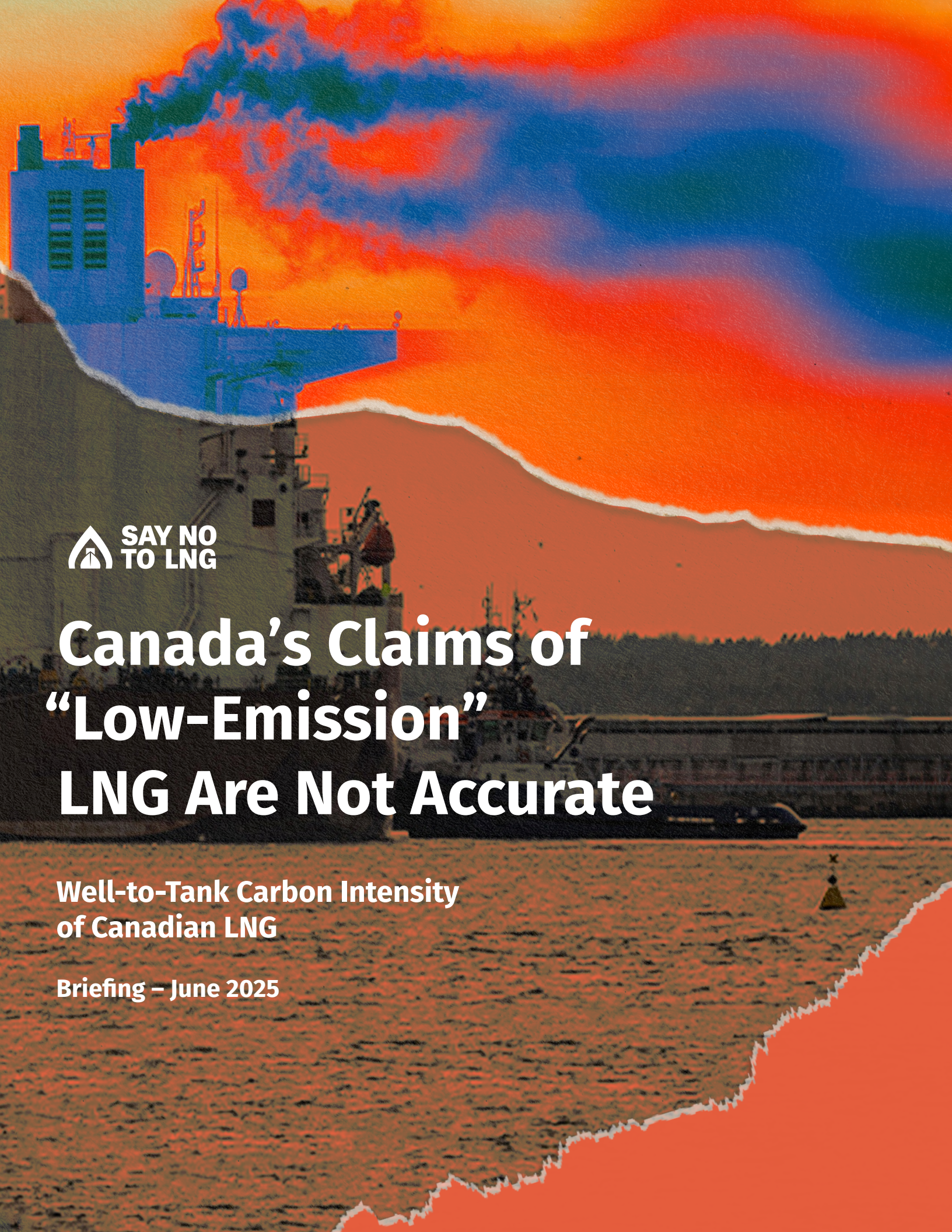


SAY NO TO LNG

Canada's Claims of "Low-Emission" LNG Are Not Accurate

Well-to-Tank Carbon Intensity of Canadian LNG

Briefing – June 2025

Key Findings and Conclusions

- Canada's methane emissions for oil and gas activities reported in the Greenhouse Gas Reporting Program are 54% lower than satellite measurements.
- Projected Canadian methane emissions from liquefaction (3.48gCO_2e/MJ) are inconsistent with those reported by the US (12.55 gCO_2e/MJ) and other nations. Due to the absence of large-scale LNG facilities in Canada as of early 2025, Canadian estimates are mostly based on proposed low-carbon scenarios and not real world projections.
- Well-to-tank emissions (production, extraction, liquefaction, and transport) of Canadian LNG (28.58 gCO_2e/MJ, AR5 GWP_{100}) are roughly the same as the average (e.g., 20.22 gCO_2e/MJ, AR5 GWP_{100}) for EU Imports (Russia, Algeria, US, Nigeria, Qatar, UK, Trinidad and Tobago, Norway).
- Canadian LNG emissions projections are contingent on facilities powered by renewable electricity.
- Exporting Canadian LNG could significantly raise the fuel's overall emissions, largely due to methane leaks during LNG tanker transport. Around 90% of the global LNG shipping fleet use low pressure dual fuel engines which produce 10 to 45x the amount of methane slip compared to readily available high pressure engines.

Canada's Aims for Low-Emission LNG

Liquefied natural gas (LNG) has been proposed as an alternative marine fuel for the energy transition, but is nearly all methane (CH_4), a more potent greenhouse gas (GHG) than carbon dioxide (CO_2). Methane is 28 times more powerful than CO_2 at trapping heat on 100-year period (also known as Global Warming Potential, or GWP_{100}), and 80 times more powerful on 20-year period (GWP_{20}).[1]

Methane emissions occur throughout the LNG life cycle, including production and extraction (fracking), liquefaction (turning methane gas into liquid), transport, storage, and combustion (as a fuel for vessels or elsewhere). A critical source of life cycle methane emissions is its leakage directly to the atmosphere, known as methane slip.

In recent years, the Canadian government has supported a significant expansion in LNG export capacity[2] despite Canadian commitments to reduce GHGs[3] (including emissions of methane as a Global Methane Pledge champion)[4]. As a result, British Columbia (BC) now has six LNG projects in development, all of which have long-term (25-40 years) export licenses.[5]

