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Canada and Global Energy Security: The Role of Natural Gas in a Lower Carbon Future

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Executive summary

The modern world is built on energy. As societies become wealthier, they tend to consume more energy. Since 1990, global natural gas consumption has almost doubled, but climate change is pushing the world to reconsider the type of energy it consumes and produces.

In many ways, Canada is an energy superpower. It has abundant supplies of natural gas, oil, hydro, nuclear power, renewables, and critical minerals, but over the past two decades it has vigorously debated what to do with these resources.

Of all the established energy options, natural gas is by far the cleanest, emitting half the carbon into the atmosphere as coal. 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 total annual emissions. In other words, converting a relatively small share of Asia's power infrastructure would "save a Canada" in emissions.

Natural gas also fundamentally enables energy systems that include significant volumes of renewables. It is reliable in providing the baseload capacity needed to even out intermittent power generation from sources such as wind and solar. Canadian producers supply, for example, one-third of the natural gas used by renewables-focused California.

Globally, Canada is the fifth largest natural gas producer, and has massive untapped reserves. Yet there are serious disconnects between the location of these resources and the infrastructure needed to get them to market. There have also been well over a dozen liquefied natural gas (LNG) export terminal projects proposed in the last two decades, with most dying on the drawing board and representing billions of dollars in foregone economic activity.

The successful advancement of the \$40-billion LNG Canada project stands in stark contrast to these past efforts. Located on the land of the Haisla people near Kitimat, B.C., it will become Canada's first LNG export terminal when completed in the coming months. Importantly, it is linked by the Coastal GasLink pipeline to the Montney Play, one of the largest natural gas deposits in North America. Taken together, this infrastructure will finally allow Canada to export natural gas to Asia — the global region with the fastest growing demand.

Natural gas also offers opportunities for First Nations to lead projects and build wealth. The Haisla people, for example, have proposed building their own \$3-billion floating gas export terminal across the Douglas Channel from LNG Canada. If approved, it would be the largest First Nations-owned infrastructure project in Canada. These and other projects would go a long way toward advancing the economic dimensions of reconciliation.

One crucial element that makes Canadian natural gas superior to most competitors is that it is produced under a carbon price. Only two of the top 10 natural gas producers globally have prices on carbon: Canada and Norway.

In 2019, Canada significantly overhauled its regulatory process for approving energy projects. The Canadian Energy Regulator is intended, among other things, to work with community stakeholders and First Nations more effectively, but it is too soon to tell how these reforms will impact social licence questions around energy projects.



There has been much discussion around financing for fossil energy projects. Substantially reducing emissions means converting high-emission energy sources to lower emission options. Currently, China and other parts of Asia continue to add coal-fired power generating capacity, and Europe has restarted or extended its coal-fired power infrastructure in the wake of the Russia-Ukraine war. Canada should work to finance and convert coal infrastructure to run on Canadian natural gas as a pathway to a cleaner world.

In looking at Canadian competitors and export markets, the U.S. energy position has been transformed over the past 15 years. It is now the world's largest natural gas producer, and in 2022 was tied for the position of top gas exporter. Historically, all of Canada's natural gas exports have gone to the United States via pipeline. While Canada continues to supply some exporters along the Gulf Coast and certain end-users elsewhere, the U.S. seems structurally poised to import less natural gas in the future. Canada must therefore get its natural gas to markets where demand is growing, which means LNG export infrastructure must be created.

This report makes several key recommendations, including:

1. Recognize natural gas as an essential component of a lower carbon energy mix.
2. Advance the idea that natural gas produced under a carbon price is a superior and more marketable product.
3. Promote the understanding of the engineering and economics around an eventual transition from natural gas infrastructure to hydrogen.
4. Build infrastructure to transport Canadian gas across Canada and to global markets.
5. Align and develop more efficient regulatory processes to increase Canadian competitiveness.
6. Work with First Nations across the country to expand their participation in natural gas projects.
7. Pursue a comprehensive initiative to support the conversion from coal- to gas-fired power plants abroad.
8. Operationalize Article 6 of the Paris Climate Agreement in a manner that will see it become a key driver of the Canadian natural gas sector's growth.

Regardless of whether Canada "leaves its resources in the ground," other countries will not produce or consume less energy. Doing so could in fact worsen global emissions by making way for dirtier energy sources and its suppliers.



Part 1: Introduction

The modern world is built on energy. From reliable communications, finance and transportation systems to production in mines and factories to heating for homes, these all depend on energy. For more than a hundred years, Canada and the world have developed systems to produce and distribute energy in its various forms to where it is needed, collectively representing an enormous achievement for both long-term public policy and private sector ingenuity.

As the world moves to address climate change by transitioning to a low-carbon future, energy systems are being transformed. These transformations, however, are highly complex, expensive and difficult to seamlessly deliver. As Europe is learning the hard way, ending its dependence on Russia as a natural gas supplier and changing its energy mix in real time is very challenging.

Few countries have more expansive energy resources than Canada. Whether it is natural gas, oil, hydro or battery metals, Canada is positioned to be an energy superpower well into the future. Of course, factor endowments are only the beginning. But the main question to be asked is, What does one do with these resources? After building a successful record as a natural resources' producer, Canada has spent the past 20 years becoming increasingly conflicted about developing its energy assets and supplying them to the world.

We regularly see consequences of this indecisiveness: proposals to build pipelines engender fights. Environmental campaigners demand a shift to renewable energy sources while often failing to address the cost and complexity of these changes. They frequently demand that Canada leave natural gas, oil and other resources "in the ground" without acknowledging that this would do little to address the issue of global demand. If Canada does not supply these resources sustainably, countries with much lower environmental standards will gladly do so. Together, this leaves both the Canadian economy and the global environment worse off.

One of the most stark examples of Canada's conflicted public policy came in August 2022, when German Chancellor Olaf Scholz approached Canada to secure natural gas supplies for his country for the approaching winter. Germany's previous supplies were cast in doubt after Russia invaded Ukraine in February 2022. In 2020, 66.1% of Germany's natural gas came from Russia (Eurostat, 2022). With Canada being the fifth largest natural gas producer globally, it was logical that Germany would turn to Canada to meet its natural gas needs (International Energy Agency, 2022). Chancellor Scholz did not receive the response he was hoping for, however. During a joint press conference, Prime Minister Justin Trudeau stated that "there has never been a strong business case" for LNG terminals in Atlantic Canada. He added:

From the government's standpoint, easing the processes because of the difficulty that Germany is facing, to make sure we can move through regulatory hurdles more quickly, is something we are willing to do... But there needs to be a business case. It needs to make sense for Germany to be receiving LNG directly from the East Coast (Chase and Scholz, 2022).

While Canada did not directly say no to Germany, it did not say yes, either. Its lack of decisiveness on energy policy over the past two decades has resulted in a dearth of export infrastructure, particularly on its Atlantic Coast, as was needed in this case. Canada also did not seem particularly motivated to develop solutions that could aid Europe in the shorter term.



Demonstrating what is possible, Germany built an LNG import terminal in Wilhelmshaven in nine months — a project that normally takes five years (Kantchev, 2022). Canada could undoubtedly have retrofitted Saint John, N.B., to become an export terminal in 18 months, or even less if it were really motivated. Still, there is no consensus about how Canada wants to approach the new energy order. As one industry analyst told Reuters, “The government itself is very split between focusing on decarbonization and supporting another fossil fuel project, and that’s the problem” (Williams and Scherer, 2022).

This opportunity to supply Germany has now passed Canada by. In November 2022, Germany signed a 15-year gas supply agreement with Qatar, with first deliveries due in 2026 (Mills and El Dahan, 2022). While there is no guarantee that this type of contract would have come out of Scholtz’s visit had Canada taken a different view, it is hard not to see this as a missed opportunity. Qatar, not Canada, will now get the economic and employment benefits of producing and shipping gas to Germany.

Meanwhile, the United States is having fewer reservations. Despite his strong environmental credentials, President Joe Biden did not hesitate to commit to “ensure additional LNG volumes for the (European Union) market of at least 15 billion cubic meters (bcm) in 2022, with expected increases going forward” (White House, 2022). Given that much of the U.S. gas supply was tied up in long-term contracts, some analysts were skeptical that there was spare capacity to meet this pledge. Yet by July 2022, Refinitiv calculated that the U.S. was on track to increase its natural gas exports to Europe by 45 bcm in 2022 — three times the amount promised by President Biden (Renshaw and Disavino, 2022). The U.S. could have increased by more still if a fire and explosion had not sidelined the Freeport gas liquefaction plant in Texas until February 2023.

Several European buyers have signed long-term sales and purchase agreements (SPA) with U.S. suppliers. Europe has also leaned heavily on the spot market. According to National Gas Intelligence, almost 70% of U.S. natural gas exports in 2022 went to Europe (Cocklin, 2022). In the first half of 2022, the U.S. was the largest natural gas exporter globally (Energy Information Administration [EIA], July 25, 2022) and ended the year tied with Qatar (Richter, 2022).

Comparing the U.S. to the Canadian response to Europe’s energy crisis, it is hard not to conclude that Canada is failing to capitalize on its natural gas deposits. This hurts Canada’s economy, global reputation and allies, as well as the global environment since countries in need of energy often choose dirtier fuel sources whose carbon is not subject to a price regime. All of this suggests that Canada needs to undertake a serious re-examination of its energy policies.

