Technical Writing Sample by Patricio Kobek:

Analysis of Canadian Liquified Natural Gas Imports and Exports (2009-2023)

Introduction:

Liquefied Natural Gas (LNG) is a form of natural gas that has been cooled to its liquid state for easier storage and transportation relative to Natural Gas. When compared to pipeline natural gas, it is a popular alternative due to the ease with which transportation by ships is available to locations not connected by pipelines. Canada is one of the largest producers of natural gas in the world, and as environmental concerns remain a relevant political consideration for natural gas, LNG maintains a position of important for further expansion of global exports.

Currently, Canada has three active LNG facilities located in British Columbia (the LNG Canada facility and the Kitimat LNG facility) and in Quebec (the Énergie Saguenay facility). Together, these three locations have a combined production capacity of over 4 billion cubic feet per day, approximating 25 million tonnes of LNG per year.

Canada is clearly committed to growing its LNG potential in the future, as evidenced by several projects in development. These include the Woodfibre LNG project in British Columbia, the Goldboro LNG project in Nova Scotia, and the Pieridae Energy project in Quebec. Once complete, these projects will significantly increase Canada's LNG production capacity, which could potentially make Canada one of the world's largest exporters of LNG. However, these projects are subject to environmental assessments, regulatory approvals, and other factors that may impact their timelines and ultimate success. See my Portfolio Guide by clicking here for more projects.

Source for Data Sets:

The data set used for this analysis comes from the Government of Canada, Open Government collection. Refer to Liquefied Natural Gas (LNG) – Imports and Exports (Digital Object Identifier (DOI)) for new data going forward, as the analysis and visual Tableau dashboard have been prepared with data up to and including April 2023.

SQL Data Analytics:

Microsoft SQL Server management Studio was used with queries to provide a comparison of imports versus exports, exports by year and location, yearly rolling imports by country of origin, and mode of transport by import/export versus quantity. The SQL code is available here for

anyone who would like to run this analysis in the future as new data is made available by the Government of Canada.

Tableau Visualization:

A Tableau Dashboard was created after examining the above SQL queries featuring:

- Total imports and exports by volume since 2009
- Yearly exports to the United States and China
- Total imports and exports by country of origin
- Yearly imports as a running total with future projections

Analysis:

The future of the Canadian liquefied natural gas (LNG) market looks promising for both imports and exports. The data visualization shows an increasing demand for natural gas in China, the US, and other countries, therefore Canada's strategic location and abundant natural gas resources make it a favorable LNG supplier, a position that is only likely to improve with the previously mentioned development of new LNG export terminals and the expansion of existing ones, pending approval and consideration of relevant environmental impact and law.

Canada's key trading partners in the LNG market include the US, China, Qatar, and Trinidad and Tobago. The growth of the Canadian LNG market is likely to be driven by demand from these trading partners, as well as from other emerging markets seeking a cleaner source of energy.

Important Notes:

1. There are three Excel Worksheets used in this analysis: Detail (all imports and exports), Monthly and Annual. The second and third worksheets provide sums of imports and exports and are used to check our calculations. A possible mistake appears if using Monthly and Annual reports for totals instead of Detail, because they show double the total volume compared to "DETAIL" file. This is because they both feature "total" rows after each month or year, doubling the results. This needs to be considered when using SQL or Excel functions for queries to avoid misrepresenting the sum values.
2. MC3 (Mm3) is the measurement used in Canada and Europe, while MCF is for American measurement.
3. Total Volume Import and Export of LNG has roughly a 3:1 ratio since 2009. Natural gas (not liquified) imports and exports have a ratio of roughly 1:3. This is purely coincidental but essential to note because it would be easy to assume that the data set is mislabelled to a reader who only has knowledge of natural gas and not liquified Natural gas.