

Canada at a crossroads in its future hydrocarbon output

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These are challenging times for oil and gas producers worldwide, and Canada is no exception. The country ranks sixth worldwide in terms of oil production and third in terms of reserves. For natural gas, Canada is third in terms of production and 18th for reserves. Despite these vast endowments, the future of Canadian oil and gas production has become less certain in recent years. Historically, Canada has been a net exporter of both products, primarily to the United States. The shale revolution has resulted in a resurgence in US production, creating a competitor out of a former customer. This has compounded market access constraints.

In the case of oil, there is a sole pipeline to Canada's West Coast; all others send Canadian product south to the US. The majority of these pipelines are at capacity, resulting in a switch to rail. Current low oil prices have squeezed Canadian producers even further.

In the case of natural gas, Canada lacks export facilities beyond pipelines to the US. A steady decline in exports to the US has prompted a search for other markets. And while there has been substantial interest in building LNG export terminals on both West and East coasts, projects have been slow to move beyond the planning stage. Some projects have

even been put on hold due to worsening market conditions. What's worse, these physical and market challenges are not the end of the story.

Energy is a controversial topic in Canada these days. Support for the continued development of Canada's hydrocarbon resources is not universal. In particular, energy infrastructure such as pipelines and LNG export facilities have become lightning rods in the discussion around what the future of energy use should look like. As stated above, access to other markets has been stymied by a lack of export infrastructure and challenging market conditions. Given all this, the future of oil and gas development certainly seems bleak. But is it?

Energy use underpins our economy and our society. There is a clear positive correlation between energy use and economic activity. Even the most stringent International Energy Agency scenario – assuming the world meets commitments to keep global warming to no more than two degrees Celsius – projects substantial and continued use of oil, coal and natural gas. There is a continued future for fossil fuels, particularly for natural gas.

The question becomes, then, who will continue to produce hydrocarbons, and will Canada be one of them? Canada has the benefit of stable governments, robust institutions, and in

Figure 1: Canadian Natural Gas Production and Exports (2010-2040)