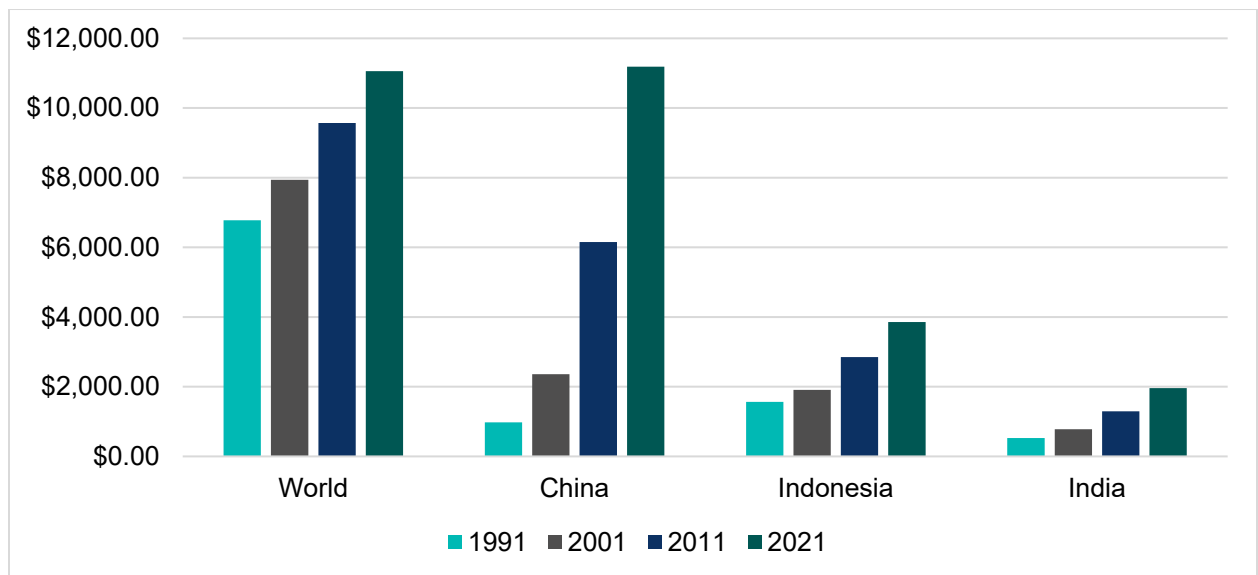
This paper explores options for Canada’s energy strategy, with a particular focus on natural gas. It will open with an exploration of the drivers of demand for natural gas globally, focusing on markets that Canada could readily supply. Next, it will look at Canada’s natural gas sector, infrastructure, and endowments, and will then pivot to assess Canada’s public policies toward natural gas and to examine the policies of its key competitors. Finally, it will lay out a roadmap for (re)building a world-leading natural gas sector that is aware of both the nature of global demand and the need to contribute to a lower carbon future.



Part 2: Global drivers of demand for Canada's resources

Many factors are driving demand for Canadian natural gas products and other commodities, which is a great opportunity that should be embraced. Major producers around the world, many of which have poor environmental records and no price on carbon, are stepping forward to supply these markets while Canada remains on the sidelines.

Figure 1.
Growing wealth: GDP per capita, 1991–2021
(in constant 2015 USD)



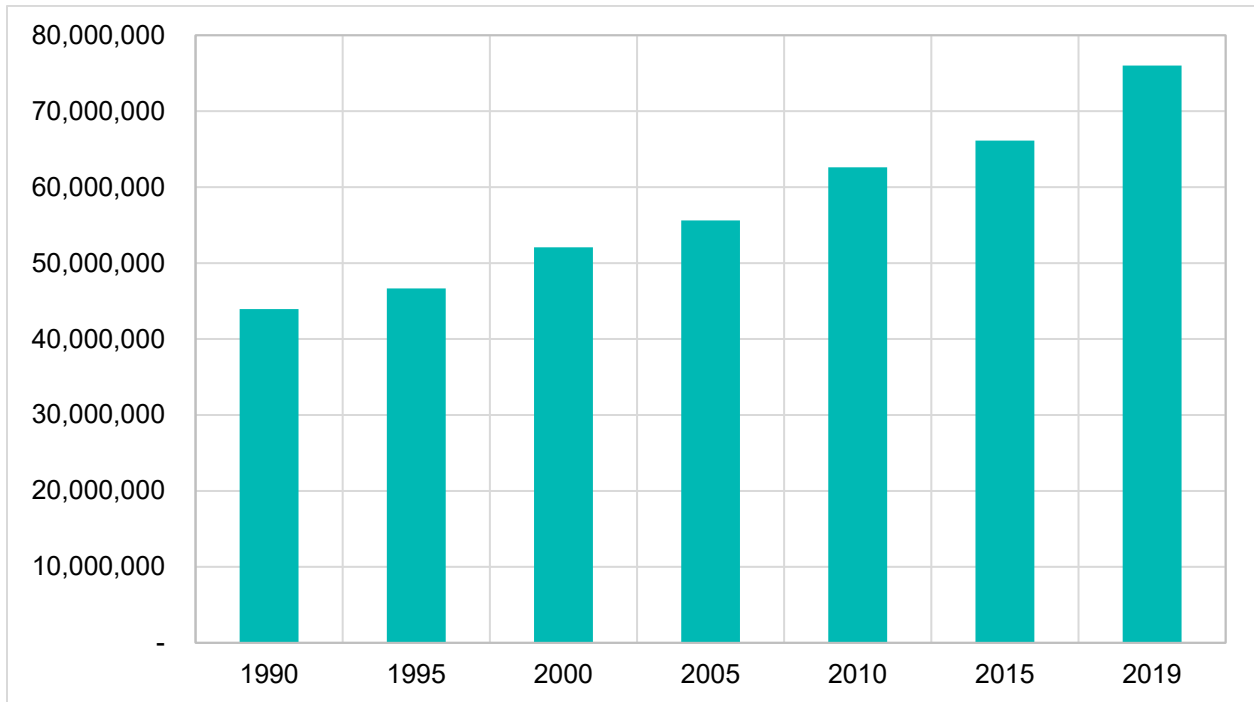
Source: World Bank. *GDP Per Capita in Constant 2015 USD\$.*

What is driving this growth? First is the growing global population, which just hit eight billion according to the United Nations. The world is also steadily growing wealthier. Figure 1 shows the evolution of gross domestic product (GDP) per capita for the world as a whole and for three large Asian economies over the past 30 years. Global growth in wealth over the past 30 years, however, has not been confined to the developing world. According to the same World Bank dataset, U.S. GDP per capita almost tripled while the GDP per capita of Germany and the United Kingdom more than doubled (World Bank, 2022).

As populations grow wealthier, their consumption of natural resources and energy increases (Roberts, 2020). Figure 2 illustrates the strong pattern of growth in global natural gas consumption over the past three decades.



Figure 2.
Global natural gas consumption, 1990–2019
(in terajoules – gross)



Source: IEA. *Natural Gas Final Consumption-World*.

Growing wealth in Asia has been a particularly strong driver of increased commodity consumption, with China experiencing the most dramatic change. Forty years ago, China's GDP per capita was 14% of the global average. Today, it is 101%. During its peak growth years of the early 2000s to about 2015, its economy often grew above 10% per annum and its share of global manufacturing rose from 10 to 27.5%. It is more than 30% today (UNIDO, 2022).

This transformational growth saw China import massive quantities of a broad range of commodities, triggering a historic “commodity supercycle” price boom. While its percentage annual growth rates have slowed, China's wealth continues to grow steadily in relative and absolute terms as its middle class also expands. This means that its demand for energy, including natural gas, will continue to increase.

While China's rise has been the most dramatic transformation over the past few decades, the wealth of other Asian nations has surged as well. Liquefied natural gas will become increasingly important to meet Asia's demand because there are not enough new gas fields in the region that can be readily accessed via pipelines. Because LNG can be transported by ship, it can come from anywhere in the world. Shell estimates that about 75% of new gas demand in Asia through 2040 will be met by LNG. Overall, it estimates that Asia will account for 70% of the total demand growth globally for LNG through 2040 (Shell, 2022).



Given the vast reserves in its Western provinces, Canada is ideally positioned to serve these markets. At the time of writing, Canada's first major natural gas export terminal, located in Kitimat, B.C., is about 70% constructed (Jang, 2022). The ownership structure of the LNG Canada consortium, which is developing the facility, underscores Canada's future as a key natural supplier to Asia. Investors include Shell (Global), Petronas (Malaysia), PetroChina (China), Mitsubishi (Japan) and Korea Gas (South Korea.) Despite Canada's reputation as a challenging place to develop resource projects, the terminal, coupled with the Coastal GasLink pipeline (expected to be finished in 2023) and upstream gas field development, is expected to represent a \$40-billion investment (Bennett, 2022). This is one of the biggest infrastructure projects in Canada's history.

