



Media Briefing Paper

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Transition to nowhere: Liquefied Natural Gas

Liquefied Natural Gas (LNG) is lauded as a transitional fuel, a replacement to coal in a bid to reduce greenhouse gas (GHG) emissions that are heating and destabilizing the biosphere.

Speaking to an international audience at the opening of Gastech 2020 on September 7, Natural Resources Minister Seamus O'Regan [touted](#) Canadian LNG as sustainable and competitive. LNG is a gas, primarily composed of methane, that has been cooled down to liquid form for ease and safety of non-pressurized storage or transport.

The Canadian government has gone so far as to pursue a provision in the Paris climate accord to [gain emissions credits](#), claiming that LNG exports to Asian countries will help reduce air pollution there.

Unfortunately, these claims are backed by little substance.

LNG development will not only prevent Canada from meeting its Paris emission reduction targets, it may also be an economic non-starter. The decreased demand for fossil fuels that preceded the COVID-19 pandemic is due in part to cheaper clean energy alternatives that are on the rise.



Credit: Canaport LNG terminal in Saint John, NB.

LNG's Carbon Footprint

“Climate change is principally caused by extracting carbon from below ground and putting it into the atmosphere. That Canada is now trying to get emissions credit for digging even deeper into fossil fuel production is preposterous.”

[LNG's Big Lie](#), Marc Lee, Senior Economist at the CCPA's BC Office

Gas power plants emit [50 to 60 percent less carbon dioxide](#) than coal plants so, the argument goes, Canada has a golden opportunity to exploit this natural resource and help the world mitigate the climate crisis. However, this does not tell LNG's full story.

When emissions from the entire gas supply chain are factored in, including drilling, fracking, flaring, venting – and subsequent release of methane, a powerful GHG - and the liquefaction terminal itself, LNG’s carbon footprint grows substantially.



Credit: Hhakim/Istock.

[According to BC’s Greenhouse Gas Emissions Inventory](#), methane venting is responsible for about 20 percent of emissions from gas production. Methane has a global warming potential that is [86 times](#) that of CO₂ over a 20-year timeframe.

Hydraulic fracturing (fracking) also increases the risk of methane leakage. Fracking involves the injection of water, sand, and chemicals deep underground at high pressure to fracture rocks containing gas or oil. A [recent study](#) of BC’s active and abandoned gas wells revealed that “almost 11 percent of all oil and gas wells had a reported leak, together releasing 14,000 cubic metres of methane per day.”

[Research](#) published earlier this year in Nature finds that methane impacts from fossil fuel extraction have been underestimated by up to 40 percent and that industry plays a much larger role in methane’s atmospheric contributions than previously thought. [According to the IPCC in its 2013 Summary for Policy Makers](#), methane’s contribution has increased by at least 150 percent since the Industrial Revolution, although until recently, it was assumed that geological sources like wetlands and volcanos played a much larger role in these contributions.

To address these concerns, the federal government implemented new methane regulations on January 1, 2020 with a reduction target of 40 to 45 percent below the 2012 baseline level by 2025. However, current regulations will fall short in helping Canada reach its goal.

[The Pembina Institute writes](#): “Recent model results from the federal government, released in equivalency agreements with provinces, show that the federal methane regulations will only achieve a 29 percent reduction below the 2012 baseline level by 2025.”

Also, the new federal regulations exempt fractured gas well completion practices and reporting requirements in BC and Alberta because they are subject to provincial rules. According to a [2019 Scientific Review of Hydraulic Fracturing in British Columbia](#), regulations for fugitive methane emissions in BC are less stringent than federal regulations.

Transitional Fuel?

“The latest science from the Intergovernmental Panel on Climate Change (IPCC) indicates that we have to fundamentally shift our energy systems away from fossil fuels to stay within the limits set by the 2015 Paris Agreement. By 2030, global carbon emissions must be cut in half, compared to current levels, to be in range of limiting global warming to 1.5 degrees Celsius.”

