CGA By the Numbers:
LNG and Canada’s Opportunity to Address Global Energy Security

This issue of the Canadian Gas Association’s By the Numbers comes at a time when global energy security is at the forefront of energy deliberations around the world. We examine key natural gas trends in Europe and examine the North American LNG market and how the latter, and particularly Canada, can help bolster global energy security.

The key findings are as follows:

1. The EU is one of the largest global energy markets, using 10% of the global natural gas demand in 2020. To meet demand, the region relies heavily on Russia which supplied nearly 45% of all imports into the EU between 2019 and 2021.

2. The United States has seen tremendous growth in LNG production over the last decade and continues to see more. In 2021, the US exported a record 4,000 PJ of LNG, mostly to markets in Asia and Europe. This is equivalent to 26% of the EU’s total gas consumption and 30% of the EU’s total of gas imports.

3. While there is enormous export potential, Canada has been much slower than the US in developing LNG projects for export. Market conditions and concerns about energy security — especially for Europe — have created a new sense of urgency about project development in Canada. Efficient regulatory and approval processes could allow the country to unleash enormous clean energy exports and permit Canada to become a key long-term supplier of LNG to Europe within the next five to seven years.

Surging prices, supply constraints and rolling blackouts are increasingly common realities in many energy markets around the world, as the emissions reduction agenda runs face first into the reality of growing global energy needs. The challenges have been compounded by rapid economic rebounds post-COVID and most recently by the massive shock to energy security triggered by Russia’s invasion of Ukraine. That shock is felt around the world, but most particularly in Europe, where countries are now scrambling to find ways to reduce their dependence on Russian supply. In 2020, the EU produced less than 6,000 PJ of natural gas, equivalent to about 4% of the total global production. In contrast, the EU consumed nearly 14,000 PJ of natural gas in 2020, equal to about 10% of total demand. The region relies heavily on imports to make up the gap. The graph below illustrates the supply breakdown and demand for natural gas in the European Union between 2019 and 2021. As it illustrates, 87% of natural gas supplied to the European Union was imported, equal to almost 13,000 PJ. In contrast, only 13% of its supply came from domestic production.

When we break down the EU’s natural gas imports by country, it reveals how dependent the region is on Russian gas. Between 2019 and 2021, nearly 45% of the EU’s total imports came from Russia. Norway (23%), Qatar (5%), Algeria (5%), and Tunisia (4%) round out the rest of the top five importers to the region. In contrast, the United States only contributed to 3% of the EU’s imports — and Canada contributed nothing. Given such a high dependency, how will the EU navigate a phase-out of Russian oil and gas? Furthermore, is there a role that Canada can play in supporting Europe’s energy problems?

LNG from North America can play a significant role in reducing Europe’s dependency on Russia. However, Canada does not currently have the infrastructure to export LNG directly to help. To date, only one LNG export terminal has been approved in Canada, despite a flurry of project proposals in the last decade. That project — LNG Canada — is currently under construction in Kitimat, British Columbia. Canada is a significant exporter of natural gas, but this is by pipeline, and to the United States. In the short term, Canada can offer indirect support to Europe by exporting more gas to the U.S. which in turn permits Americans with a greater ability to liquefy that gas and send it to Europe through the various US export terminals built in the last decade.
In the United States, there are currently six operating LNG terminals with a total export capacity of 4,000 billion cubic feet per day\(^2\) or 4600 PJ/day\(^3\). Additionally, there are 15 expansion projects that have been approved and/or are under construction.

The speedy growth of LNG infrastructure development in the United States has enabled them to become a significant player in the global LNG market while Canada has missed an opportunity. The chart below shows the volume of LNG exports from the U.S. grouped by destination between 2012 to 2021. As shown, LNG exports have grown tremendously over the last five years. In 2021, U.S. LNG exports exceeded 4,000 PJ, a more than 18 times increase over what was exported in 2016. Since 2020, LNG was shipped mostly to Asia, peaking at 47% of total exports in 2021. Cargoes bound for Europe and the rest of the Americas made up 34% and 18% of total LNG exports respectively.

Ultimately, the preference for selling LNG to Asia comes down to supply and demand fundamentals. The chart below shows the proportion of U.S. LNG exported between Asia and Europe relative to the LNG prices in both markets. As demand in Asia has outpaced that of Europe, the LNG pricing between the markets has reflected that trend. As such, U.S. exporters, who are eager to capture the premium, have preferentially sent more LNG to Asia.

However, this trend has started to shift. Since May 2021, prices in Europe have risen to exceed the LNG price in Asia. As such, U.S. LNG exports have been slowly shifting towards European markets. November and December 2021 mark the first time that European-destined exports have outpaced Asian-destined exports for two consecutive months since March 2020.

In the short term, we will likely continue to see LNG cargoes diverted from Asia to Europe. However, it is important to note the LNG demand in Asia has not gone away. Until more LNG capacity comes online, the Asian and European markets will continue to compete for the same volume of LNG supplied by the U.S. The 15 LNG projects under development in the United States will help greatly, but new LNG capacity development shouldn’t be the exclusive domain of the United States.

Canada still has an enormous opportunity. This country can play a significant role in strengthening global energy security. Our European allies want Canadian gas to help them end their heavy reliance on Russia and gain long-term energy stability.

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\(^3\) Energy density of LNG assumed to be 1.145 TJ/MMscf.
July 10 to 14, 2023, will see Vancouver play host to the global gas industry at LNG2023, the world’s biggest LNG conference. Already European and Asian parties are approaching Canadian organizers asking to use the opportunity as a chance to move forward with new Canadian LNG development — development to make a cleaner, more secure energy marketplace for citizens around the world.

Clean, affordable, reliable gas energy has been foundational to Canada’s well-being, and we have the resources to deliver the same benefits to the world. Canadian natural gas — amongst the lowest emitting in the world, produced by an industry with some of the highest performance standards in the world — could be delivering an opportunity for Europe and other markets to lower emissions, maintain affordability and ensure reliability. With the right conditions in place, including efficient regulatory and approval processes, Canada could deliver.