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The Case for Carbon Offsets and Trading in B.C. and Canada's Climate Framework

by Rob Seeley
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LNG SERIES

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British Columbia and Canada have set aggressive greenhouse gas (GHG) reduction goals of 40 per cent and 30 per cent respectively by 2030, with an 80-per-cent reduction by 2050.¹ The B.C. and federal governments' core policy to date has been an economy-wide carbon tax on all combustion emissions, with complementary incentive and regulatory measures. The tax applies to all combusted fossil fuels and includes retail fuels, commercial fuels, home heating fuels and industrial fuel use. The carbon tax is about sending a price signal to consumers for fossil energy use. It introduces the cost of carbon to industry and retail consumers, with the intention of influencing public and business choices for energy products and use and thereby lowering emissions. The tax is intended to be revenue neutral, meaning that the revenue collected should be offset by tax cuts. However, in B.C., both the personal and corporate income tax rates were raised in 2017, thereby moving away from the revenue-neutral concept.² The effectiveness of carbon tax policy on energy use and CO₂ emissions in Canada is open for debate; however, the carbon tax's impact on the competitiveness of B.C. or Canadian export industries is a real concern. The carbon tax is an additional cost for these sectors, making their products less competitive with other global suppliers who do not have carbon regulation or carbon costs in place. This is of greatest concern in B.C., where the carbon tax applies to all combustion emissions from industrial facilities, and not just those emissions above a performance benchmark.³

For industries with limited technology options for CO₂ reduction, an increasing carbon tax makes their products less competitive, either driving them out of business, or driving investment to other countries or jurisdictions that do not have a carbon tax. This is called carbon leakage. The carbon emissions move to another country, along with the investment and jobs, and even though B.C. or Canadian emissions may go down as a result, there is no net reduction in emissions for the world. For industry in Canada and B.C., alternative mechanisms to the carbon tax must be considered in order to achieve real CO₂ reductions, attract investment, remain competitive and keep the jobs in place.

Carbon Offsets and Trading

In order to assist B.C. and Canada to achieve their stated GHG reduction goals and allow for economic growth, carbon offsets and trading should be made available to industry as an alternative to the carbon tax for CO₂ compliance.

¹ *Climate Change Accountability Act* 2007, c.42, Legislature of British Columbia. Available at http://www.bclaws.ca/civix/document/id/complete/statreg/07042_01 ; Environment and Climate Change Canada, *Canada's Mid-Century Long-Term Low-GHG Development Strategy*, 2016:3. Available at https://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf. This document was submitted to the UNFCCC in November 2016 for the Paris COP.

² Kenneth Green, Elmira Aliakbari and Ashley Stedman, "BC Budget Abandons Hope for Efficient Carbon Tax," Fraser Institute, September 2017. Available at <https://www.fraserinstitute.org/article/bc-budget-abandons-any-hope-for-efficient-carbon-tax>

³ Jock Finlayson and Ken Peacock, "Policy Perspective: It's Becoming More Costly and Complex to do Business in B.C.," Business Council of British Columbia 26, no.2, July 30, 2019: 3. Available at <https://bcbc.com/dist/assets/publications/its-becoming-more-costly-and-complex-to-do-business-in-b-c/PPv26n2.pdf>



Including carbon offsets is a practical way of creating incentives for a broader set of potential emission reductions in the near and medium term, and broader participation in climate solutions from the overall economy.⁴ CO₂ offsets and carbon trading are proposed in the Pan-Canadian Framework for Clean Growth and Climate Change. However, B.C. also needs to include offsets and trading as an alternative compliance mechanism to the carbon tax, particularly for provincial resource sectors experiencing growth and continued global demand. This includes natural gas, liquefied natural gas (LNG), mining, manufacturing and forestry. According to the sustainable development scenario in the International Energy Association's (IEA) Energy Outlook 2018, global demand for many B.C. resource-based products will continue as the world transitions toward lower carbon intensity.⁵ B.C. and Canada have the opportunity to meet the global demand for our natural resources, and provide global leadership by supplying the most sustainable resource products in the world. Our GHG policy needs to reflect this, to ensure we are not only low carbon, but remain globally competitive. By supplying the lowest carbon-intensity products to the world, we are contributing to the global CO₂ reduction. Carbon offsets and trading will provide a mechanism to reduce the CO₂ intensity and emissions of our export products, particularly for new economic activity, helping to lower compliance costs for industry, and assisting B.C. and Canada to achieve their CO₂ reduction goals.