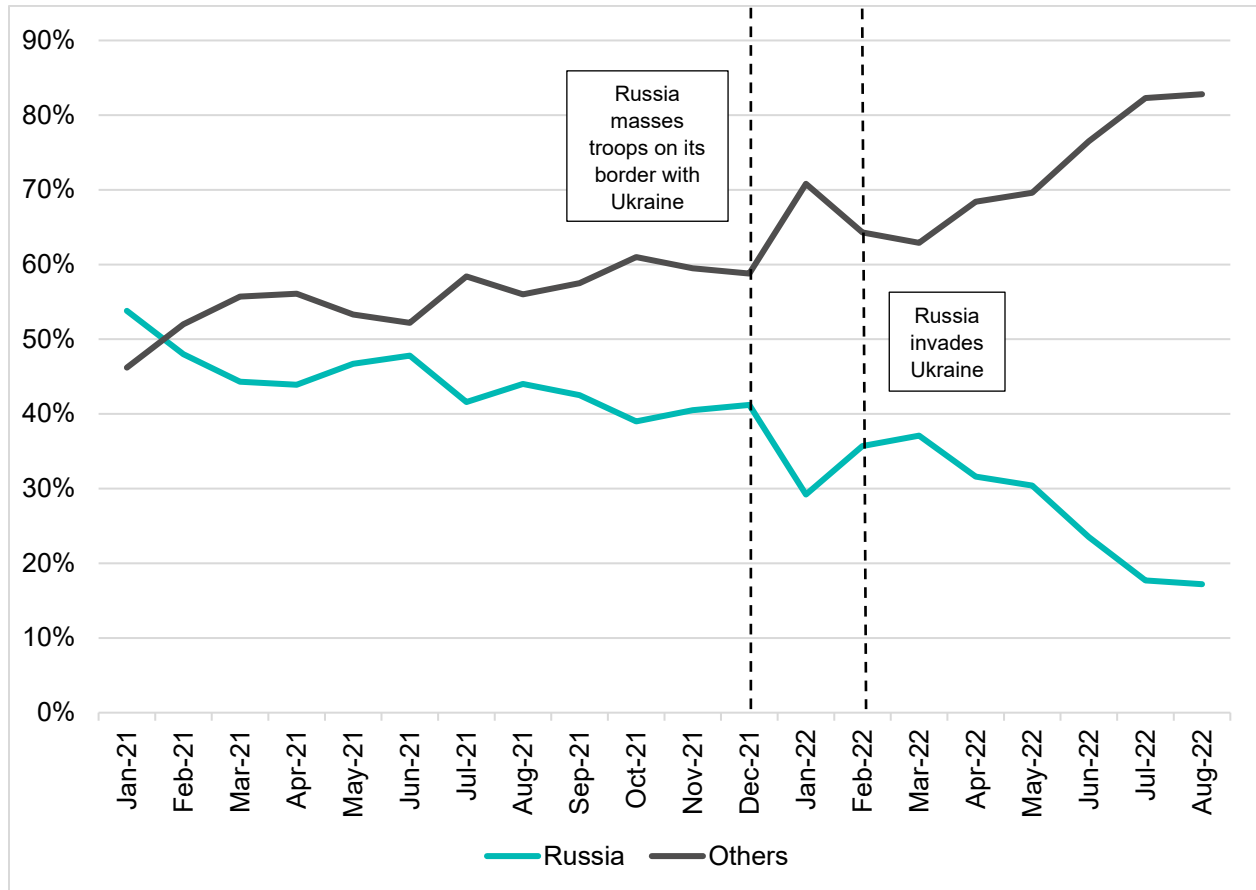
While long-term trends favour a growing energy market in Asia, the key driver of global gas markets recently has been Russia's invasion of Ukraine, which is radically reshaping energy flows. In 2021, the European market accounted for 74% of Russia's natural gas exports (Caon, 2022). That same year, Europe imported approximately 83% of all its natural gas (European Council, November 2022). While Europe's shift away from depending on Russia as a gas supplier began in earnest in mid-2021, escalating Russia-Ukraine tensions at the end of the year followed by the invasion in February 2022 caused European purchases from Russia to plummet. As Figure 2 demonstrates, Europe received 82.8% of its gas from non-Russian sources by August 2022. Notably, gas was not included in Europe's sanctions on Russia.

To diversify its gas supplies, the EU had to significantly ramp up purchases from traditionally less prominent suppliers. Some of the supplies re-routed for Europe were originally destined for other markets under long-term supply contracts, which meant that Europe paid a premium on the spot market.

For Russia, it had to find new markets for most of its natural gas production. In 2021, it reportedly sold 33 bcm of gas to Asia compared to 160–200 bcm to Europe (Caon, 2022). While Russian crude oil production was reportedly only 2% lower in November 2022 than its pre-invasion output, gas has struggled more (McDonnell, 2022). This is because Russia has traditionally been dependent on pipelines to transport its gas to market and lacks sufficient LNG export terminal capacity.



Figure 3.
Source of Europe's gas imports, January 2021–August 2022



Source: European Council. *Where does the EU's gas come from?* Infographic.

With Europe trying to buy more gas from non-Russian suppliers and Russia looking to sell its surplus gas (but lacking sufficient infrastructure to do so), there are new opportunities for Canada. The U.S. has systematically increased its gas supplies to Europe, so even if Canada sells more gas to Asia, the overall global supply increases. This means, for example, that suppliers such as Qatar could ship more to Europe since they do not have to supply Asia to the same degree.

Need for a backstop

While the energy transition is real and seems to be gathering pace, the word “transition” is instructive. As a first principle, 100% reliability must remain at the core of North America’s energy system, even as feedstocks change. In most jurisdictions today, there is nowhere near enough installed capacity in wind, solar and other renewables to seriously displace existing energy feedstocks. Moreover, wind and sun are not consistent, so those energy systems require robust backstops to be fully reliable.



Electricity generation in California should be looked to as an instructive case. While it has long prioritized increasing its renewable energy production, only 33% of its electricity generation in 2021 came from renewable sources according to the California Energy Commission. At 38%, natural gas was by far the largest non-renewable fuel type used (California, 2021). Natural gas offers an easy and relatively low carbon way for system operators to smooth out peaks and valleys in renewable generation. Even if the share of renewables doubled, California's system would still need a sizable natural gas backstop.

Importantly, Tourmaline — Canada's largest natural gas producer — supplies about one-third of California's daily gas needs. Without Canadian natural gas, California's electricity system would feel the fickleness inherent in renewables production to a much greater degree. It is an important example of how Canadian gas resources can deliver energy security and stability to North America and the wider world (Tourmaline, 2023).

“Saving One Canada” with gas

Of established energy options, natural gas is best positioned to support a lower carbon energy world. As Table 1 demonstrates, the pounds of carbon dioxide (CO²) per million British thermal units (BTU) emitted by natural gas is almost half that of coal.

Table 1.
Carbon dioxide emissions coefficients by fuel

Fuel Source	Pounds of CO² per Million BTU
Bituminous Coal	205.57
Subbituminous Coal	214.13
Lignite Coal	216.40
Diesel Fuel	163.45
Natural Gas	116.65

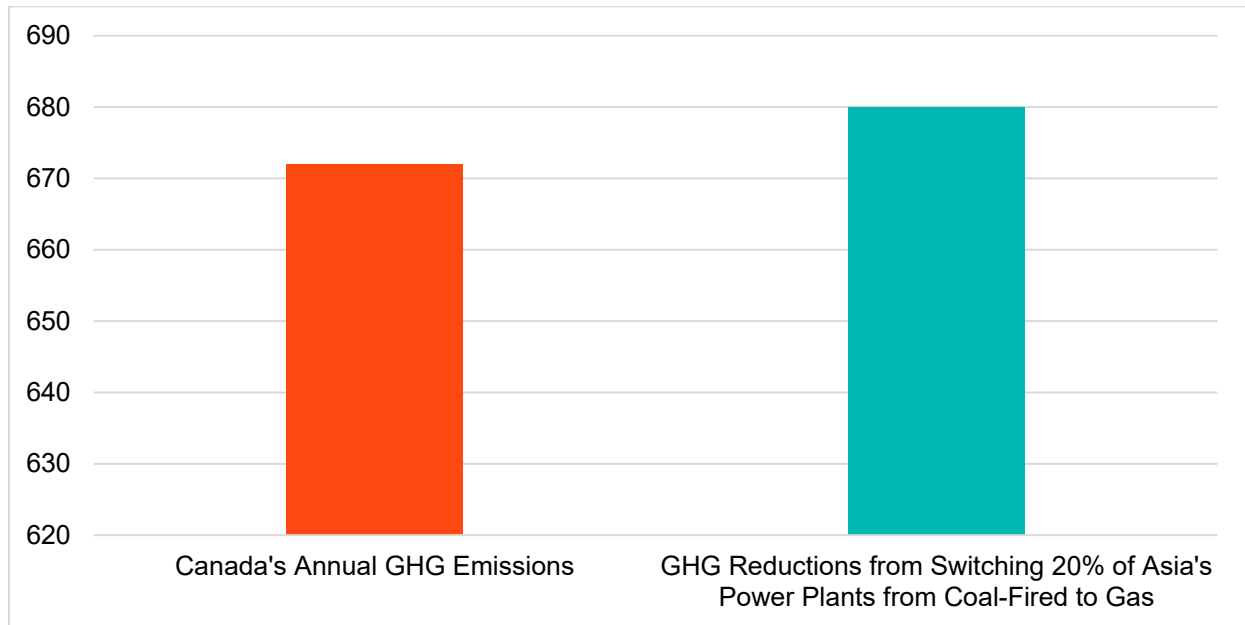
Source: EIA. Carbon Dioxide Emissions Coefficients by Fuel.

