

ECONOMIC VIEWPOINT

What Does the Future Hold for Canada's Oil Industry?

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After a number of tough years, Canada's oil and natural gas industry seems to be in better shape. While low oil prices and high operating costs had cast doubt on the sector's profitability in Canada, the recent increase in prices and economies of scale leading to lower production costs paint a much more positive picture. This presently favourable situation for the Canadian industry should help it adjust to a changing economic and legislative environment, as the energy transition accelerates. With that, the industry is up against many daunting logistical and climate challenges. The future of Canada's oil and natural gas industry therefore depends on its capacity to overcome them all.

Oil in Canada

In 2020, Canada's rich oil reserves made the country the world's fourth largest producer with 4.2 million barrels per day (mbd) (table 1). Of these reserves, 97% are in the oil sands and are concentrated in the Western Canada Sedimentary Basin, comprising Alberta, Manitoba, Saskatchewan and British Columbia (the eastern part of the province). It is therefore not surprising that the two largest producing provinces are Alberta and Saskatchewan, accounting for 80% and 10% of national production, respectively. Newfoundland and Labrador is not far behind with 6%. Depending on the type of deposits, three production methods can be used: the conventional method for liquid and semi-solid oil sand deposits, the mining method and the in situ method (graph 1). Conventional production consists in digging a well and extracting the oil using tank pressure or a pump. In both cases, this is the least expensive method of exploiting oil. In oil sands, mining consists in extracting surface deposits, found up to 70 m deep, using an open-pit mine. This is generally the most expensive method. The in situ method is used for deeper deposits. It consists in digging a well and, depending on the viscosity of the bitumen, using solvents or steam to bring the bitumen up.

In 2019, out of the 4.7 mbd of crude oil produced, just 0.8 mbd was used to supply the country's refineries. The rest was exported to meet international demand, but also because of limited bitumen refining capacity. Canadian refineries are not sufficiently equipped to process all of the country's production, and oil companies therefore export the majority of their output, mainly to the southeastern United States, to be refined. The

TABLE 1

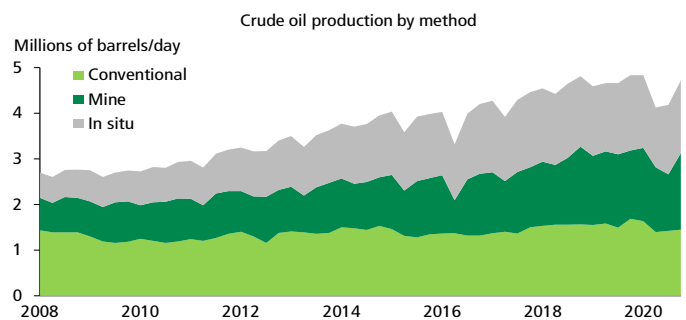
Canada was the fourth largest crude oil producer in the world in 2020

Crude oil and condensate		
SECTORS	PROVEN RESERVES	PRODUCTION
	Millions of barrels	Millions of barrels/day
Saudi Arabia	267	9.4
Canada	170	4.2
United States	47	11.3
Russia	80	9.9
Venezuela	302	0.5
WORLD TOTAL	1,662	76,097

Sources: U.S. Energy Information Administration and Desjardins, Economic Studies

GRAPH 1

Crude oil production by method



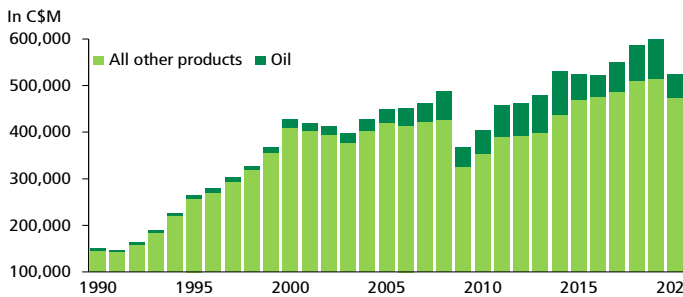
Sources: Canada Energy Regulator and Desjardins, Economic Studies

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consequences on exports are notable, as the crude oil has accounted for 13% of all Canadian exports over the past decade (graph 2). The oil and natural gas industry therefore plays a leading role in Canada’s economy. In 2020, it added C\$104B to the GDP, or 5.6%, in addition to creating 60,000 jobs directly related to oil and natural gas extraction. In Alberta, this industry contributes 26% to its GDP. The health of the oil industry is therefore a determining factor in Canada’s economic growth.