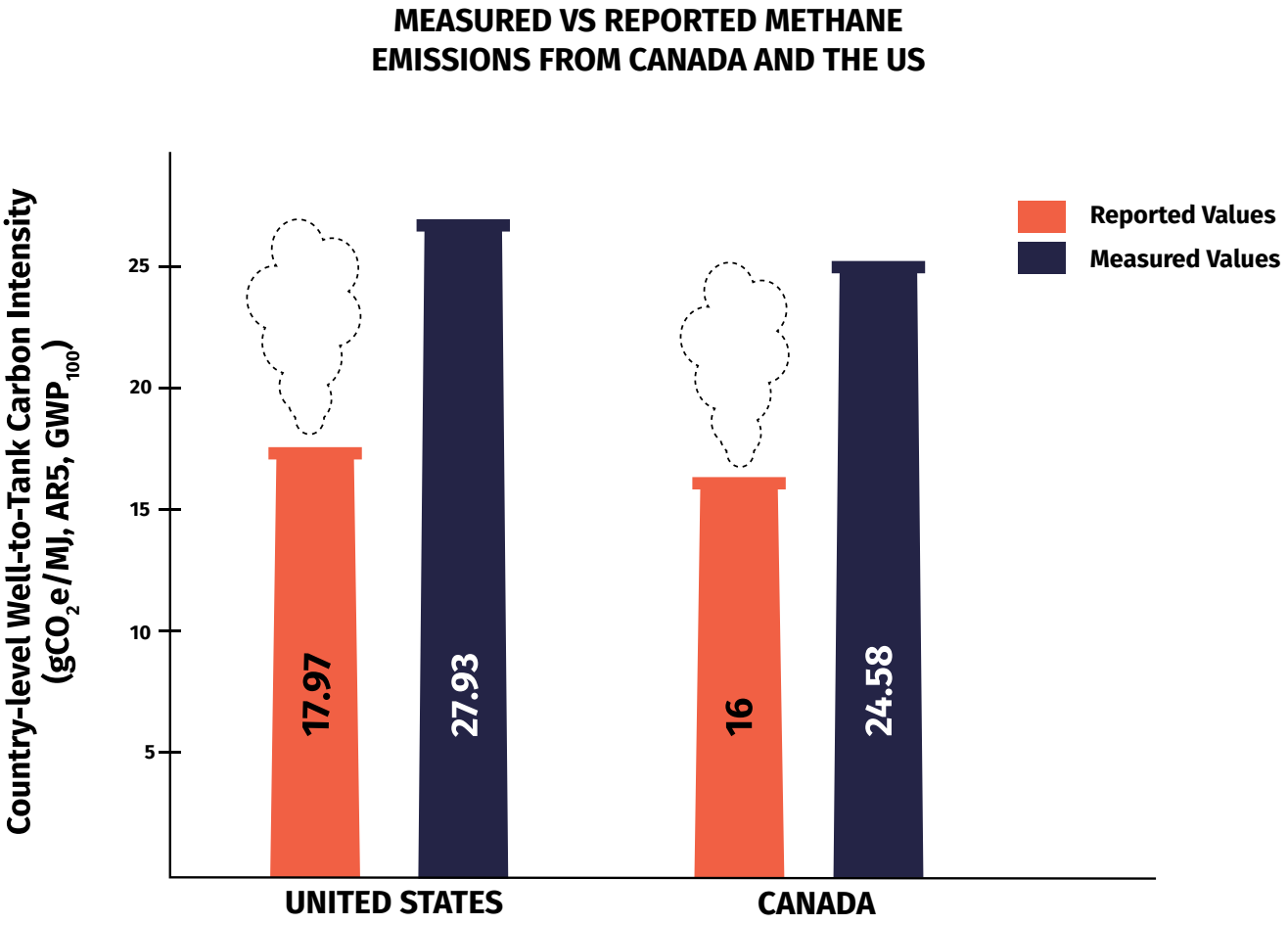
Federal government support for this export expansion has always relied on proving LNG to be a low emission option[6] compared to coal and other sources of LNG outside of Canada, which would feed mainly energy demand in Asia.

To fact check this approach, the Say No to LNG Campaign commissioned Energy and Environmental Research Associates (EERA) to assess the average of all associated GHG emissions, also known as well-to-tank (WtT), of Canadian-produced natural gas (NG) and LNG—including production and extraction, liquefaction, and transport—and determine whether Canada can truly be a low-emission choice for LNG in the global and maritime climate context. The full report can be accessed here.

1 IPCC. (2021). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp. doi:10.1017/9781009157896
2 https://natural-resources.canada.ca/energy-sources/fossil-fuels/canadian-liquified-natural-gas-projects
3 https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html
4 https://www.globalmethanepledge.org/#pledges
5 https://natural-resources.canada.ca/energy-sources/fossil-fuels/canadian-liquified-natural-gas-projects
6 https://thenarwhal.ca/lng-climate-emissions-exports/

Canadian LNG Emissions Are Average or Worse, and Definitely Nothing Special

Canada is mandated to track and report GHG emissions from large industrial facilities through its Greenhouse Gas Reporting Program (GHGRP)[7], which relies on industry self reporting. However, real time satellite measurements of methane emissions for the Canadian oil and gas sector taken by the Tropospheric Monitoring Instrument (TROPOMI), are substantially higher than those self reported by industry. While global governments are underreporting methane emissions by about 30%[8], analysis of publicly available data and satellite measurements indicate that Canada is worse, underreporting methane emissions by 54%.