IHS Markit estimates that switching just 20% of Asia's many coal-fired power plants to natural gas would prevent an estimated 680 megatonnes (MT) of CO² emissions annually (IHS Markit, 2021). To put this in context, Canada's annual emissions are 672 MT. In other words, switching just 20% of Asia's coal-fired power plants would save the equivalent of “one Canada” in terms of annual emissions, while switching 40% would save “two Canadas”.

Given the substantial impact that switching from coal to gas in Asia would have on the global emissions picture, providing natural gas and financing to facilitate this transformation should be at the heart of Canada's international energy policy.



Figure 4.
“Saving one Canada”: Estimated impact of switching 20% of Asia’s coal-fired power plants to gas relative to Canada’s annual emissions (in megatonnes of CO² equivalent)



Sources: [Natural Resources Canada. A Sustainable Flame: The Role of Gas in Net Zero](#). IHS Markit.

Note: The IHS report defines Asia as including China, India, Japan, South Korea, Taiwan, Australia, Vietnam, Thailand and Indonesia.

The positive emissions picture explains why natural gas has a bright future and is the lynchpin to the greening of energy systems around the world. In its *Global Gas Outlook to 2050* report, global consultancy McKinsey explains:

Gas will be the strongest-growing fossil fuel ... from 2020 to 2035. It is the only fossil fuel expected to grow beyond 2030 ... with more than 200 million metric tons of new capacity required by 2050. (McKinsey, 2021)

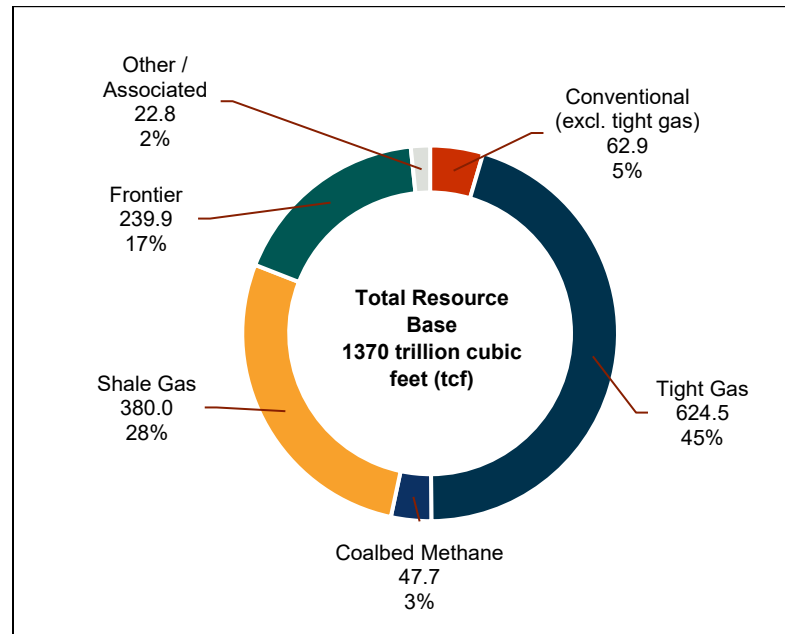
In terms of total global LNG trade, Shell estimates that demand will grow from 380 million tonnes in 2020 to more than 700 million tonnes in 2040 (Shell, 2022). This offers plenty of room in the global market for new supplies that other countries will gladly provide should Canada decline to.



Part 3: About the Canadian natural gas sector

To effectively plan for the future of Canada's natural gas industry, it is important to examine its endowments and the structure of the sector. Figure 5 notes that Canada has an estimated 1370 trillion cubic feet (tcf) of natural gas spread across a variety of forms (although tight gas and shale gas represent almost 75% of the resource base) (CGA, *Natural Gas*). Canada has more than enough gas for both its own needs and export markets.

Figure 5.
Canada's natural gas resource base
(in trillions of cubic feet)

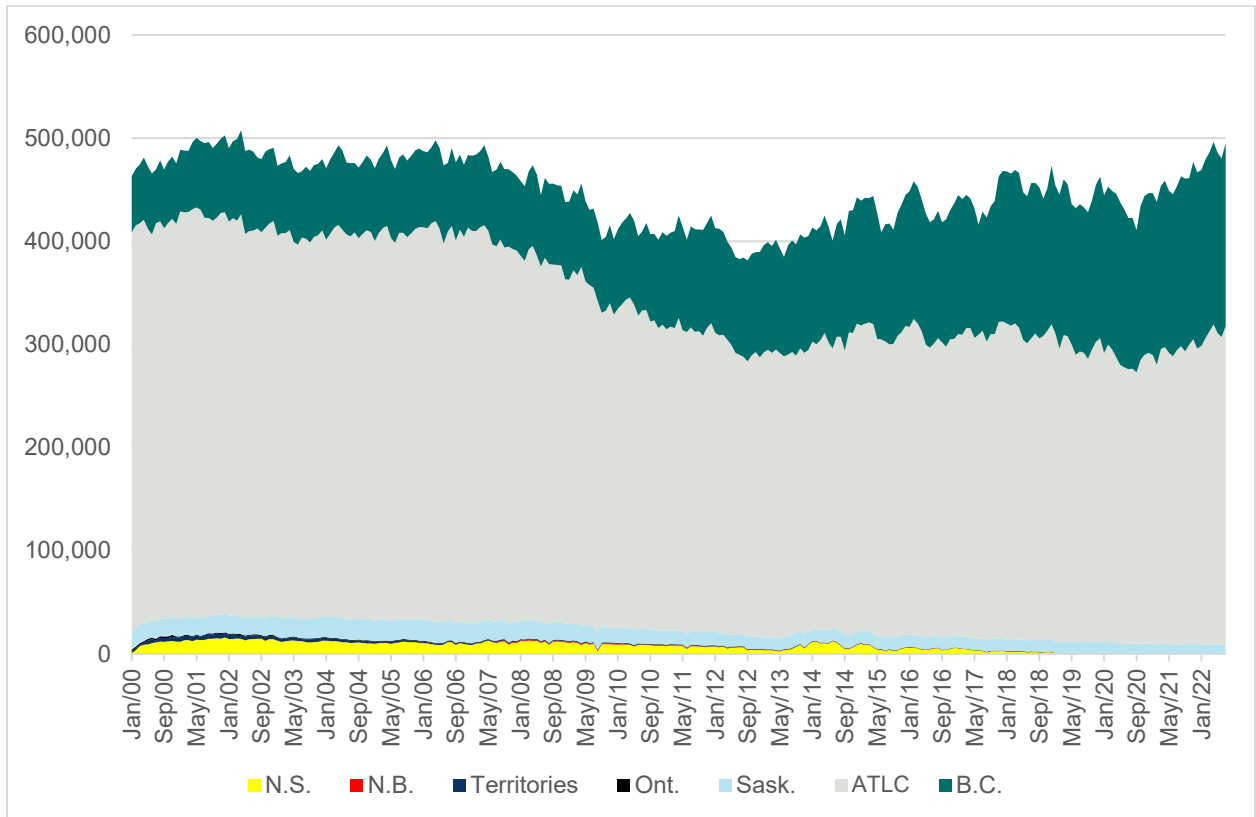


Source: Canadian Gas Association using its own data and that of the Canadian Energy Regulator.

When looking at Canada's marketable natural gas production, Alberta has long dominated, although B.C. has come on strong in recent years. In July 2022, Alberta represented 62.5% of Canada's gas production while B.C. represented 36%.



Figure 6.
Marketable natural gas production, January 2000–July 2022
(in thousand cubic meters per day)