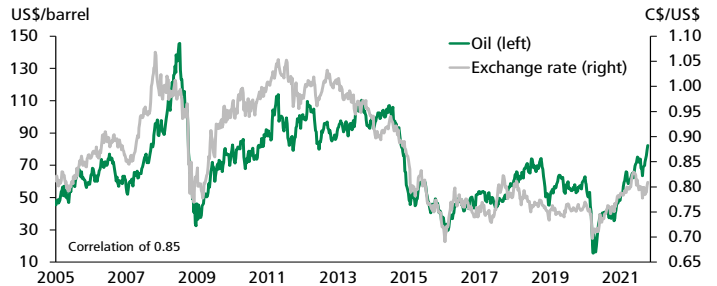
GRAPH 2
Oil has an ever-increasing presence in Canadian exports



Sources: Statistics Canada, Datastream and Desjardins, Economic Studies

A [study by the Canadian Energy Research Institute](#) on the impact of oil prices on the country’s economy determined that a gain of a single dollar for West Texas Intermediate (WTI) translates into a cumulative increase of C\$1.7B in Canada’s GDP over a seven-year horizon. The effects of a fluctuation in oil prices are broad, influencing investment, the exchange rate, employment and government revenue, but are also uneven and vary from province to province. Alberta, Saskatchewan and Newfoundland and Labrador would be negatively affected by a drop in oil prices. Conversely, the study shows that Ontario and Quebec would benefit from the price drop. This contrast is due to the provinces’ varied economic structures and the close relationship between the price of a barrel of oil and the Canadian dollar exchange rate (graph 3). Because of oil’s significance in exports, a long-lasting variation in its price strongly influences domestic demand in Canada through investment in the oil sector and changes in household and government income, particularly in producing provinces. A decline in oil prices is therefore generally accompanied by a depreciation in the loonie, and vice versa. Consequently, producing provinces are negatively affected by falling oil prices (lower revenue and investment). The other provinces benefit from lower energy costs and greater competitiveness of their exports due to the lower exchange rate, which has a positive effect on their economy. Although the effect of lower crude prices heterogeneous among the provinces, the overall effect remains negative, causing a slowdown in the Canadian economy, even a decline as in 2015. By contrast, an increase would be beneficial for the Canadian economy.

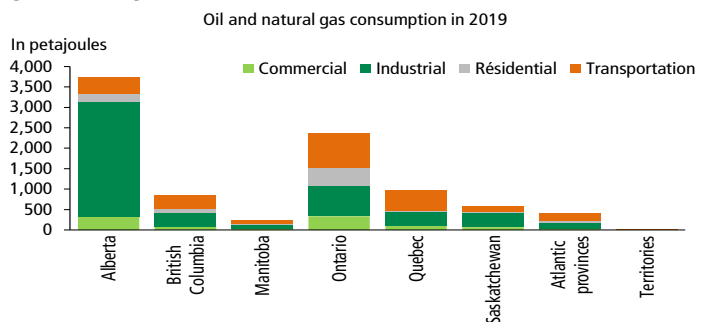
GRAPH 3
Close relationship between the price of oil and the value of the Canadian dollar



Sources: Datastream and Desjardins, Economic Studies

Canadians are major consumers of oil and natural gas, with per capita consumption hitting approximately 250 kilojoules in 2019, according to the Canada Energy Regulator (CER). Alberta is by far the biggest consumer in the country, due mainly to its industrial demand, with 40% of national demand, followed by Ontario with 26% and Quebec with 10% (graph 4). In total, over 50% of consumption comes from the industrial sector, followed by the transportation sector with 27%. As for petroleum products, the demand follows traditional distribution, meaning that gasoline, liquefied petroleum gas and ethane as well as diesel are the most consumed products, with 30%, 15% and 10% of the domestic demand, respectively (graph 5 on page 3).

GRAPH 4
The industrial sector accounts for the majority of oil and natural gas consumption

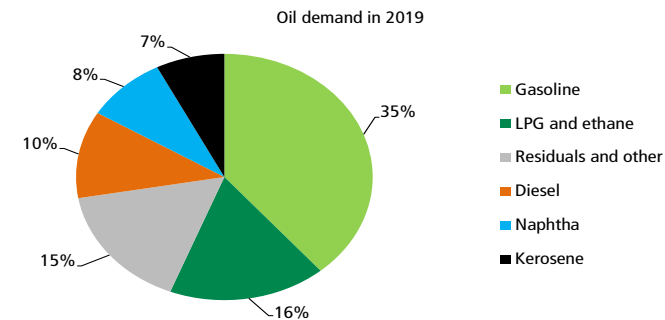


Sources: Canada Energy Regulator and Desjardins, Economic Studies

An Industry Hit Hard by the Pandemic

As a result of the major economic shock and changes in transportation habits caused by the pandemic in the spring of 2020, global demand for oil suddenly plummeted approximately 30%. The consequences of this slump were considerable for Canada: an 87% plunge in the price of Western Canadian Select (WCS), an 18% drop in exports, a significant reduction in production of around 1 mbd and even the temporary closure of refineries such as Come by Chance in Newfoundland and

