leadership to formulate and implement sound policies and the respect of citizens for the country's institutions.

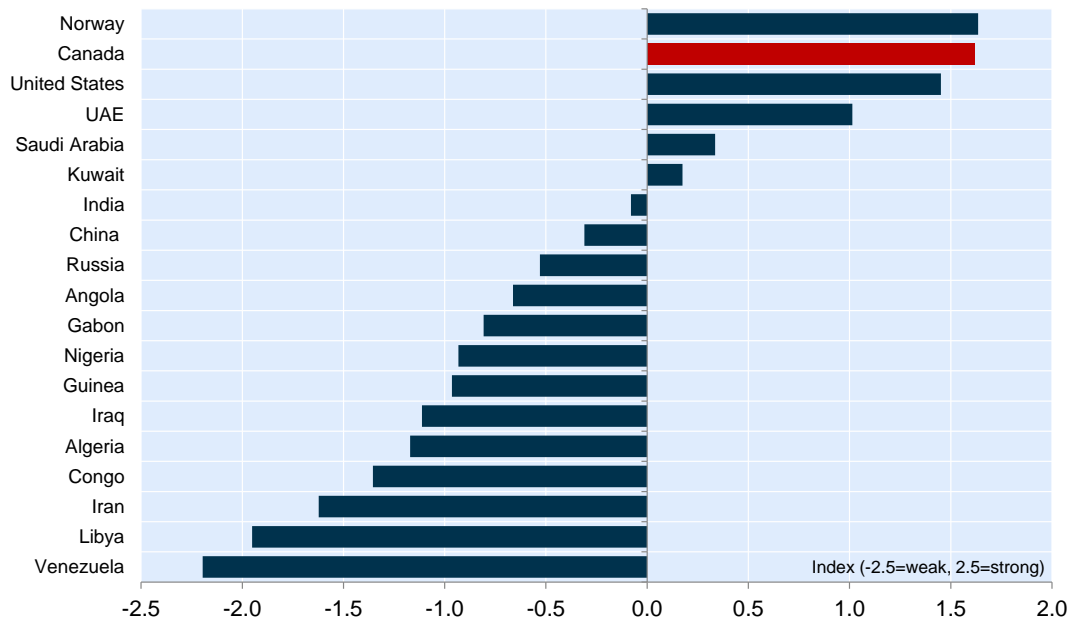
In a world where political tensions require companies to establish supply chains in stable, dependable locations, the importance of good governance credentials will continue to grow. Effective governance will also have an increasingly significant role in helping investors and regulatory bodies to assess the accuracy of a country's data in various sectors ranging from carbon footprints to economic indicators. Countries with reputations for good governance, like Canada and Norway, will stand to benefit.

<sup>24</sup> "Government of Canada invests over \$1.6 million in new technology for high-efficiency fertilizers," Government of Canada, July 4, 2022

<sup>25</sup> "Potash fact," Government of Canada, October 31, 2022

## Canada: ESG is meaningless if you ignore “G”overnance

Index of regulatory quality for OPEC countries plus Canada, Norway, U.S., China and India (2021)



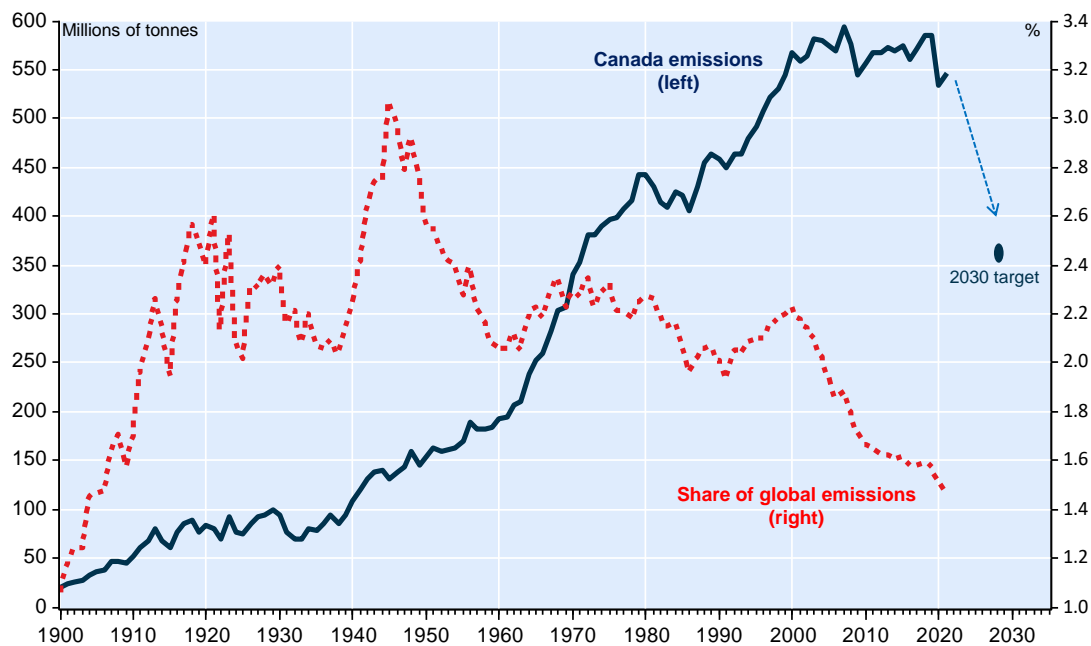
NBF Economics and Strategy (data via [World Bank](#))

## Placing Canada's Share of Global Greenhouse Gas Emissions in Context

While Canada appears a long way from hitting its 2030 targets (we're only 8.4% lower than 2005 levels in 2021), this is in the context of global GHG emissions having surged to a record high in 2021 on the back of greater coal usage. In contrast, Canada's share of global emissions, at 1.47%, is the lowest since 1906.