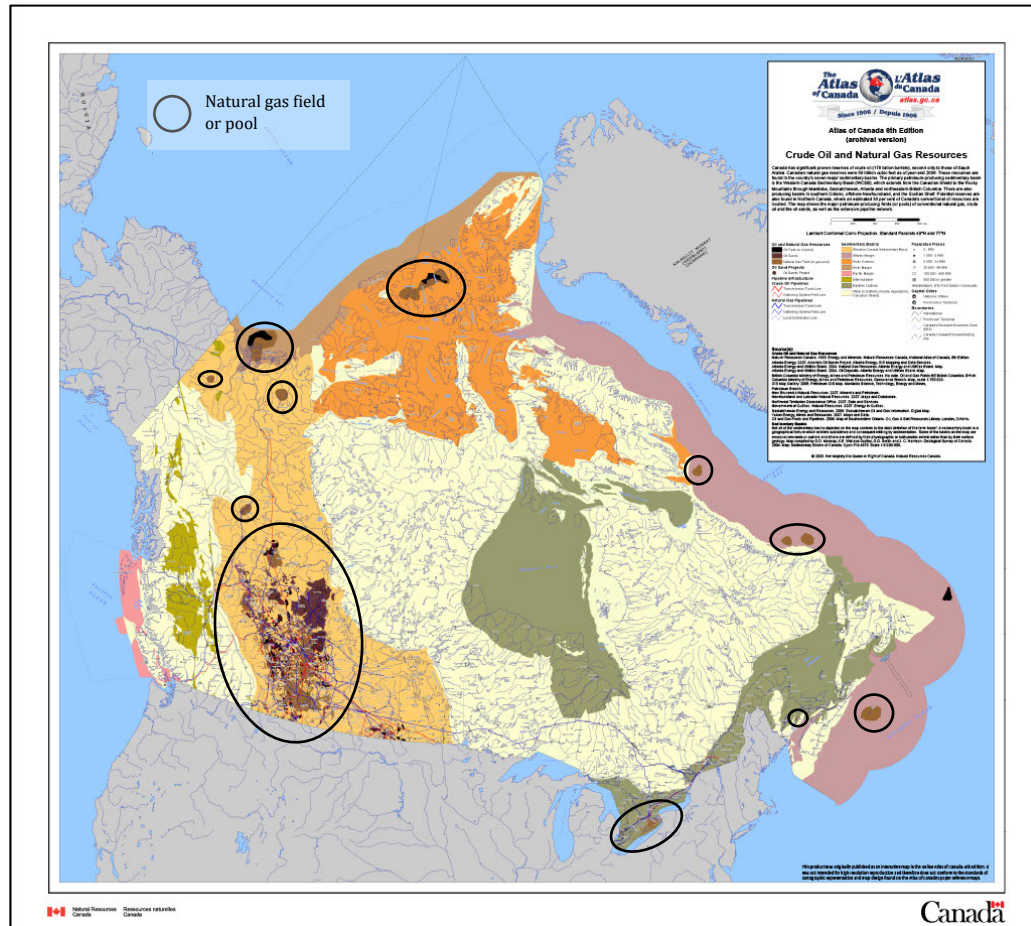


Source: Canadian Energy Regulator. Marketable Natural Gas Production in Canada.

Canada has massive potential to increase its natural gas production, particularly in Western Canada, the Territories and, to a limited extent, off the Atlantic Coast (Map 1). According to Natural Resources Canada's most recent Energy Fact Book, the country has only 1% of proven global gas reserves but has 8% of the world's unproven but technically recoverable shale resources (NRCan, 2021). Resources are considered unproven unless they have been subject to a rigorous feasibility study that allows them to be properly measured and formally listed as reserves by their owners.



Map 1.
Location of Canada's natural gas fields and pools



Source: Natural Resources Canada. *Crude Oil and Natural Gas Resources*. Atlas of Canada, 6th Edition.

Canada's oil and gas sector had some \$25.8 billion total capital expenditures in 2021 (Statistics Canada, 2022). When assessing the value of natural gas projects to the Canadian economy, it is important to remember that most jobs in the sector flow through thousands of service providers.

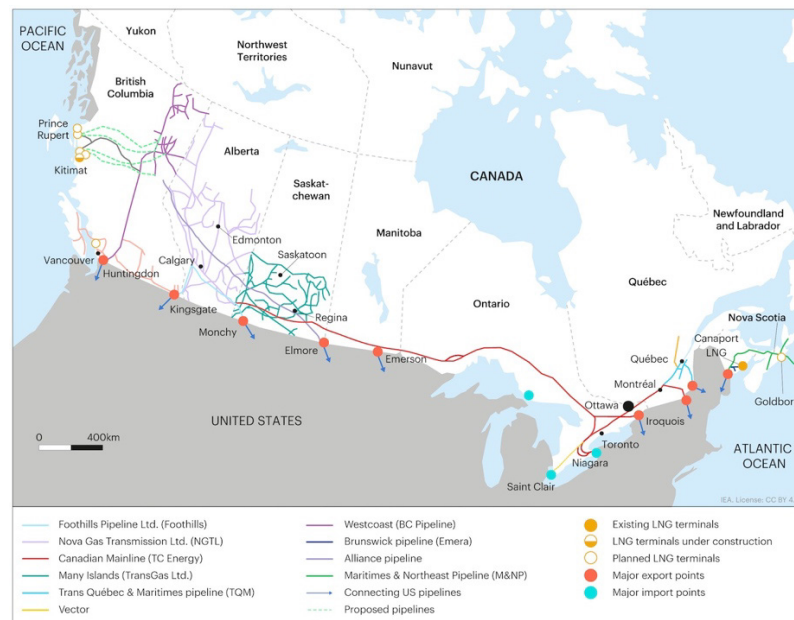
While the bulk of Canada's energy reserves are in the West, their development is a national story, with firms based in all regions of the country managing and maintaining the required systems. For example, steel comes from Ontario and some players, such as Montreal-based SNC-Lavalin, have grown to be world-leading firms because of their work in the Canadian energy sector. The expertise that they and others have developed in the high-standards Canadian market make them attractive energy service providers around the world. This, in turn, supports Canada's long-term goal of building more globally oriented Canadian companies. From coast to coast to coast, the Canadian natural gas sector supports tens of thousands of jobs and creates billions of dollars in economic activity.



Getting to market

The goal of every resource project is to get a product to market. Pipelines carry natural gas from the interior of Canada to Canadian consumers and export markets in the United States. By overlaying the pipeline network in Map 2 onto the locations of gas fields in Map 1, the gaps in Canada's energy production and transportation systems are clear.

Map 2.
Canada's natural gas infrastructure, 2022



Source: IEA, 2022.

Canada's natural gas exports presently move through 39 pipelines to the United States (NRCan, FAQs). Although some parts of the country (such as Tourmaline's California market, and ARC Resources and Tourmaline's supplies to firms such as Cheniere on the Gulf Coast) remain strong, the overall U.S. market for Canadian gas is declining. While Canadian gas can help indirectly by adding supply to the global market, at the time of writing Canada simply does not have the infrastructure to move its gas directly to markets beyond North America.

LNG export opportunities

Fortunately, with the advancement of the LNG Canada project, the country will finally have an LNG export terminal. With this, Canada can finally break its reliance on the U.S. market and supply customers globally. The export terminal at Kitimat is linked through the soon-to-be-completed Coastal GasLink pipeline to major gas fields along the British Columbia–Alberta border.



The most important of these is the massive Montney Formation. According to a 2013 joint study by Alberta, B.C. and the federal government, it contains an estimated 449 trillion cubic feet of marketable natural gas, meaning “Montney’s marketable unconventional gas resource is one of the largest in the world” (National Energy Board, 2013). This also means it will be as big (if not bigger) than the largest American shale plays that have made the U.S. the world’s biggest natural gas producer. Some analysts project that on the strength of Montney, British Columbia will overtake Alberta and become Canada’s largest gas producing province by 2039 (Jaremko, 2020).

The establishment of the export terminal and upstream infrastructure has the additional benefit of opening up other projects whose economics would have been challenging in their absence. One of the most exciting is Cedar LNG, a \$3-billion floating export terminal that would be majority owned by the Haisla Nation (Potkins, 2022). Located just across the Douglas Channel from LNG Canada, it is interconnected with the project’s extended infrastructure. If it receives its environmental approvals, it will become the largest Indigenous-owned infrastructure project in Canada (Cedar LNG, 2022).

In July 2022, Enbridge joined with Pacific Energy to build the Woodfibre LNG Export Facility near Squamish, B.C. Once complete, it will produce 2.1 million tonnes of LNG per year and is positioned to supply Asia (Enbridge, 2022).

As previously noted, the war in Ukraine has brought much discussion about East Coast export terminal options. The conversion and expansion of the Saint John, N.B., LNG Import Terminal into an export terminal is likely the best option in the near term, but given existing pipeline networks, it would almost certainly use U.S. gas as its feedstock (Bissett, 2022). Other options, including a proposed LNG export facility in Goldboro, N.S., have gone through various iterations but are not on track to be completed any time soon.

There is significant frustration in many quarters over Canada’s lack of ability to quickly scale to supply Europe or to even have a desire to lock in medium-term supply contracts that would necessitate adding or retrofitting infrastructure. Over the past 15 years, 18 new LNG export terminals were proposed: 13 in British Columbia, three in Nova Scotia and two in Quebec (NRCan, 2020). Of these, only LNG Canada is close to completion. Had Canada supported the construction of even a fraction of these terminals, it would have been at the centre of support for growing Asian and European markets that are in desperate need of LNG, and would be actively contributing to the displacement of coal.

Although the policy errors of the past can’t be corrected, they can certainly be learned from, with one lesson being that it is unwise to leave North America’s natural gas resources landlocked. While many parts of Canada’s approach to natural gas are good, it has nevertheless failed to be bold in expanding into global markets.

Already a large producer

Canada is currently the world’s fifth-largest natural gas producer (IEA, *Production*). While this is impressive, Canada has significant room to grow. Had Canada seized the LNG opportunity 15 years ago, it could have been much closer to being the largest natural gas producer. At present, the United States produces five times as much gas as Canada.



Table 2.
**Top 10 producers of natural gas and
their application of carbon pricing**

Country	Value (EJ)	Price on Carbon
United States	32.67	No
Russia	24.84	No
Iran	8.33	No
China	6.70	Partial — only covers the power sector
Canada	6.49	Yes
Qatar	6.24	No
Australia	5.33	No
Norway	4.10	Yes
Saudi Arabia	3.38	No
Algeria	3.26	No

Sources: IEA. Natural Gas Production-2020; World Bank. Carbon Pricing.

Note: Price on carbon is used broadly to include carbon taxes, emissions trading schemes and similar instruments.

On carbon pricing

One key variable when benchmarking Canada against peers is whether the jurisdiction puts a price on carbon. Of the top 10 producers, only two have economy-wide regimes in place. China has a limited carbon tax, covering only the power sector (World Bank, *Carbon Pricing*). In total, there are 70 carbon emissions pricing schemes across 47 countries globally, making it fair to say that many parts of the world are, broadly speaking, actively working on strategies to build a lower carbon future.