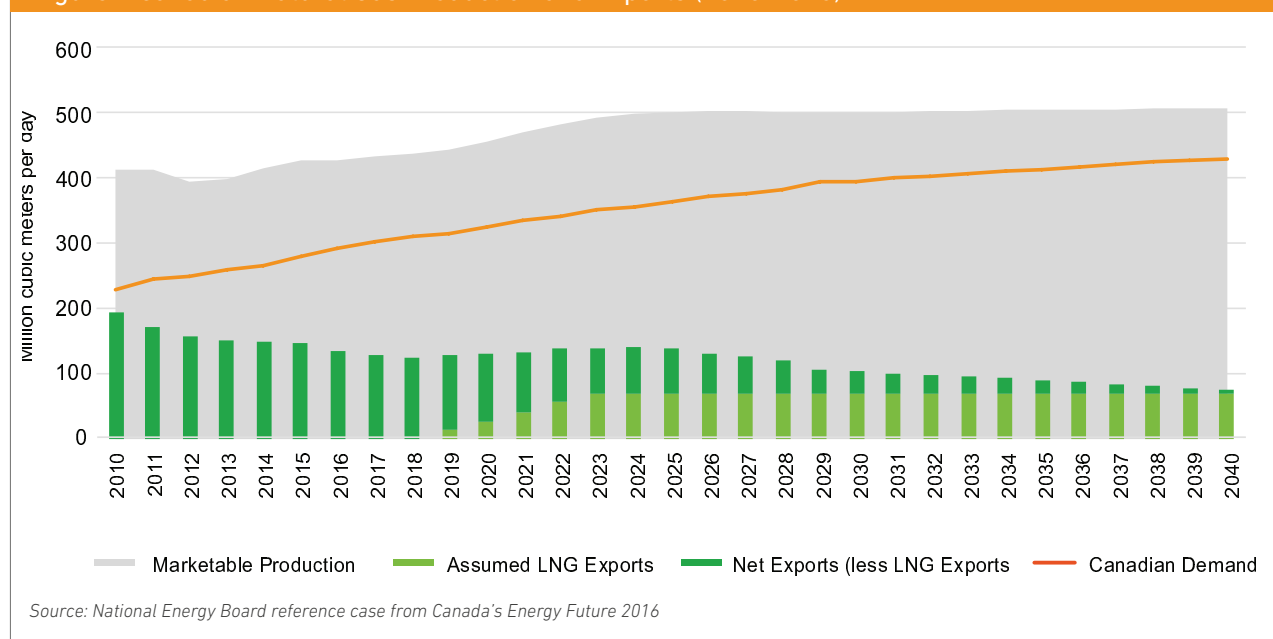
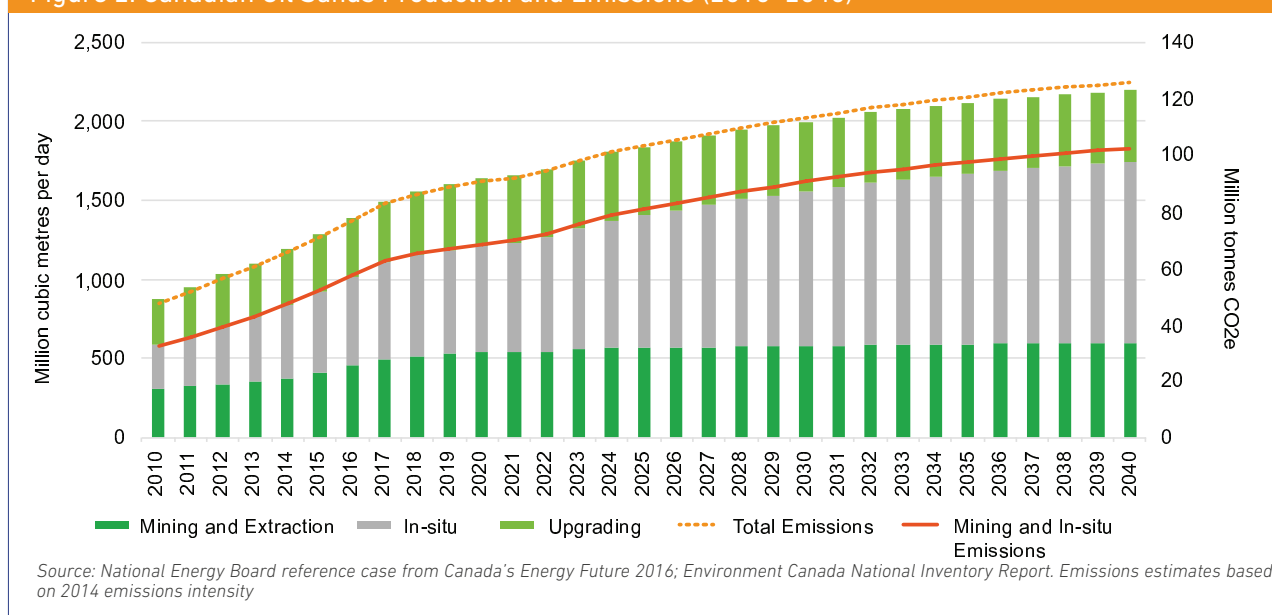




Figure 2: Canadian Oil Sands Production and Emissions (2010–2040)



general, stable policies. But Canada is also limited by a lack of current export infrastructure, and in the case of oil, is on the high end of the cost curve. At least one oil sands operator is musing publicly about 'high-grading' – optimising output to achieve the highest quality rather than the maximum quantity. Low oil prices have substantially reduced investment in the oil sands. Prices will need to recover to above US\$70 per barrel, and look set to stay there for a long time, before the oil sands become an attractive investment again. And even then, when comparing a long-term oil sands project to quicker payoff shale plays, investors may choose a quicker-payoff.