From [Oil, Gas and the Climate: An Analysis of Oil and Gas Industry Plans for Expansion and Compatibility with Global Emission Limits](#), January 2019, Environmental Defense, et al

In the September 2020 Speech from the Throne, the Government of Canada said that it would immediately bring forward a plan to exceed Canada's goal of reducing emissions by 30 percent from 2005 levels by 2030 and legislate Canada's goal of net-zero emissions (minimal emissions plus atmospheric CO₂ removal) by 2050. Canada's 2030 target translates into a reduction of [513 Mt CO₂ eq.](#)

Analysis of Canada's [fair share](#) of preventing warming above 1.5°C shows that the country should reduce emissions by 60 percent from 2005 levels by 2030. While the government's promise to exceed its 2030 goal is welcome, it is challenged to meet even the weaker target, [acknowledging](#): "Between 1990 and 2018, emissions increased by 20.9 percent, or 126 Mt CO₂ eq. Canada's emissions growth over this period was driven primarily by increased emissions from mining and upstream oil and gas production as well as transport."

Specifically, from 2000 to 2017, emissions from oil and gas production in Canada rose by 23 percent due to a 46 percent increase in production, according to Natural Resources Canada's [Energy Fact Book 2019-2020](#).

Despite efforts to improve energy efficiency standards in the oil and gas sector, emissions grew due to increased production.

Unsurprisingly, in its [September 2020 report](#), Climate Action Tracker brands Canada's carbon reduction efforts "insufficient" and consistent with a 3.0°C world, with "little support" for green recovery measures to date.

Canada is home to approximately [200,000 fracked gas wells](#), located primarily in the west, and one operational import LNG terminal in Saint John. In a recent [report](#) for the Canadian Centre for Policy Alternatives, J. David Hughes, a renowned Canadian earth scientist, highlights why current gas development, particularly in BC, is undermining provincial plans to reduce emissions.

"Even without any LNG exports, and assuming a 15 per cent reduction in upstream emissions through reduced fugitive methane and electrification, emissions from oil and gas production alone would exceed BC's 2050 target by 54 per cent, given the CER [Canadian Energy Regulator] forecast—and that is if all other sectors of BC's economy reached zero emissions by 2042."

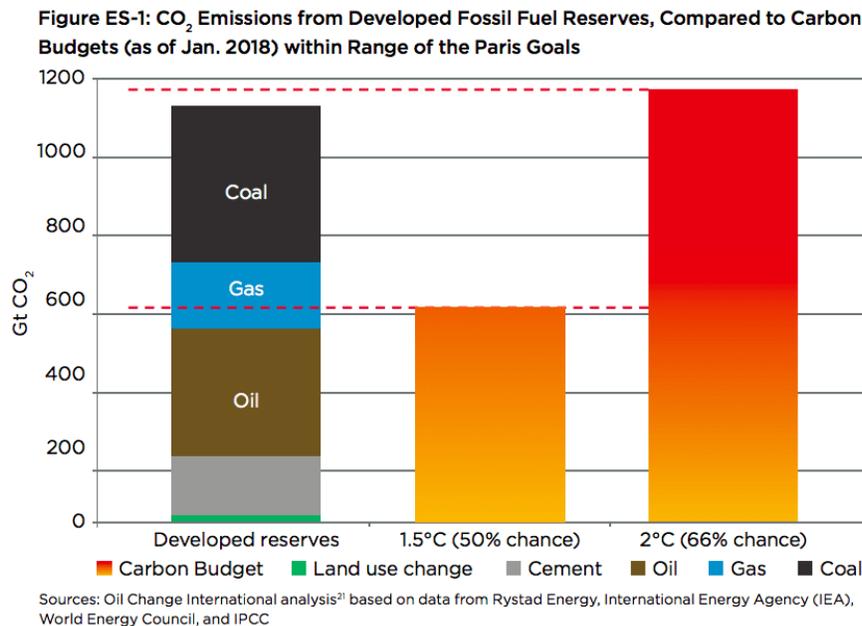
At a time when domestic gas is poised to undermine emissions reduction targets, the federal government [is considering](#) the development of 18 LNG export facilities, 13 in BC alone, which if built would represent an annual capacity of 216 million tons. All this, according to government and industry spokespeople, to help Asian nations reduce their GHG emissions.