In addition, Europe is implementing a prototype of a “Carbon Border Adjustment Mechanism” (CBAM), which goes live in 2026 (European Council, March 2022). Other countries, including Canada, are studying how CBAMs could work in their markets. The main goal of CBAMs is to prevent carbon leakage, where production in countries without a price on carbon gain a competitive advantage over those with a price on carbon. If Europe’s CBAM is eventually extended beyond the proposed six sectors to include energy products, Canada’s carbon pricing regime should help protect Canadian natural gas exports from such punitive carbon offset tariffs.

An important question over the medium term is whether a market premium can be created for gas that is produced under a carbon pricing regime, such as in Canada. Some other commodities have seen certain companies advance market segmentation based on whether specific inputs are deemed to have been produced sustainably. For example, one client of the author is developing a major project in the western United States. This company has an arrangement with the local utility to only receive sustainable power because it helps with the project’s overall carbon footprint.



Part 4: Canadian public policy toward natural gas

One way to examine Canadian public policy on natural gas is to ask questions such as the following:

- Is Canada realizing its potential as a global natural gas supplier? As demonstrated previously, the answer seems clearly to be no.
- Are the rules and service standards of regulators clear and transparent? In the case of the Canadian Energy Regulator (CER), they seem to be for the most part.
- Is there clarity in the work and procedures of the Impact Assessment Agency of Canada, which examines health, environmental and other factors related to natural gas projects? Perhaps less so than the CER.
- Are other policies and regulations negatively impacting the development of the natural gas industry? The answer seems clearly to be yes.

Overlaying the application of these formal processes are issues that are not strictly public policy in nature, including the use of lawsuits to delay projects and regular protests.

Finally, whatever public policy lens is chosen must include the question of reconciliation and effective engagement of First Nations with Canada's energy economy. We need to move toward upfront involvement of First Nations and further advance partnerships where their interests align with industry and public policy.

Energy regulation in Canada

The CER was created in August 2019 to replace the National Energy Board (NEB), which had regulated inter-provincial and international aspects of oil, gas and electricity trade since 1959. Many in the industry felt the NEB worked well. They understood what data and processes were important to the regulator when making a decision to approve or reject a project. Over the years, the University of Calgary (among others) hosted many international visitors who came to learn from the NEB model.

After the year 2000, oil and gas extraction, refining and transport/pipeline projects became increasingly politicized. Criticism of Canada's energy regulatory regime spiked, and the NEB was accused by some, particularly in the NGO community, as being weighted in favour of the industry, untransparent and insensitive to concerns about reconciliation. That said, it was sometimes hard to disentangle to what extent these criticisms were actually about the NEB process itself or if they were simply an attempt to block new energy projects in Canada. After all, many environmental groups tend not to find regulatory processes reasonable or to support almost any energy project. Still, regulators must be open to feedback and understand the tenure of the times.



Regardless of the extent to which the NEB critiques were warranted, the Trudeau government felt it necessary to remake Canada's energy regulatory institutions in an effort to recover some legitimacy in the many quarters associated with regulatory decisions. When initiating the process that would create the CER, the federal government launched an extensive consultation process. When the final structures were agreed upon, it cited a number of ways in which the CER would be an improvement over the NEB. These included:

1. **A more effective governance model:** The CEO, Board and independent commissioners of the CER would have distinct roles.
2. **Enhanced certainty and timelier decisions on projects:** Environmental and social impact assessments would be conducted jointly with the Impact Assessment Agency of Canada. It set specific timelines and service standards for reviewing projects and removed Cabinet's ability to overturn a negative CER decision.
3. **More inclusive public engagement:** New avenues for communities and interested parties to participate were added. Public interest determinations would explicitly address environmental, social, safety, health, and socioeconomic issues.
4. **Greater Indigenous participation:** The centrality of Indigenous peoples to decision-making processes would be recognized, the consideration of Indigenous knowledge would be required, and an Indigenous Advisory Committee would be established.
5. **Strengthened safety and environmental protection embedded in projects:** Regulatory authority over key aspects of new projects would be enhanced. (CER, 2019)

The CER is in its relatively early days of operation. Based on discussions with several industry sources, there appears to be broad frustration with what can be seen as a failure of the CER to deliver a more clear and predictable process. When the industry proposes a project, it holds dozens of consultations, commits to applying best-in-class environmental controls and practices, and partners with Indigenous communities. However, the process feels as unpredictable and circuitous as ever.

On the other side, a broad swath of the environmental community tends to oppose any proposed energy production or transport project. Whenever a project is approved by the CER — even if there are dozens of conditions — numerous environmental groups will denounce the regulatory process as “flawed.” Absolutism is not helpful when it comes to discussing any public policy and achieving “legitimacy” among groups with no incentive to agree is very challenging.



Social licence

The natural gas industry is more important than ever to the long-term health of the Canadian economy and to global decarbonization. Though it seems unlikely from today's vantage point, it's possible there will be fewer conflicts over energy projects in the coming years. Eventually the CER may find its bearings and be able to ensure its decisions are broadly perceived as legitimate, giving the projects it greenlights a "social licence to operate."

Social licence is a broad and murky concept in which a critical mass of interest groups and impacted communities are sufficiently agreeable to the advancement of a project with the understanding that environmental, social, health and safety matters are handled appropriately. This understanding is underpinned by robust external audits, ongoing dialogue and, in certain circumstances, instruments such as community benefit agreements.

The challenge with social licence is there typically has been no standard process that must be followed and no established place to go to apply for this type of "permit." This has left companies feeling like goalposts can easily be shifted. If trust in CER processes and their legitimacy can be strengthened over time, companies may finally get something like a standardized social licence process run by an identifiable social licensing authority.

Of course, the CER process or any other institutional regulatory mechanism cannot please those that are ideologically opposed to all natural gas projects. These groups would most likely never grant a licence under any circumstance. These mechanisms are targeted to the moderate middle who care that when resource projects are developed, all aspects are handled properly.

Reconciliation

A central objective of the CER reforms was to mandate a greater focus on reconciliation with Canada's First Nations. While encouragement from regulators is always helpful, Canada's natural gas industry and First Nations had already made progress in building a transformational relationship.

Today, Canada's First Nations are at the forefront of Canada's energy economy. A key goal is to drive reconciliation through economic opportunity — or, in the words of one First Nations leader, "to manage wealth not poverty." To do that, First Nations have increasingly positioned themselves to knowledgeably engage with energy companies and participate in projects. This has been aided by setting up advisory, support and advocacy infrastructure.

The First Nations Major Projects Coalition (FNMPC), a group of more than 130 Indigenous communities across the country, has facilitated seven major projects in three regions with combined capital expenditures of more than \$17 billion. Each project has First Nations equity participation and will deliver long-term economic returns to these investors.

One of the key projects facilitated is the Coastal GasLink pipeline. In total, 20 First Nations have signed agreements with lead project developer TC Energy. In March 2022, 16 of these First Nations agreed to buy a 10% equity stake in the pipeline. Of these, 11 are members of the FNMPC (CBC, 2022).



Getting to the point where First Nations have significant ownership in energy projects has taken time to materialize. In *Delgamuukw v. British Columbia* in 1997, the Supreme Court of Canada confirmed that First Nations ownership of land included the right to develop the resources thereon (Supreme Court, 1997). Having resources and developing them, however, are two different things. At times, resource companies and First Nations struggled to work together and to understand each other's priorities. A culture of trust and mutual respect had to be patiently built. The progress made between energy companies and Canada's First Nations has been enormous, but there is still more to do.

The FNMPC describes its role as providing “business support,” which perhaps understates the full scope of the value it brings. The FNMPC helps First Nations sit across the table from any resource company, secure in the knowledge that their advisors know the nuances of project finance and industry operations. Participating First Nations can therefore be confident that they will secure the best returns while fully protecting the health of the environment and people in their territory.

In the years ahead, Canada's Indigenous peoples are expected to expand their participation in the nation's energy economy. One interesting development has been the emergence of First Nations-led projects. In addition to the Cedar LNG project previously discussed, the Nisga'a Nation has proposed to build the world's largest net-zero LNG export terminal. Called the Ksi Lisims Project, the terminal would be located 80 kilometres north of Prince Rupert, B.C. and have a price tag of \$10 billion (Bakx, 2021). On Canada's East Coast, in Newfoundland, the Miawpukek First Nation is an equity partner in the proposed \$5 billion LNG NL project, which includes offshore drilling platforms, a subsea pipeline, and an onshore LNG export terminal.

First Nations interested in participating in LNG and other energy opportunities in British Columbia have set up an advocacy and education group called the First Nations LNG Alliance. It plays a valuable role in both facilitating coordination on project opportunities and protecting and advancing their members' interests vis-à-vis governments, companies, and the wider population.

Canada's LNG opportunity is made possible in large part by the constructive relationships built between First Nations and energy companies over the past few decades. As these partnerships grow and expand, the economic benefits flowing to First Nations and the broader Canadian economy should increase considerably.

Financing LNG projects

In recent years, environmental campaigners have pressured financial institutions to not invest in Canadian energy projects, efforts that have been replicated in other parts of the world. At the 26th UN Climate Change Conference of the Parties (COP26) in 2021, a group led by Mark Carney launched the Glasgow Financial Alliance for Net Zero, which aimed to push financial institutions to reflect net-zero objectives in their lending. This was taken to mean that institutions would scale back funding of future fossil energy projects.