### Canada: Share of global CO2 emissions is the lowest since 1906

Canada's annual CO2 emissions and share of global total emissions



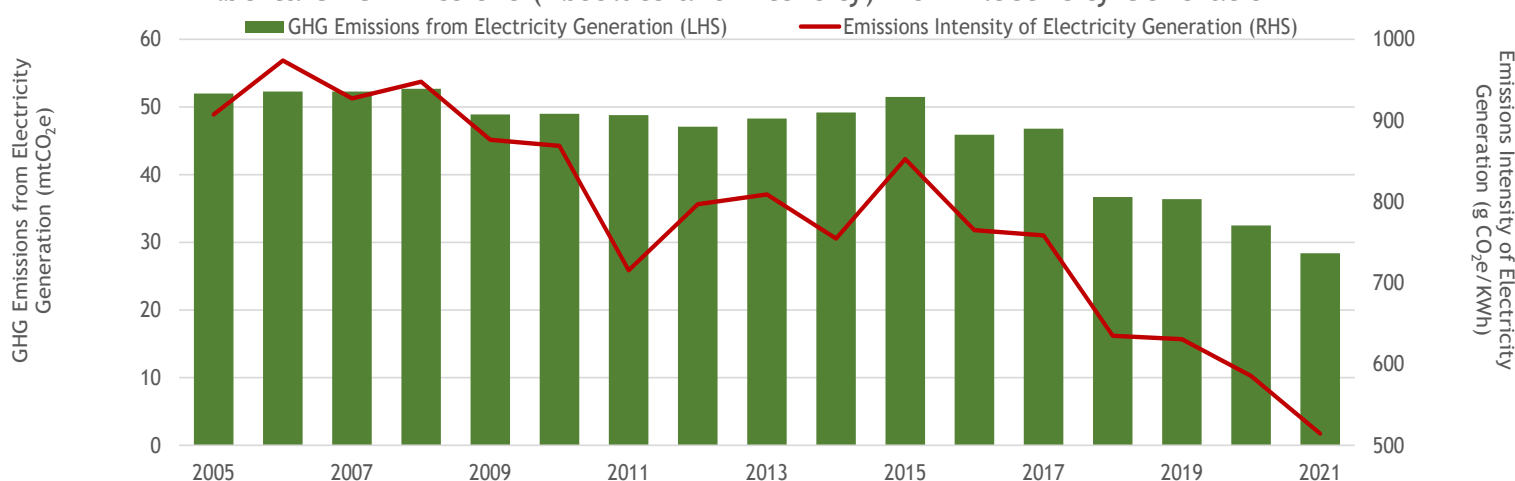
NBF Economics and Strategy (data via [our world in data](#))

This tiny share of the world's emissions means that if Canada were to totally cease oil sands production, its emissions would decrease by about 13%. But in the context of global emissions, the change would not even amount to a rounding error.<sup>26</sup>

This suggests that Canada's greatest opportunity to make a substantial contribution to reducing global emissions lies in assisting emerging countries with their transition to cleaner energy, which includes offering alternatives to coal usage. As highlighted earlier, it is estimated that converting only 20% of Asia's coal-fired power plants to natural gas would result in a greater reduction in global emissions than what Canada emits annually.

This is not to say that the status quo is a viable option for Canada, however. The country has made significant strides in advancing its climate targets and should continue to do so. Emissions in the electricity and heating sectors have already fallen by 31% between 2005 and 2021 primarily due to a reduction in the use of coal. Alberta, in particular, has experienced a substantial decline of 45% in emissions from these sectors during the same period.<sup>27</sup>

### Alberta GHG Emissions (Absolute and Intensity) from Electricity Generation



### Coal Contribution to Electricity Generation

74% 76% 77% 75% 73% 73% 68% 63% 64% 67% 65% 65% 60% 51% 48% 40% 30%

## Conclusion

Similar to Norway, Canada is well positioned to benefit from both an economic and environmental standpoint if its existing energy resources can be leveraged to finance the transition to green energy. Among other things, this will require the federal government and provinces to expend a significant amount of political capital to drive this agenda forward. Another crucial component includes helping emerging countries transition to cleaner energy sources. The Norwegian model could be a source of inspiration.

However, to fully assess Canada's environmental performance it is essential to consider the country's significant mining and agricultural sectors, which play a crucial role in the global transition towards green energy and ensuring food security. While these sectors contribute to the country's higher carbon footprint, their environmental impact should be evaluated through a comparison with similar industries in other countries to gain a better understanding of Canada's environmental performance.

Finally, Canada's strong governance rating should not be overlooked when evaluating its ESG performance. A strong rating bolsters confidence in the credibility of Canada's ESG-related data and practices, and also signals a strong institutional capacity for continuous improvement in sustainable practices.

<sup>26</sup> Canada's Official Greenhouse Gas Inventory, Environment and Climate Change Canada, April 14, 2023 & Greenhouse Gas Emissions, Our World In Data, May 4, 2023

<sup>27</sup> "Canada's Official Greenhouse Gas Inventory, Environment and Climate Change Canada," April 14, 2023



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