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Policy Brief

An Evaluation of British Columbia's Liquefied Natural Gas Economic Policies

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Introduction

The government of British Columbia (BC) has endorsed the development of a liquefied natural gas (LNG) industry to export to Asia (Government of BC, Office of the Premier, 2018a). A major reason for this endorsement was the high revenue-raising potential of LNG. Historically, the price of LNG in Asia was significantly higher than the price of natural gas in Canada (Figure 1). The BC provincial government saw the development of an LNG industry as a way to generate provincial revenue through various economic policies and fiscal mechanisms, including taxes and royalties, and cited the establishment of a \$100 billion Prosperity Fund with the goal of ensuring communities, First Nations, and all citizens of BC would benefit from LNG projects (Government of BC, Office of the Premier, 2013). These revenue projections were supported by provincial government-commissioned reports completed by two major accounting firms: Grant Thornton (2013) and Ernst & Young (2013). In a period of immense optimism, the Province promised BC residents a booming LNG industry consisting of two to three LNG projects up and running by 2020 (BC Ministry of Energy and Mines, 2011).

Economic benefits are extracted from a natural resource industry through a fiscal regime: a collection of relevant royalties, taxes, and policies that are applied to the industry (Alberta Department of Energy, 2007; IMF, 2012). Ideally, a jurisdiction will work in the public interest and adopt an optimal fiscal regime that will maximize the economic benefits of resource extraction that will accrue to the residents of the jurisdiction (Tilton, 2004). This is a highly complex task, as setting the royalty or tax rates too high can potentially discourage private investment in the extractive industry and setting it too low may result in the fiscal regime not collecting a fair return for the

jurisdiction. The development of an optimal fiscal regime can be achieved through a combination of modelling exercises and negotiations between the government and the resource developer (OECD, 2018; Tilton, 2004; Weijermars, 2015).

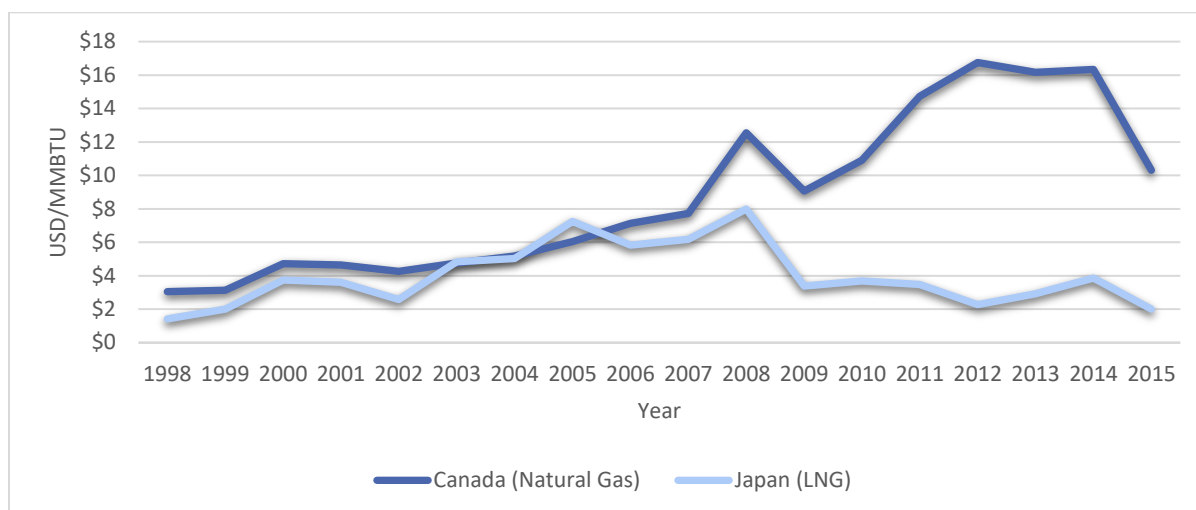


Figure 1. Graph of historical price differential between gas prices (US Dollars per million British Thermal Units of LNG) in Canada and Asia. Data from BP (2016).

LNG Economic Policies

The BC provincial government has developed a fiscal regime that will apply to all LNG projects that are developed in BC. When the LNG fiscal regime was first developed, it had three primary goals associated with it: to keep BC competitive in the global LNG market, to maintain BC’s leadership on climate change and clean energy, and to keep energy rates affordable for families, communities, and industries (BC Ministry of Energy and Mines, 2011). The key policies that make up BC’s LNG fiscal regime are summarized in Table 1.