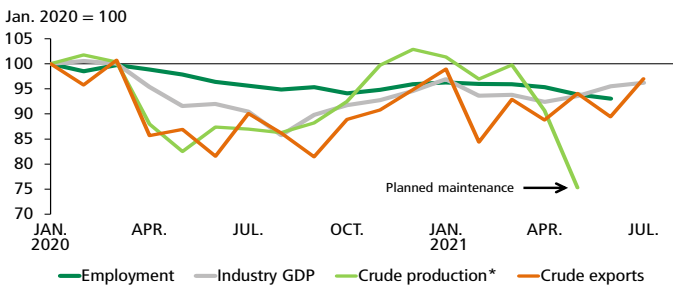
GRAPH 5
Gasoline accounts for the largest share of oil demand in Canada



Sources: International Energy Agency and Desjardins, Economic Studies

Labrador. In addition, the industry’s widespread slowdown reduced the number of operating drills to a level not seen in more than 50 years. As mentioned in our [Economic Viewpoint](#) on the recovery of the Canadian economy, in May the oil and natural gas industry was at 97% of its pre-pandemic level from February 2020 (graph 6). The gradual recovery in oil demand and prices supported this industry’s recovery. Even though a recovery had been expected, many doubted the speed and force with which it would occur.

GRAPH 6
Amid elevated oil prices, the industry’s recovery continues

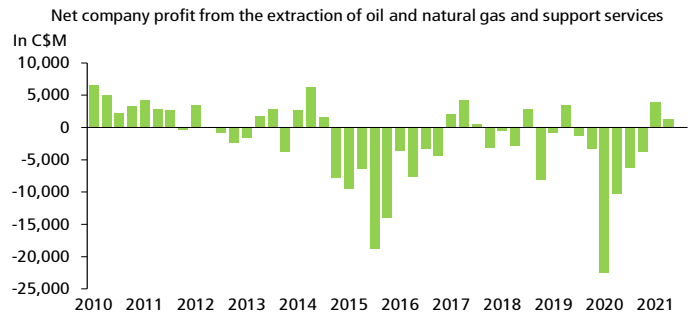


* Canadian crude oil production estimates.
Sources: Statistics Canada, Canada Energy Regulator and Desjardins, Economic Studies

It bears remembering that this industry was fragilized by the 2014–2016 oil price crash. The rise of the American shale industry and the negative outlook for oil demand at the time had placed the market in a glut, sinking prices. Saudi Arabia then wanted to take advantage of the situation to intimidate its competition—the United States, Russia and Iran—by deepening the price plunge by increasing its production. This price war reduced the price of a barrel of WTI from US\$100 to US\$25. In a context where producers depended on high prices to stay profitable, the Canadian oil industry went through some difficult years, with losses climbing up to C\$19B according to Statistics

Canada (graph 7). These losses have only been beaten once since, during the pandemic, due to the exceptional impact of containment measures and the major downturn in the economy.

GRAPH 7
High production costs have hurt the sector’s profitability



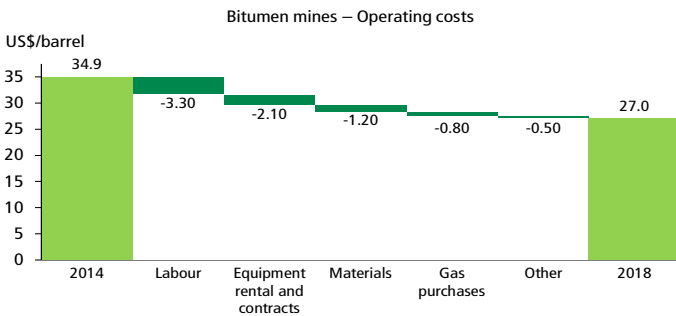
Sources: Statistics Canada and Desjardins, Economic Studies

As a result, once the dust had settled and a new price level for oil was set, Canada’s oil industry faced three major immediate challenges. The first was to cut operating costs, primarily those associated with the development of oil sands, which were no longer viable for a price close to US\$55 a barrel. The second was to increase oil transport capacity in order to sustain production and export growth. The last challenge was to encourage investment, which had decreased significantly, while stabilizing the industry’s debt in order to maintain some flexibility for future projects.