Hughes’ analysis refutes the claim that BC LNG will help Asian nations reduce emissions, citing that China is the world’s largest installer of renewable energy, is creating high efficiency coal plants, and is importing gas from Russia.

In its World Energy Outlook Special Report, the International Energy Agency [observes](#): “Potential savings of around 100 Mt CO₂ from switching [from coal to gas] are small, relative to China’s overall power sector emissions of 4,500 Mt CO₂.”

[According](#) to Hughes, LNG exports from BC alone, when factoring in methane leakage, “will increase emissions compared with best-technology coal in China by up to 18 per cent over the next few decades, which is a very critical period in addressing the global warming problem.”

If all global fossil fuel reserves that are currently operating or under construction are consumed, the world will exceed 1.5°C of warming, the target set by the IPCC to stop catastrophic climate change. Efforts must be underway to scale down production of existing reserves, and any new projects must be off the table. This graphic from Oil Change International illustrates this point.



According to a [September 2016 study by Oil Change International](#), 85 percent of known reserves of oil, gas and coal must remain in the ground to have a 50 percent chance of limiting global warming to 1.5°C. The study concludes that “no new oil fields, gas fields, or coal mines should be developed anywhere in the world.”

BC is [projected](#) to provide most of the growth in Canadian gas production through 2040.

“The industry and government narrative that BC LNG will contribute to a reduction in global emissions by displacing coal-fired electricity in China and elsewhere in Asia lacks credibility if a proper accounting of emissions is undertaken.”

J. David Hughes, earth scientist, president of Global Sustainability Research, and formerly with the Geological Survey of Canada

What about Carbon Capture and Storage?

Canadian governments and industry pursue LNG development, claiming that carbon capture and sequestration (CCS) will reduce its carbon footprint.

[Current CCS technology](#) is designed to separate CO₂ from other gases produced at downstream facilities such as coal and natural gas power plants, oil and gas refineries, steel mills and cement plants and store them underground in large geological formations. How CCS will resolve methane leakage during upstream operations remains to be seen.

Scientists Kevin Anderson and Glen Peters question CCS as a serious solution to fossil fuels’ carbon problem.

“Two decades of research and pilot plants have struggled to demonstrate the technical and economic viability of power generation with CCS, even when combusting relatively homogenous fossil fuels,” they write in an [article for Science Magazine](#).

Desmogblog, in its review of CCS [concludes](#): “due to factors such as cost and scalability, there are not many large scale carbon capture and storage plants in operation worldwide. The reality of CCS does not match up with the expectations of the technology, and as a result, has not been widely adopted.”

Indeed, [according to OilChange International](#): “Given most of the few CCS pilot projects to date have proved more costly and less effective than hoped, many analysts now consider that wind and solar power, which are proven technologies, are likely to remain cheaper than CCS, even if CCS technology improves.”

Regardless of the commercial viability of CCS, which is certainly questionable, CCS should certainly not be a green light for Canada to ramp up gas development when the focus must be on developing and deploying carbon-free energy.

Economics

The case for gas assumes that it is the only affordable option to replace coal on a large scale in the short term. This argument is used to support the development of LNG export terminals in Canada to supply Asian markets, especially China. However, a recent report by the Institute for Energy Economics and Financial Analysis [reveals](#) that a substantial increase in global export capacity is outpacing demand.

The COVID-19 pandemic has caused further and significant decreases in global demand for gas due to lockdown measures and economic downturn. The International Energy Agency [expects](#) that the pandemic will have long-lasting impacts on the gas market, echoed by the Global Energy Monitor in a [recent report](#).

[According to the IEEFA](#), gas is not competitive with coal in China unless the price is below US\$4 per million BTU, which is well below the [US\\$8.35/mmBTU](#) cost of producing and shipping Canadian LNG to China.