Table 1. LNG-related policies

Policy	Description
LNG Income Tax (no longer applicable)	The LNG Income Tax (LNGIT) was developed with the goal of capturing a portion of the profit generated by the sale of LNG to Asia (Lee, 2014). This tax was meant to apply to liquefaction activities at an LNG plant in BC. When this tax was first proposed, the applicable tax rates were 1.5% of the total plant profits before project capital costs were recovered, after which a 7% rate would be applied. When the LNGIT was put into legislation in 2015, the 1.5% tax rate still applied until capital costs were recovered, after which a 3.5% rate would be applied (Government of

	British Columbia, 2015). The LNGIT was then eliminated by the provincial government in 2018 (Government of British Columbia, Office of the Premier, 2013).
Natural Gas Tax Credit	The natural gas tax credit serves to reduce the amount of provincial corporate income tax (CIT) owed by a company that carries out liquefaction activities (McCarthy Tetrault, 2016). Beginning January 1, 2017, the tax credit rate changed from 0.5% of the LNG corporation's eligible cost of natural gas to a maximum of 3% (McCarthy Tetrault, 2016). This tax credit effectively brings the provincial CIT rate from 11% to 8% for BC LNG plants.
Long-term Royalty Agreement	Long-term Royalty Agreements (LTRAs) are legally binding contracts between the Province and natural gas producers that supply LNG plants. LTRAs set out obligations for both parties. Natural gas producers are required to produce for the duration of the LTRA, and in return receive greater certainty in the applicable royalty rates (Grieve & Turner, 2015). Royalties for most natural gas production in BC are based on an ad valorem rate that varies with the price of natural gas. The LTRA royalties, however, are based on relatively pre-determined rates. The only LTRA that has been signed so far consists of royalty rates ranging between 6-13% of gross sales revenue, that vary minimally with changes in natural gas prices (BC Ministry of Natural Gas Development, 2015).
Accelerated Capital Cost Allowance	The Accelerated Capital Cost Allowance (CCA) for LNG plants is a federal tax incentive program that was announced in 2015. This regulation made two changes to LNG-related asset depreciation policy: <ol style="list-style-type: none"> 1. The CCA depreciation rate for liquefaction-related assets changed from 8% to 30%; and 2. The CCA rate for non-residential LNG buildings changed from 6% to 10% (Department of Finance Canada, 2015; McCarthy Tetrault, 2016).
BC Hydro eDrive Electricity Rate	BC Hydro's eDrive electricity rate is a special subsidized rate applicable to LNG plants that is meant to incentivize the use of hydro to power an LNG plant in order to decrease greenhouse gas (GHG) emissions. This subsidized rate is roughly 40% below the cost of hydroelectricity production in BC (Shaffer, 2016).
Greenhouse Gas Policy	BC had previously legislated GHG targets in the <i>Greenhouse Gas Reduction Targets Act</i> of 2007, requiring a reduction in GHG emissions of 33% below 2007 levels by 2020 and a reduction of 80% below the 2007 levels by 2050. Specific to LNG plants, the provincial government introduced the emissions benchmark of 0.16 CO ₂ tonnes per tonne of LNG produced by BC's LNG sector (McCarthy Tetrault, 2016). LNG plant owners can meet the 0.16 CO ₂ benchmark in a variety of ways:

1. Increase the energy efficiency of the plant or increase the use of clean energy such as hydro (McCarthy Tetrault, 2016);
2. Purchase emission offsets from emission reduction projects (McCarthy Tetrault, 2016); and
3. Contribute to a technology fund at a rate of \$25 per tonne of CO₂ (McCarthy Tetrault, 2016).

In May 2018, the provincial government replaced the *Greenhouse Gas Reduction Targets Act* with the *Climate Change Accountability Act of 2007*. This updated act offers new GHG reduction targets: 40% below 2007 levels by 2030, 60% below 2007 levels by 2040, and 80% below 2007 levels by 2050 (Government of BC, Office of the Premier, 2018b).

Evaluation

An evaluation was performed to assess the effectiveness of BC's LNG fiscal regime at collecting benefits for the Province. This evaluation consisted of two methods, the first of which was a quantitative analysis. In this analysis, a discounted cash flow model was used to estimate the provincial government revenues that would be generated under various LNG development scenarios using the Woodfibre LNG plant as a case study. Woodfibre LNG, located in Squamish, BC, was the first LNG plant in BC to receive a positive final investment decision, but its development not yet been substantially started. The analysis considered different potential future prices of LNG in order to calculate a range of possible revenues. These revenue estimates were then compared to revenue estimates of a scenario in which LNG is not developed in BC. The model inputs used in the analysis were collected from various publicly accessible provincial government documents.