In Canada, the idea of linking climate with finance is being formalized in the Office of the Superintendent of Financial Institutions (OSFI) Guideline B-15 – *Climate Risk Management*. At the time of writing, B-15 is still in draft form and, if adopted as written, would require financial institutions to incorporate the implications of climate change into their business strategy and make specific climate disclosures. While on its face B-15 is about the resilience of financial institutions in a changing climate, many in the energy sector fear it will have a chilling effect on financing for new projects. In discussions with certain industry



players, some have wondered if the ultimate goal of these climate finance initiatives is not “net zero” but “absolute zero” when it comes to non-renewable energy production.

Canada benefits enormously from having a strong energy sector that can supply its own market and the wider world. The risk of energy-climate measures creating confusion and chilling investment in new projects is real. It would be helpful for regulators and policymakers to offer reassurance about Canada’s long-term commitment to a robust energy economy.

Financial support for Canada’s energy sector

Beyond the quality and efficiency of the regulatory regime, another key question is to what extent public policy presently provides financing and other types of support to Canada’s LNG sector — and to what extent it should do so going forward.

For several years, the Government of Canada has stated that it intends to wind down subsidies for the oil and gas industry, a commitment included in the December 2021 Mandate Letter provided by Prime Minister Trudeau to Environment Minister Steven Guilbeault.

The extent of current support is unclear, with NGOs that track such things indicating a variety of figures. The Globe and Mail reported in January 2022 that Canada provided \$11 billion to the oil and gas industry between 2018 and 2020, declaring that Canada provided more funding to this sector than any other country in the world (McClearn, 2022). Yet Oil Change International, whose numbers are cited in the Globe and Mail article, did not break out countries that operate state-owned oil and gas companies, such as China, Russia and Saudi Arabia. Given its centrality to the Kingdom’s economy, it is hard to believe, for example, that Saudi Aramco is less supported by the Saudi government than a typical Western Canadian gas producer is by the federal government.

A 2021 report by Environmental Defence found that the Government of Canada provided \$18 billion in subsidies to the oil and gas sector in 2020. The largest amount cited in their report — \$8.1 billion — was “financing provided to support the operations of oil and gas companies both domestically and internationally” (Environmental Defence, 2021). This included lending money to Pemex (Mexico), Indian Oil (India) and Petrobras (Brazil) as a way of supporting the export of Canadian oil and gas equipment, technology and services (McClearn, 2022). These exports support Canadian jobs, innovation and trade diversification, and these firms would have bought from other suppliers had Canada not provided financing.

Expansion of the natural gas industry

If Canada is to make a meaningful contribution to decarbonizing other parts of the world, it should provide more financing for LNG solutions, not less. It can and should offer an integral approach that includes:

- Financing to convert coal-fired power plants to gas that is underpinned by long-term purchase agreements for Canadian natural gas.
- Support to get natural gas to tidewater and out to its intended market.
- Development of supply agreements for key materials, management systems and long-term servicing of the natural gas plants.



This approach would help the Canadian economy, aid the recipient country and improve the global environment.

Reducing coal consumption is the lynchpin to bending the emissions curve downward. As noted in Table 1, the U.S. Energy Information Administration (EIA) indicates that coal produces almost twice as many emissions as natural gas. Why then did coal consumption reach an estimated eight billion tonnes in 2022 — equal to the all-time global high set in 2013 (Liboreiro, 2022)? The answer is that it is readily available, whether to drive economic growth or generate energy in a crisis. Countries will only move away from coal if they have substantial access to a reliable alternative fuel such as natural gas. Unfortunately, full reliance on renewables is not yet workable at national scale.

Mainly created by coal, China's emissions of man-made greenhouse gases exceed those of the United States, Europe and Japan combined (Bradsher and Krauss, 2022). Had environmentalists and the Canadian federal government supported serious development of natural gas export infrastructure on the West Coast 15 years ago, Canada would have been positioned to offer China LNG at scale — a much cleaner alternative to coal.

Europe is surviving the winter of 2022/23 with much less Russian gas, with Germany, the Netherlands, Italy, Greece and Hungary having all announced plans “to extend the lifetime of coal plants, re-open those that have been closed or lift the cap on coal-burning hours” (Liboreiro, 2022). In addition, some Europeans are going even more traditional by opting for firewood rather than gas. According to German statistics, gas cost 20.9 cents per kilowatt hour of heat in October 2022 compared to 14.88 cents for wood pellets (Gera, 2022). Once again, there is nothing that Canada can immediately do to help Europe.

The world needs energy and will acquire it one way or another. Canada should not only encourage global partners to choose lower carbon options but should actively make natural gas available to them. This will take financing, diplomacy and creativity, but the impact on emissions would be significant.



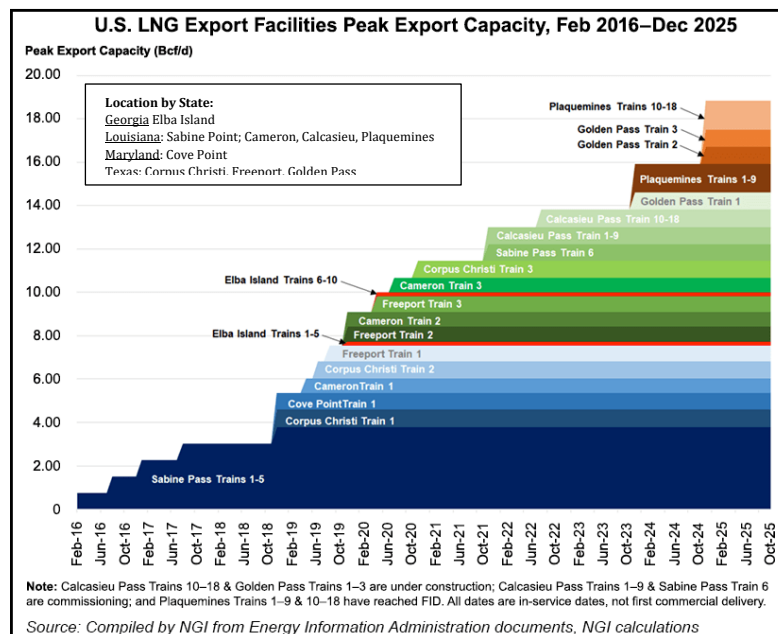
Part 5: What key competitors are doing

As Canada prepares to ramp up its natural gas exports beyond North America, it is useful to examine the sectoral policies of other major producing nations. While countries such as Qatar and China are among the top 10 global gas producers (as noted in Table 2), the most relevant for comparison for Canada may be the Western liberal democracies on the list: the United States, Norway, and Australia.

United States

Canada's biggest direct competitor in the natural gas world is the United States. Until the early 2000s, the U.S. was a major importer of natural gas, almost exclusively via pipelines from Canada. Then the hydraulic fracturing revolution took hold and propelled the U.S. to the top of global gas producers. U.S. natural gas production has grown from 18.05 tcf in 2005 to 34.05 tcf today. Notably, production and the permitting of new sites expanded consistently throughout the Bush, Obama and Trump administrations, making the shale revolution a bipartisan achievement. Imports peaked at 4.61 tcf in 2007. Today, the U.S. exports 6.65 tcf of gas to 41 countries and imports 2.81 tcf (and dropping) mainly from Canada (EIA, *Natural Gas*). Since 2016, the U.S. has built or is in the process of building nine LNG export terminals across four states, and by 2025, is expected to have a peak export capacity of 19 billion cubic feet per day.

Figure 7.
U.S. LNG export terminals and daily capacity



Source: Cocklin, Natural Gas Intelligence, 2022.



When the Biden administration took office, it sought to make transitioning to a low-carbon economy a major priority and imposed a moratorium on new oil and gas leases on federal land. It publicly discouraged fossil fuel production but did not shut down the growth in U.S. natural gas exports or its expanding infrastructure.

Then came the war in Ukraine. As energy prices and inflation surged, the administration oscillated between attacking the industry for “profiteering” and stating how important it was to the U.S. economy. It suspended the lease moratorium on the basis that these projects would generate more supply for the domestic market.

The U.S. dualism between climate action and energy development was reflected significantly in the Inflation Reduction Act (IRA). The IRA is projected to reduce U.S. greenhouse gas emissions by 2030 to 40% below 2005 levels (DOE, 2022). A close analysis of the regulatory and tax tools included in the IRA reveals an expansive industrial strategy that will position the U.S. for leadership in an array of clean and low-carbon energy sectors and related sectors, including electric vehicles. At the same time, the IRA ensures that the U.S. will hold regular auctions for oil and gas leases on federal land and issue licences to develop offshore fields in the Gulf of Mexico and Alaska. Additionally, the law financially rewards natural gas companies that address methane leaks and punishes those that do not. The IRA also heavily supports companies that invest in carbon capture technologies, which means that natural gas and coal power plants can stay open over the long term if they are systematically deploying new technologies (Dobbs, 2022).

Innovation is at the heart of the U.S. energy ecosystem and will be fundamental to ensuring U.S. LNG exports continue to grow over the medium term.