Lower Operating Costs

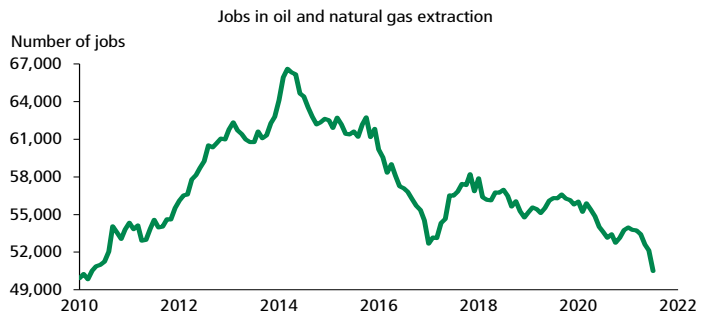
The [analysis conducted by the Government of Alberta](#) on the oil industry’s response to lower oil prices reveals a decrease in operating costs for companies working in the oil sands from 2014 to 2018. The main factor for mine production was the decrease in labour costs by US\$3.30 a barrel (graph 8 on page 4). First, this reduction came from deep job cuts (graph 9 on page 4), but also a number of major restructurings to raise worker productivity and maximize economies of scale. In addition, the renegotiation of service contracts and the improvement of procurement with suppliers led to additional reductions of US\$2.10 and US\$1.20 a barrel, respectively. In total, the cost of mine production was reduced by US\$7.90 a barrel from 2014 to 2018. For in situ production, which already had lower operating costs, the total decrease was US\$7.20 (graph 10 on page 4). Because of heavy natural gas use in this type of production, the lower price led to a drop of US\$2.80 a barrel. Just like mine production, the renegotiation of service contracts and better equipment procurement shaved off a combined US\$2.30 a barrel. During the pandemic, Canadian oil companies did not put their efforts to reduce operating costs on hold. Hit once again by a steep drop in oil prices, the industry continued to maximize the efficiency of its workforce with new economies of scale, this time

GRAPH 8
Significant reduction in labour costs



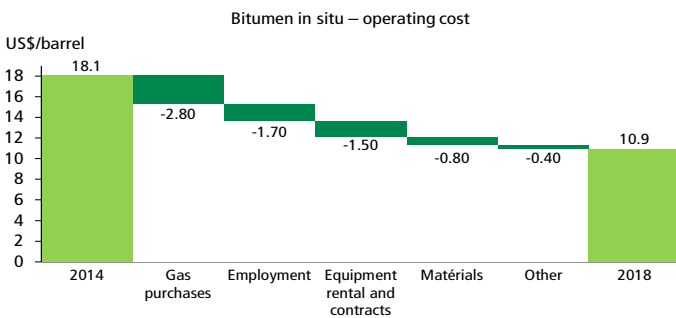
Sources: Government of Alberta, Alberta Energy and Desjardins, Economic Studies

GRAPH 9
Jobs never recovered to pre-2014 levels



Sources: Statistics Canada and Desjardins, Economic Studies

GRAPH 10
Low natural gas prices benefited in situ facilities



Sources: Government of Alberta, Alberta Energy and Desjardins, Economic Studies

costs are a fraction of those of rail. The industry therefore tends to prefer using and developing the pipeline network over the rail network. The limitations of these networks were nevertheless tested in 2018. With the pipeline network operating at full tilt, the drop in price made exports by rail too expensive, causing the Canadian price per barrel to fall US\$20 (graph 11). As a result, the Government of Alberta had no choice but to impose production limits until the situation normalized. Although the pipeline network’s capacity increased by more than 6% between 2015 and 2018 and other projects were under development, this increase was insufficient to offset the 22% growth in production from the basin (graph 12 on page 5). This race between the transport network and production is not new; 2018 simply made the winner clear. The industry and the governments involved kept up their efforts, which resulted in an additional increase in

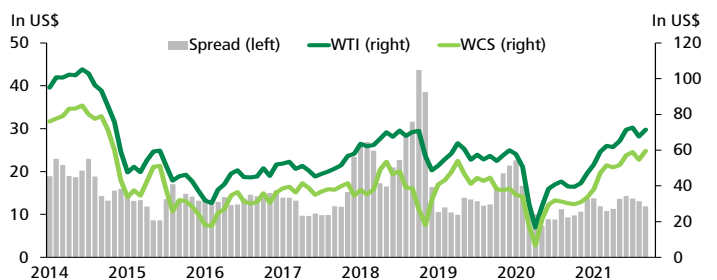
among office workers. Although that meant further job cuts, the economic disruptions caused by the pandemic are still blurring the data too much to settle on a precise number.