The results of the analysis show that due to the design of BC's LNG fiscal regime, it is unlikely that LNG development will generate economic benefits for the Province. If the Woodfibre LNG plant was developed, the Province would collect between \$536 million and \$1.18 billion in revenue. If Woodfibre LNG is not developed, and the Province continues to sell natural gas to traditional markets, Canada and the United States, the Province would collect approximately \$1.28 billion (for the equivalent volume of natural gas that would be needed to supply the Woodfibre LNG plant). The results of the analysis show that developing LNG would generate less revenue for the Province than not developing LNG: between \$14.2 million and \$1.9 million less provincial revenue per million tonnes of LNG produced, assuming that BC's natural gas production would remain relatively constant with or without LNG development.

If it is assumed that less natural gas would be produced in BC as a result of LNG not being developed (50% less production), developing LNG would still likely generate less revenue for the Province than selling natural gas to traditional markets: approximately \$2 million less provincial revenue per million tonnes of LNG produced. If LNG development triggered an increase in upstream natural gas production and LNG prices increased significantly in Asia, LNG development could potentially generate more revenue for the Province: up to \$10 million per million tonnes of LNG produced. This scenario, however, is highly unlikely. If LNG was developed and earned a higher price than domestic natural gas sales in the short run, natural gas producers would likely shift their supply to LNG plants rather than increase their production. Additionally, Asian LNG prices are not projected to increase significantly in the near future (The World Bank, 2017).

The second method used for the evaluation was key informant interviews. The key informants represented the perspectives of the LNG industry, the BC provincial government, First Nations, and third-party natural resource management experts. The major finding of the interviews is that the informants that elected to evaluate the LNG-related fiscal policies and regime (all but one) were highly critical. These informants believed that the policies were neither reasonable nor effective, and pointed out major deficiencies. One of the primary deficiencies of the LNG fiscal regime was the multiple, potentially conflicting, objectives of the various policies that make up the regime. The objective of keeping BC LNG competitive in the global market, and ensuring LNG is developed, conflicts with the objective of obtaining a fair return for the residents of BC. A second deficiency of the fiscal regime is that the public was excluded from the development process. The fiscal regime development process did, however, include a significant amount of input from industry. A third deficiency is that the Province's evaluation of fiscal regime options was likely not comprehensive enough. It is unclear if the entire LNG fiscal regime was analyzed and evaluated as a whole, as no such analysis was ever made public. In their interview responses, the natural resource economic experts were concerned that some of the policies that make up the LNG fiscal regime may work against each other, resulting in the Province collecting less revenue. This deficiency is supported by the findings of the quantitative analysis which show that, as a result of the fiscal regime design, the Province will likely collect less revenue if LNG is developed.

Recommendations

The results of the quantitative analysis and key informant interviews indicate that LNG development is unlikely to generate economic benefits for the Province due to the design of the LNG fiscal regime. The key recommendations resulting from the findings of this study are as follows:

1. The process used to develop the LNG fiscal regime should be much more inclusive. The provincial government has the fiduciary responsibility to develop a fiscal regime that balances the interests of all parties affected by the fiscal regime (OECD, 2018; UN, 2016; Weijermars, 2015). Fulfilling this responsibility requires the provincial government to not only negotiate with private companies but to also include the public in the decision-making process, as this would help build trust and buy-in (UN, 2016);
2. The provincial government should conduct a comprehensive analysis that clearly shows how the revenue generated by the LNG fiscal regime compares to alternative regimes and resource sectors. It is unclear if this type of analysis was ever conducted, as no such study was ever made public;
3. If the Province is to benefit from LNG development, this will likely require re-establishing the LNG Income Tax. Currently, there is no tax or royalty in place in BC that will effectively collect the windfall rents created by selling LNG to higher priced markets such as Asia. Before being re-established, an analysis should be conducted to calculate the optimal LNGIT rate that will maximize government revenues; and
4. If the comprehensive analysis conducted by the provincial government shows that BC is unlikely to benefit from LNG development, as the analysis in this study has shown, the government should consider not developing LNG and instead focus on alternative resource sectors.

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