Finally, an important “side agreement” to the IRA package in the Senate was a commitment from leadership to Senator Joe Manchin (D-West Virginia) to advance legislation to reform permitting processes for energy and mining projects. The White House and Majority Leader Charles Schumer (D-New York) are working diligently to find a workable legislative pathway to accomplish this.

Norway

Norway is the world’s eighth-largest natural gas producer and exports 87% of the energy it produces (IEA, *Norway*). Production is dominated by Equinor ASA (formerly Statoil), the state-owned oil and gas company. It sells about 70% of the gas produced on the Norwegian continental shelf, mostly through long-term contracts with European gas companies (Equinor, *Natural Gas*). It supplied a little less than a quarter of Europe’s natural gas in the first half of 2022 (European Council, 2022).

Norway has been aggressive on climate policy. In 1991, it became one of the first countries in the world to set a carbon tax. In 2017, its Parliament passed major climate change legislation that committed the country to cutting emissions 50–55% over 1990 levels by 2030, and by 90–95% by 2050. Norway also participates in the European Emissions Trading System (ETS), which covers about 85% of emissions in the country (IEA, *Norway*).



The oil and gas sector is one of Norway's biggest industries, directly employing about 200,000 people and playing a central role in funding its welfare state. In 2021, the sector generated €80 billion in export revenues — almost 50% of the nation's total. These revenues go directly to supporting the state pension scheme. The government nonetheless works diligently to guard against the lowering of standards that often accompany state-ownership of resource companies. Norwegian offshore production, for example, leaves among the smallest footprints of any operation in the world (IEA, *Norway*).

The Government of Norway's medium-term strategy is focused on transitioning the industry to a lower carbon future through various means:

1. Use Norway's abundant hydro power resources to electrify the industry's operations.
2. Drive efficiency in operations through carbon pricing tools.
3. Increase the deployment of carbon capture and similar technologies.

The country is also starting to think beyond 2030 when gas production in the country's territorial waters is projected to begin declining.

Australia

In May 2022, Australia elected a new government — the first from the centre-left in a decade. This shift is likely to have important impacts on the government's approach to climate policy. For example, Australia's Parliament passed legislation in September mandating a 43% reduction in carbon emissions by 2030 (Globe and Mail, 2022). There is no indication yet as to whether the new government will seek to revive a carbon tax, which was put in place by the last Labor Party government in 2011 and then scrapped in 2014 after it lost power. Prime Minister Anthony Albanese has said that he will work with the resource sector to “reduce emissions in a predictable and orderly way” (Martin and Karp, 2022). In its analysis, the Globe and Mail stated that Australia was like “a southern hemisphere mirror of Canada ... going through a similar shift” on climate policy as Canada did after its 2015 federal election (Globe and Mail, 2022).

Australia has long been a major energy producer and has been exporting LNG since 1989. In its last review of Australian policies, the IEA reported that energy products accounted for almost 40% of the nation's export revenues (IEA, 2018). It has export terminals on both its east and west coasts, and in 2021 was the world's top exporter of LNG globally with China and Japan being its two largest markets (Lewis, 2022).

Institutionally, the Australian Energy Regulator is the key body for regulating pipelines and natural gas production in all jurisdictions except Western Australia. In that state, the Economic Regulation Authority holds power. The Australian Energy Market Operator ensures that the domestic gas and electricity markets function properly, while the Australian Competition and Consumer Commission is responsible for monitoring the retail gas and LNG markets (IEA, 2018). In August 2022, the Australian Competition and Consumer Commission called on the industry to scale back exports and supply more to the domestic market in response to the upheavals caused in the global market by the war in Ukraine (Tan, 2022).



Part 6: A durable natural gas sector

This paper has examined the global natural gas landscape, the nature and evolution of Canada's natural gas sector, and the opportunities and challenges it holds. Canadians should be proud that their country's natural gas industry comprises first-rate companies that take their economic, social and environmental obligations seriously. Canada's regulatory regime is also both robust and inclusive, which is unfortunately not the case in most countries.

It was previously noted that Canada's natural gas industry has faced varied public policy signals about its role in a lower carbon future. The world needs energy regardless — and Canada's natural gas industry can deliver it in the right way.

There are several assertions to be made:

- If Canada “leaves its resources in the ground,” other countries will not produce or consume less energy. This would in fact worsen global emissions by making way for dirtier sources and its suppliers.
- Not every natural resource or sector is the same. Natural gas has the lowest carbon footprint of all non-renewable fuel sources.
- Natural gas that is subject to a carbon price should be viewed as superior to that which is not.

In short, the more Canadian natural gas there is on the global market, the better off Canada and the world will be from a global emissions perspective.

So, how specifically should public policy be aligned to support the goal of making Canada the most respected and productive natural gas producing nation in the world?

- **Recognize natural gas as an essential component of a lower carbon energy mix.** Transition does not mean going from a fully carbon-based to a non-carbon-based energy system overnight. Changing large scale, complex infrastructure takes time. Moreover, any system that relies on solar, wind and other sources that produce energy in a variable, non-linear fashion requires a backstop fuel such as natural gas to smooth out the peaks and valleys and ensure system reliability. Natural gas is the key enabler for reducing overall carbon emissions quickly. There is much that Canada can and should do domestically and internationally to support this shift.
- **Advance the idea that natural gas produced under a carbon price is a superior and more marketable product.** Only two of the top 10 natural gas producers have an economy-wide price on carbon. In many market segments, companies are not only measuring their emissions but preferring to source from carbon-efficient and sustainable producers. This type of segmentation based on sustainability will likely continue to grow, and Canadian natural gas should be at the forefront.
- **Understand the engineering and economics around an eventual transition of natural gas infrastructure to hydrogen.** Every major natural gas producer globally is thinking about hydrogen, especially green hydrogen. Broadly speaking, it appears to have the advantage of using the same type of infrastructure as natural gas. Being able to piggyback on existing infrastructure would be an enormous advantage in hydrogen's scaling process. In addition to investing in hydrogen research, the Government of Canada should move to understand what specifically would be involved in converting gas infrastructure to hydrogen and what the cost structure would look like. This knowledge would help clarify the long-term economics of gas pipeline investments, for example.



- **Build infrastructure to transport Canadian gas to all parts of Canada and global markets.** A decade from now, Canada should have robust LNG export terminals on both the West and East Coasts. There is a role for government in not only permitting these facilities, but perhaps even financing them directly or through guarantees. This support could facilitate upfront Indigenous involvement. Expanding pipeline capacity to service these terminals is also fundamental. For example, those seeking to convert the Saint John terminal into an export facility still saw the need for U.S. gas because the terminal is not sufficiently connected via pipeline to Canadian gas fields. In this case, an integrated Canadian solution would be the preferable option. Separately, the government and the industry should undertake a study to define the costs and examine the advantages associated with using temporary floating LNG export terminals. This could be an option to get export capacity in place faster.
- **Align and make more efficient regulatory processes to advance Canadian competitiveness.** Federal–provincial regulatory collaboration is essential to project success. Work must be done to ensure that the service standards for review of projects permitting set forth by the CER are met. Benchmarking of the nature and speed of Canadian project permitting processes against key peers — including the United States, Norway, and Australia — should also be undertaken and the findings made publicly available. Recommendations on how to shorten the permitting process without lowering standards should also be put forward.
- **Work with First Nations across the country to expand their participation in natural gas projects.** This includes discussing with interested partners lessons for expanding the number of First Nations-led natural gas projects and accelerating their regulatory review processes. Groups such as the FNMPC should be worked with closely, following the understanding that economic opportunity for First Nations can be a key part of the broader reconciliation process.
- **Pursue a comprehensive initiative to support the conversion from coal- to gas-fired power plants abroad.** Financing for power plant conversions should be underpinned with long-term supply contracts for Canadian natural gas, and it should be ensured that agreements cover essential goods and services as well as ongoing maintenance.
- **Operationalize Article 6 of the Paris Climate Agreement in a manner that will see it become a key driver of growth for the Canadian natural gas sector.** Article 6 enables companies and governments from different countries to share or trade carbon credits under what's called the Internationally Transferable Mitigation Outcomes (ITMOs). Participating entities can exchange credits in such a way that they are either incented to deploy technologies that reduce carbon emissions or to switch from higher to lower carbon power sources (e.g., from coal to natural gas). The Trade Commissioner's Service and Export Development Canada should pursue a dedicated strategy to switch out coal-fired power infrastructure to cleaner, Canadian natural gas-powered infrastructure around the world. This initiative could not only support natural gas exports but an array of services, technology, and materials exports. Canada should use the global carbon market framework to build a stronger Canadian natural gas sector and a cleaner world.



Canada is in a remarkable position as it looks to the future. Few countries are better positioned to navigate the challenges of energy transition, climate change and a growing global population while also delivering the promise of long-term prosperity and social cohesion for their population. However, like in football, good field position does not guarantee a touchdown — that only comes from skillfully turning advantage into action.

As the late Alberta Premier Jim Prentice and his co-author, Dr. Jean-Sebastian Rioux observed in their landmark 2017 book on Canada's energy challenge:

In tomorrow's world, renewable and non-renewable energies will share the same ecosystems, driven by the same market needs, financed by the same intermediaries, and drawing on the same technically skilled workers. The real question for Canada is whether we wish to lead or follow in the transformation. (Prentice and Rioux, 2017)

In LNG and the broader energy and climate economies, one thing is clear: the world needs more Canada.



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