One of the main factors behind the reduction in production costs is the merging of production chains, making economies of scale possible, particularly in terms of workforce, service suppliers, equipment procurement and infrastructure. The pandemic accelerated this trend, which had already been in place since 2014, due to the abundance of liquidity and low financing costs for the industry. The rise in oil prices and government support measures meant that oil companies had large sums of cash available, in addition to being able to borrow at low interest rates. New mergers, such as Cenovus Energy with Husky Energy and SECURE Energy Services with Tervita Corporation, therefore contributed to the economies of scale.

Although Better, Transport Capacity is Still Limited

The main logistical hurdles in transporting oil have to do with the Western Canada Sedimentary Basin. Given that the development sites are inland, the two most widely used means of transport are pipelines and rail. However, pipelines are far more advantageous from a commercial standpoint because the associated transport

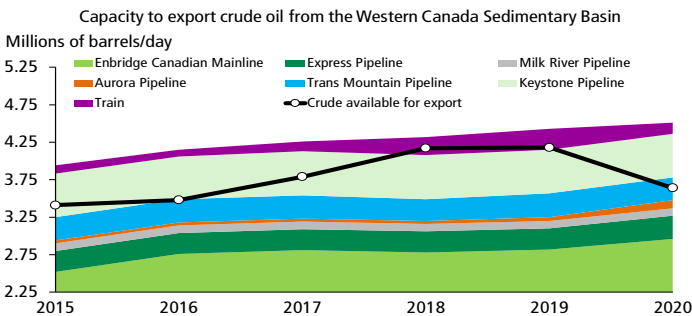
GRAPH 11
The gap between U.S. and Canadian barrel prices widened in 2018



WTI: West Texas Intermediate; WCS: Western Canadian Select
Sources: Datastream and Desjardins, Economic Studies

pipeline transport capacity of just under 7% from 2018 to 2020. The main pipelines that saw growth since 2015 are Enbridge Canadian Mainline, with 17%, and Express Pipeline, with 11%. Although the network was expanded, developing new pipelines or extending existing ones is no easy task, something made clear by the case of Keystone XL. This pipeline, which was supposed to run from Alberta to Texas, had been initially rejected by President

GRAPH 12
Faster production than pipeline growth



Sources: Canada Energy Regulator, Canada's energy future and Desjardins, Economic Studies

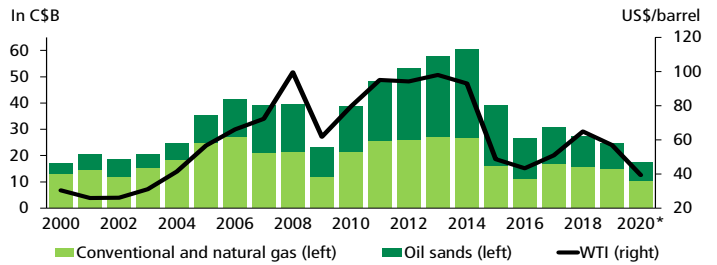
Barack Obama, only to be authorized by Donald Trump via an executive order, a decision that was overturned very recently by Joe Biden shortly after he took office. Opposition to such projects is generally stiff due to environmental issues, which may complicate and slow the expansion of the pipeline network. Nevertheless, with an increased oil transportation capacity and production since the start of the pandemic, Canada now has excess transport capacity.

A New Investment Strategy

Investment in the oil and natural gas industry has struggled for the past few years. High prices in the past had buoyed Albertan capital spending, which amounted to approximately C\$60B in 2014 (graph 13). Although the 2014–2016 oil price plunge was the main reason behind the 56% decline in investment, the rise in oil prices was not followed by a similar increase in investment. Capital spending actually experienced two annual declines of 10%, in 2018 and 2019. In the years following the oil price plunge, Canadian producers prioritized reducing production costs to the detriment of developing new mining sites. The objective of investment in the oil sands in recent years has therefore been to maintain and improve existing facilities. Moreover, oil sand facilities have a very low depreciation rate, meaning that mining and in situ facilities have an estimated lifespan of 20 to 40 years, compared to approximately 1 year for conventional wells. Which require further digging after that period. Since the initial capital cost is much higher than the cost of maintaining production (table 2) and the development of new sites has slowed down, the value of investments has become smaller. This strategy also enabled the Canadian oil industry to consolidate its debt. Producers are therefore less exposed to economic ups and downs and have greater financial leeway to comply with new environmental regulations.