7 https://open.canada.ca/data/en/dataset/a8ba14b7-7f23-462a-bdbb-83b0ef629823
8 https://www.transportenvironment.org/uploads/files/WTT_CO2e_LNG_Imports_TE.pdf.

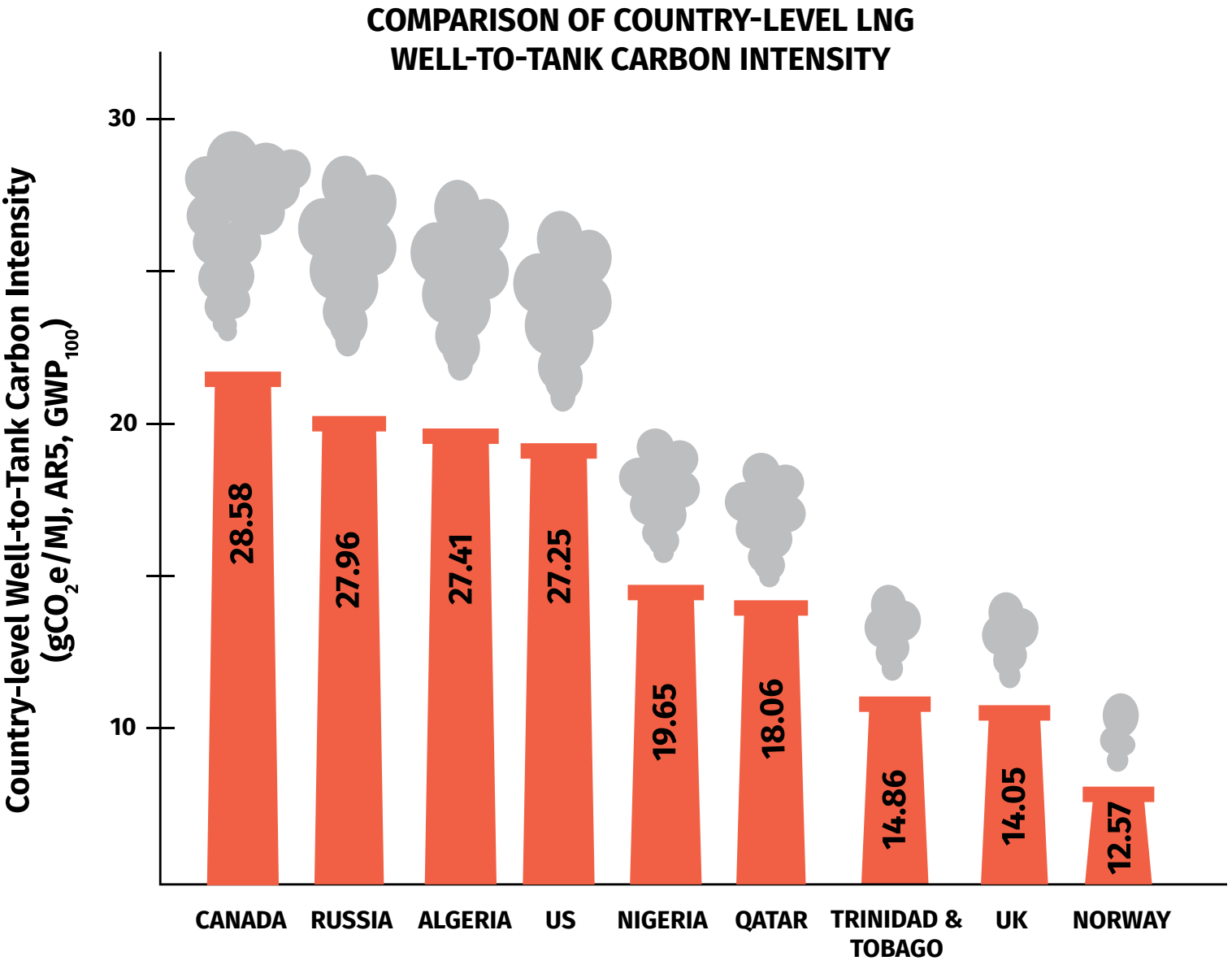
Because Canada has no LNG export facilities to-date, methane emissions for Canadian LNG are projections, rather than measured real world values. For liquefaction—an emissions-intensive stage of the LNG chain—forecasted average Canadian methane emissions (3.48 gCO_2e/MJ) are far lower than those observed in the US (12.55 gCO_2e/MJ). Although lower-than-average methane emissions from liquefaction may be expected for Canada under low-carbon scenarios (with facilities powered by renewable electricity), some forecasts, such as for the new Ksi Lisims facility (0.43 gCO_2e/MJ) are an order of magnitude lower, which raises questions about their real world validity. For instance, if all six of the planned LNG facilities were built in BC, they would consume about 43 terawatt-hours of electricity annually—equivalent to 69% of BC's total electricity demand in 2022, or more than the output of eight Site C dams combined.