The future of natural gas production is also uncertain. While Canadian producers are more than capable of supplying domestic demand, increased production from the Marcellus and Utica has priced Western Canadian gas out of Eastern Canada. As shown in Figure 1, exports after 2028 are primarily from LNG from Canada's west coast. The current supply glut in international LNG markets, combined with low oil prices, has placed Canadian greenfield projects at a disadvantage. While there is still potential for exports, this is most likely to occur after 2020, and perhaps even 2025.

Canadian politicians have been very active on the environmental side, adding to costs relative to other major

producing jurisdictions. In 2007, Alberta introduced a price on emissions for large emitters, and in 2017 will introduce a broad, economy-wide carbon tax. In 2008, British Columbia introduced an economy-wide tax on combustion emissions. Quebec implemented a cap and trade system in 2013, and joined it to California's emissions trading scheme in 2014. Most recently, Ontario has announced it will join the Quebec-California cap and trade system. Also significant is the federal government's renewed commitment to climate policy: at last year's Paris climate summit, Prime Minister Trudeau stated "Canada is back" and "here to help." Moreover, the federal government has indicated there will be a minimum carbon price in Canada by the end of 2018.

Most significant is Alberta's decision to implement a carbon tax, because it is the first major oil and gas-producing jurisdiction in North America to do so. Moreover, Premier Rachel Notley was joined by CEOs from major oil and gas companies (including the oil sands) as she made the announcement, indicating widespread industry support for the new policy. Premier Notley has promoted the carbon tax and other new policies as making Alberta "one of the world's most progressive and environmentally-responsible energy producers." The premier is a champion for market access as



well, showing that strong environmental policy can go hand in hand with energy (and economic) development.

Part of Alberta's new Climate Leadership Plan is a cap on total emissions from the oil sands, of 100 million tonnes (Mt) per year. However, this will not necessarily constrain production – Figure 2 shows oil sands production and emissions out to 2040. In 2014, total emissions from oil sands production were just under 48 Mt, and production plus upgrading emissions were 65.5 Mt. Average emissions were 46.3 kg of carbon dioxide equivalent (CO_{2e}) per barrel for mining, 65.2 kg of CO_{2e} per barrel for in situ, and 51.5 kg of CO_{2e} per barrel for upgrading. Based on 2014 average emissions intensities, oil sands emissions from production only exceed the 100 Mt limit in 2038. When upgrading is added, the limit is exceeded in 2024. If oil sands producers are able to reduce their emissions intensity – Alberta's new carbon tax only adds to current incentives to do so – then it is quite possible this cap will never bind in any real sense.

The future of Canadian oil and gas production

Canada has robust and responsible regulation of energy development, both federal and provincial. Despite this, energy development, and energy infrastructure in particular, is controversial. Oil pipelines are subject to the most –

often strident – debate, as communities across Canada protest that they bear the risk of spills but receive none of the benefit. This clash has been compounded by politicians making statements both for and against various pipeline projects, as it gives the appearance of politics affecting regulatory decision-making. Not only does this undermine the public's confidence in the regulatory systems, it also creates uncertainty.

This uncertainty has been detrimental to business investment, and certainly costly. This, combined with low oil and gas prices, makes the future less than rosy. However, Canadians still need and use energy, and at the very least there will be continued domestic demand. Producers would undoubtedly prefer to have export opportunities as well, but that will require Canadians to get over their inner (and largely hypocritical) angst over energy use and transportation.

Policy changes can, have and will add costs to energy production. The hope is that recent changes to environmental policy and regulatory policy (such as the current review of the National Energy Board's scope and mandate) will pave the way to a more constructive and less adversarial discussion about Canada's role as an energy producer and exporter. It is this, more than global prices, which will determine the direction of Canadian oil and gas production. ●

Canada lacks sufficient export outlets for its major energy resources such as these oil sands developments in northern Alberta