The energy transition also influences what investments many companies and governments choose. First, large sums are allocated to research and deployment of key technologies, such as carbon capture and storage, methane emission reduction and energy efficiency improvement. Natural Resources Canada

GRAPH 13
Capital spending in Alberta's oil industry struggles to increase



WTI: West Texas Intermediate; * Capital spending is estimated. Sources: Alberta Energy, Canadian Association of Petroleum Producers, Datastream and Desjardins, Economic Studies

TABLE 2
Ranking based on unconventional oil versus conventional oil development

PRODUCTION TYPE	INITIAL INVESTMENT	RECOVERY RATE	RATE OF DECLINE IN PRODUCTION
Mines, oil sands	Very high	Very high	Very low
In situ, oils sands	High	High	Low
Conventional	Moderate	Low	High

Sources: Alberta Treasury Board and Finance and Desjardins, Economic Studies

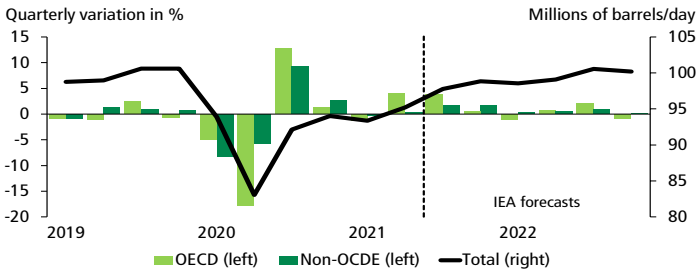
(NRCan) has invested C\$83M since 2011 through its various green funding funds to support the industry's decarbonization efforts. The value of projects in which NRCan is involved totals C\$230M.¹ Second, the industry is gradually modifying the structure of its production chain to promote cogeneration and electrification of its facilities. This involves using the heat waste during production to generate electricity and using electricity from clean sources or cogeneration to run facilities, with the aim of reducing the carbon footprint.

Economic Outlook for the Industry

Although the International Energy Agency (IEA) predicts that global oil demand will continue to grow in 2022 (graph 14 on page 6), the gradual transition from fossil fuels to renewable energies could limit the potential for growth in demand in subsequent years, especially in advanced economies. In its reference scenario for Canada based solely on public policies already in place, the CER foresees slight growth of 5% in oil and natural gas demand by 2030. However, in its scenario where the

¹ Includes projects and technologies on carbon capture, use and storage, the reduction of methane and volatile organic compound emissions, and unconventional oil.

GRAPH 14
Growth in global demand for oil in 2022



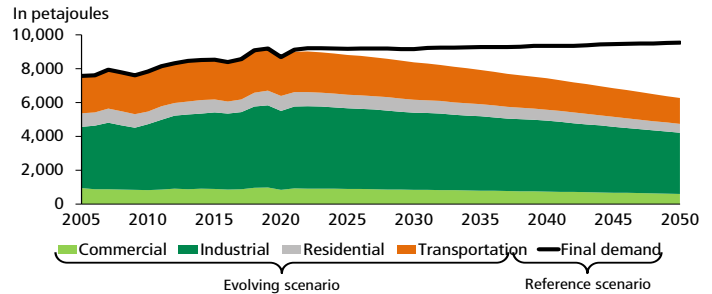
IEA: International Energy Agency; OECD: Organisation for Economic Co-operation and Development
Sources: IEA and Desjardins, Economic Studies

energy transition accelerates, the demand falls 3% by 2030, due notably to the electrification of transport networks (graph 15). In the United States, the U.S. Energy Information Administration (EIA) predicts that U.S. the demand for oil and natural gas will grow by a little under 10% by 2026, then plateau until the early 2030s (graph 16). This is due to improved energy efficiency, leading to better performance while using less fuel, as well as the gradual electrification, especially in the residential and transport sectors. Growth in the coming years will come from the expansion of the industrial sector that will be greater than the gains in energy efficiency. It should also be noted that this scenario does not include the ambitious green investment plan proposed by the Biden administration. Joe Biden’s presidency contrasts with Donald Trump’s, considered to be more pro-oil, and a acceleration of the decarbonization efforts could further limit U.S. demand. Nevertheless, North American energy needs remain high in all these scenarios and should therefore continue to be a major pillar of Canada’s oil industry, without necessarily being an engine of growth.

Although the outlook for North American demand is uncertain, the outlooks of emerging economies are more favourable. The IEA predicts that India’s and China’s consumption will be the main driver of growth in global demand. Also, the inflexion point of their demand is unclear. The Chinese government estimates its to be around 2026, but it would more likely be beyond 2030. The outlook is similar for India. Again, the speed of the energy transition will be a determining factor in the change in their respective demand.