Nonetheless, these projections of low-carbon scenarios fail to account for limited transmission capacity and long upgrade timelines. Proposed LNG projects are at risk of relying on natural gas-powered electricity instead of discussed hydropower or renewable sources, as the combined electricity demand of all proposed LNG[9] facilities far exceed the current supply.

Assessment of the full WtT LNG value chain shows that methane emissions from Canadian LNG (28.58 gCO_2e/MJ, AR5 GWP_{100} are roughly equal to emissions from the average nation (e.g., 20.22 gCO_2e/MJ, AR5 GWP_{100} for EU Imports).[10]

9 https://cleanenergycanada.org/expanding-b-c-lng-involves-risky-trade-offs-for-provinces-electricity-system-economy-and-climate-goals-report/#:~:text=If%20all%20six%20LNG%20facilities%20were%20to,from%20more%20than%20eight%20Site%20C%20dams

10 Though GWP_{20} more clearly demonstrates the climate impacts of methane, the literature analyzed in this study did not calculate emissions using IPCC Assessment Report 6 (AR6) GWP_{20} factors, and did not provide enough information to convert from AR6 GWP_{100} to GWP_{20}, so AR6 GWP_{100} emissions intensities were used.



Transporting Canadian LNG for export could further increase the fuel's overall emissions profile, especially due to significant methane leaks. Analysis of the global LNG tanker fleet shows that around 90% of the LNG carrying capacity uses engine types that are known to leak unburned methane during operation. Emissions from those engines can be more than 45x higher than other engine types. This means that much of the LNG being transported could release high levels of methane pollution in addition to emissions of CO_2 from combustion. To accurately assess the full lifecycle emissions of LNG, it's essential to account for the type of engine used during transport and the leaks associated with it.

Conclusion and Recommendations

Despite projecting low-carbon scenarios for its LNG facilities, Canadian LNG is no cleaner than LNG from other nations. Furthermore, recent political developments in BC[11] have reversed requirements for low-carbon LNG facilities, meaning Canadian LNG could be even worse than average once export operations commence due to non-renewable sources of electricity being used during production.

LNG is not a solution in spite of government and industry claims about its climate benefits, and Canadian-produced LNG will not solve this issue—it may even make it worse.

Recommendations:

- **Support realistic emissions accounting** by backing default emissions factors based on actual measurement data.
- **Acknowledge the full scope of methane's impact**, including short-term warming on a 20 year time scale and health risks.
- **Oppose any policy that allows LNG to generate carbon credits**, especially if those credits can be sold or traded. LNG should not be rewarded under any carbon pricing scheme.
- **Continue to champion a Just and Equitable Transition**—one that respects Indigenous Rights, and prioritizes clean energy, community well-being, and sustainable development.
- **Lock out LNG and other methane based marine fuels** from the development and implementation of Canada's Clean Transportation Strategy and Taxonomy.

11 https://www.biv.com/news/bc-weakens-net-zero-emissions-policy-for-new-lng-terminals-10475477

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