“New coal capacity in China uses ultralow emission plants, and that is what Canadian LNG must compete against both financially and in terms of any emissions-reduction benefits,” writes Hughes.

Furthermore, wind and solar [are now](#) the cheapest forms of bulk energy supply in most major markets and are only going to improve with increasing economies of scale.

Health Impacts

The World Health Organization [calls](#) the climate crisis the biggest health threat of our time. Fracking poses additional environmental and health risks.

The Canadian Association of Physicians for the Environment (CAPE) [reports](#) that 84 percent of public health studies on fracking find evidence of hazard, risk, or adverse outcomes. In Canada, an estimated [80 percent of gas wells are fracked](#).



Credit: Mladen Antonov/AFP/Getty Images.

Fracking [uses](#) high quantities of freshwater, between five and 100 million liters of water in BC alone. This level of water use can adversely impact water flow, wildlife, and drinking water. In addition, fracking wells generate anywhere from 10 and 25 thousand cubic meters of wastewater containing chemicals, heavy metals and carcinogens, according to Andrew Nikiforuk, in Wendy Holm’s book, [Damming the Peace: the hidden costs of the Cite C Dam](#).

Surface, below surface and groundwater (aquifers) all risk contamination related to the construction of fracking wells, management of wastewater, and from abandoned and orphan wells, [according to the CAPE](#). Oil and gas operations are sources of nitrogen oxides and volatile organic compounds, which are precursors to ground-level ozone. Fracking wells are also a source of toxic chemicals, such as radon, hydrocarbons, benzene and heavy metals. Negative health outcomes have been recorded in communities living near fracking well operations, including birth defects, cancer, cardiovascular diseases, respiratory illnesses, and more, according to CAPE.

Indigenous Rights

“It is our responsibility to protect Mother Earth, to protect the land for non-natives too. My people are speaking up for everyone.”

Susan Levi-Peters, former Chief at Elsipogtog. From: [New Brunswick fracking protests are the frontline of a democratic fight](#), (2013) The Guardian

Gas development projects, including fracking, pipelines and export terminals have been initiated on the traditional territories of Indigenous peoples in New Brunswick, BC and in other jurisdictions often without their free, prior and informed consent (FPIC) as required by the *UN Declaration on the Rights of Indigenous Peoples (UNDRIP)* and Section 35 of the Canadian Constitution. In the 2020 Throne Speech, Canada promised to introduce legislation to implement *UNDRIP* by the end of 2020. Canada’s current approach to extraction projects, including LNG, does not support *UNDRIP*, FPIC and this federal promise.

The Canadian Energy Research Institute [highlights](#) potential adverse and cumulative effects of LNG projects on Indigenous peoples, including “effects to the environment on health and socio-economic conditions; physical and cultural heritage; the current use of lands and resources for traditional purposes; and structures or sites that are of historical or archeological significance.”

The current push by provincial and federal governments to build energy infrastructure without FPIC erodes attempts at reconciliation and violates Indigenous peoples’ rights to self-governance and self-determination.

“There is no free lunch when it comes to developing energy resources. The Blueberry River First Nation, whose lands overlie much of the BC Montney deposit (which will be the source of most of the LNG exports), has already filed lawsuits about the size of the existing oil and gas industry footprint.”

J. David Hughes

In Conclusion

The next ten years are critical in keeping global warming below a rise of 1.5 degrees Celsius. Canada has a history of sailing past its emissions targets. Plans to ramp up LNG to help overseas countries reduce GHG will only guarantee future missed targets and broken promises, without offering a credible solution to help reduce global emissions.

Canada’s wishful thinking regarding LNG exports may also be moot now that large emitters like China have access to more affordable options to reduce emissions.

As renewable energy alternatives, such as wind and solar, are more affordable than LNG, why is LNG promoted as a transitional fuel to cleaner forms of energy? The renewable energy age is upon us. The future is here. It is high time that Canada catches up to it.

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