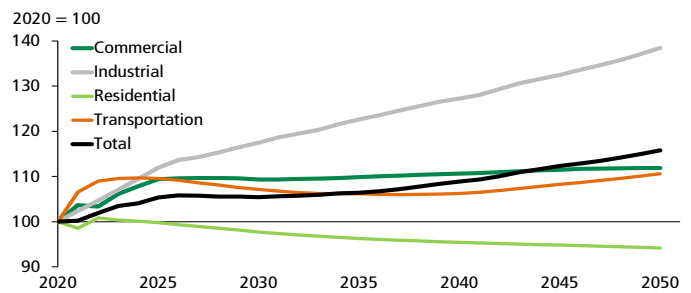
The CER therefore predicts that Canada’s oil production will advance 25% in the reference scenario and 13% in the evolving scenario (graph 17). In both cases, the majority of the growth would come from the oil sands. However, this increase depends on greater pipeline network capacity. At the time of writing, only two major projects were under construction, namely TMX, which is slated for 2022 and would add 0.54 mbd, and Enbridge Line 3, which is slated for late 2021 and would add 0.33 mbd. As previously mentioned, Keystone XL was cancelled, preventing

GRAPH 15
An uncertain future for final demand for Canadian oil and natural gas



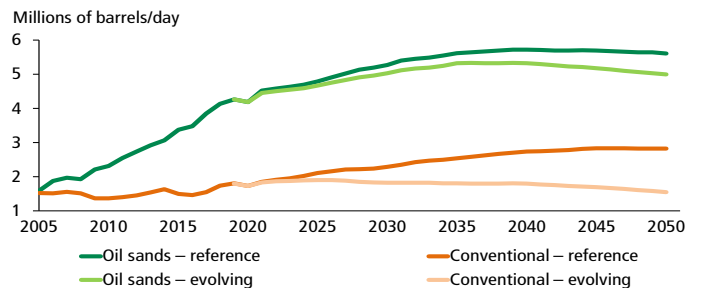
Sources: Canada Energy Regulator and Desjardins, Economic Studies

GRAPH 16
Moderate growth in U.S. demand for oil and natural gas in the reference scenario



Sources: U.S. Energy Information Administration and Desjardins, Economic Studies

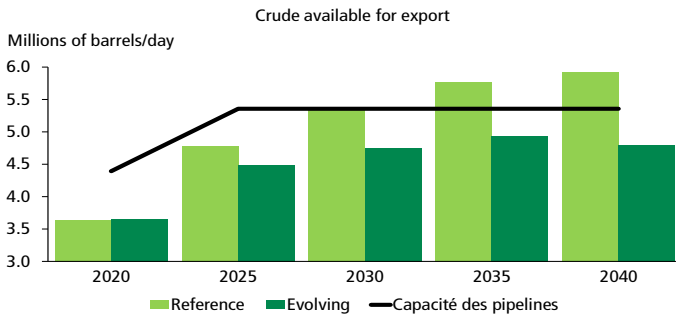
GRAPH 17
Canadian crude production growth under both scenarios



Sources: Canada Energy Regulator and Desjardins, Economic Studies

the potential addition of 0.83 mbd. The pipeline network could therefore reach full capacity in 2032 in the reference scenario (graph 18 on page 7). Moreover, the transport capacity of other pipelines is maintained constant in these forecasts, not taking into account the maintenance, replacement and ageing of existing lines. The development of the transport network will thus be decisive in the Canadian industry’s capacity to exploit

GRAPH 18
The pipeline network could reach full capacity in the event of rapid production growth



Sources: Canada Energy Regulator and Desjardins, Economic Studies

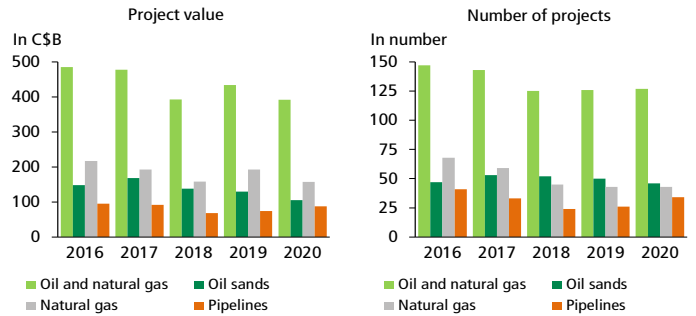
the Asian market. For the time being, the transport issues are preventing the surge of exports to this continent. Many pipeline projects are nevertheless already under development. In 2020, NRCan identified 127 planned projects or under construction, representing approximately C\$392B for the 2021–2030 horizon (graph 19). Although many sectors show declines for 2020 because of this atypical year, an increase has been noted in the number and value of pipeline projects. However, the fallout from the cancellation of the Keystone XL will have to be watched for 2021.

Canadian producers will also need to modernizing their equipment and facilities to significantly reduce their greenhouse gas emissions. Although progress has already been made in this regard (graph 20), the industry will have to step up its efforts and investments to further reduce its emissions. These reductions will, first and foremost, help combat global warming and also make Canadian oil a premier resource on the market. More and more consumers, governments and companies include environmental consequences in their consumption and investment decisions. Cleaner and more responsible oil would become an asset, if not a necessity, for the development of this industry. Moreover, the industry will have to keep its production costs low to offset the rising costs associated with environmental protection and the probable withdrawal of government subsidies, those not in line with decarbonization objectives. Other factors could put upward pressure on production costs, such as the rise in natural gas prices, if it proves to be long-lasting, as this resource is a major input for in situ production.

In conclusion: the industry will need to find a way to be part of the solution

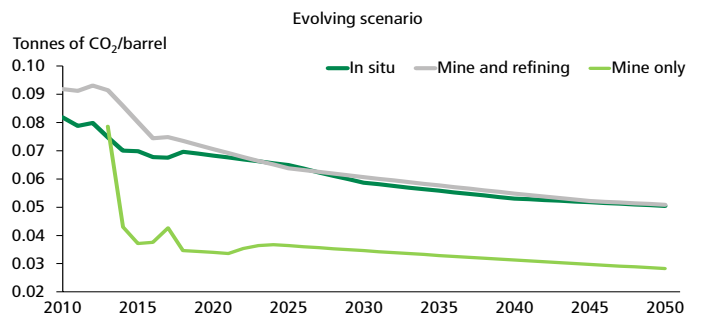
In this *Economic Viewpoint*, we have reviewed the shocks that have hit the Canadian energy industry, and the way producers have responded. What emerges is that the painful episode of the

GRAPH 19
Increase in pipeline projects in 2020



Sources: Natural Resources Canada and Desjardins, Economic Studies

GRAPH 20
Further reductions will be required to achieve carbon neutrality



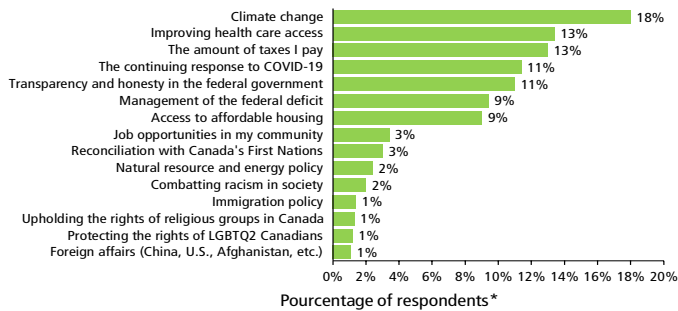
Sources: Régie de l'énergie du Canada and Desjardins, Economic Studies

2014-2016 oil shock forced the industry to generate efficiencies so that it could be profitable even with WTI prices around US\$50 to US\$60 per barrel. This has allowed the Canadian oil sector to better weather the pandemic shock, even though significant losses were incurred in the early months of the pandemic. The recovery in prices, productivity gains and a better financial situation put the sector in good shape currently. However, logistical and climatic challenges remain. As we discussed in [Economic Viewpoint](#) a few years ago, the social cost of carbon tends to increase over time. A recent [IEA study](#) stated that one way to achieve the goal of zero net greenhouse gas emissions by 2050 (as per the 2015 Paris Agreement) would be to stop all new oil and gas exploration now. How realistic that scenario is has been up to debate, especially since there is a long way to go before renewable energies are able to take over, either at the production or the consumption level². However, the fact remains that the development of fossil fuels is becoming less and less

² Goldman Sachs recently estimated the amount of annual investment needed to reach the net zero goal at US \$ 6,000 billion.

socially acceptable. During the last federal campaign in Canada, climate change was the most important issue for voters (graph 21). Moreover, large investors such as pension funds and private equity investors are increasingly turning their backs on the sector. In this context, the future of the sector no longer depends solely on its productivity but, crucially, on its ability to be part of the climate solution, and to adjust to a policy, regulatory and financial environment that will remain highly uncertain.

GRAPH 21
The most important issue for Canadians in the last federal election



* 1 692 respondents.

Sources: Angus Reid Institute and Desjardins, Economic Studies