Including CO₂ offsets and carbon trading in the climate change policy framework creates new business and trading opportunities across the country that could generate revenue for government beyond the carbon tax. According to an ÉcoRessources report for the B.C. government in December 2015, the province had invested \$53.4 million over six years for the purchase of CO₂ offsets. This resulted in a capital investment of \$327 million in the province and an increase in revenues to governments of \$76 million.⁶

The Five Key Reasons for Including Carbon Offsets and Carbon Trading in a B.C./Canada Climate Change Policy Framework are:

1- Delivering Real Reductions toward GHG Reduction Goals and Allowing for Economic Growth

Allowing B.C. offset projects to be used for compliance against emissions of new industrial facilities instead of paying a carbon tax would mean the carbon tax revenue used for compliance would go to the purchase of B.C. offsets, delivering CO₂ reductions instead of directing carbon tax dollars to general revenue. This would lower the net increase in carbon emissions associated with economic growth in the industrial sector in the near and medium term. The policy could be phased in to allow the government to adjust from the decrease in carbon tax revenue to the increase in revenue generated through the offset

⁴ Canada's Ecofiscal Commission, "Climate and Energy," September 2015.

⁵ International Energy Agency, "World Energy Outlook 2018: Executive Summary," Available at <https://webstore.iea.org/download/summary/190?fileName=English-WEO-2018-ES.pdf>

⁶ ÉcoRessources, *Economic Analysis of British Columbia's Carbon Offset Projects: Final Report*, Dec. 1, 2019: III. Available at https://www2.gov.bc.ca/assets/gov/environment/climate-change/offsets/offsets-portfolio/bc_offset_economic_analysis.pdf



project investment. The use of offsets for compliance in the near and medium term allows time for cost-effective carbon abatement technology to be developed.

2- Providing a Market Mechanism to Assist in the Finance of Clean Tech Industries

Including B.C.- or Canadian-developed offsets as a carbon compliance mechanism for industry instead of paying carbon tax creates investment for a new sector that is involved in clean tech and green projects. The revenue stream provided by the purchase of offsets is often a secondary revenue for these clean tech projects and enables them to become economically viable. Also, there is a multiplier effect, as the offset credit revenue stream allows project developers to raise the capital needed for their projects, creating further investment and more jobs in the province and the country.⁷

3- Creating an Opportunity for First Nations Participation in Clean Tech/Offset Industry

Carbon offset opportunities often come with a technology focus; however, they also include ecosystem management or nature-based solutions. Carbon offset projects developed around areas such as reforestation, forest management, tidal/wetlands restoration and biomass energy are largely remote, and include lands where First Nations have traditional activities or have asserted their claims. Terrestrial-based offset projects have been studied extensively, and the World Resource Institute, the California Air Resources Board, and the governments of Canada and Alberta, etc., have developed protocols for development and verification. Bluesource Canada has estimated the offset potential of forest-based projects in B.C. at up to 13 million tonnes/yr. of CO₂ by 2030.⁸ Offset projects on Crown land can create an opportunity for First Nations' participation in developing climate solutions that deliver real reductions, create jobs and education, and provide opportunity for economic participation in the overall climate program. The government could consider this another step toward reconciliation with First Nations.

4- An Alternative Compliance Tool for Industry. Remaining Competitive

Increasing carbon taxes will impact the cost competitiveness of Canadian export sectors, and the resource sectors in particular. At the same time, the cost of industrial facility carbon abatement projects can be very high for some sectors, and could also increase as their emission intensities are reduced and the lowest cost carbon abatement opportunities are used up. Carbon offsets can effectively continue to lower emissions in the near and medium term for industrial facilities at a cost that is lower than both the cost of direct abatement and the carbon tax being applied. This could help address the competitiveness issue for industry.

⁷ Ibid., 13.

⁸ Bluesource Canada, "BC's Offset Carbon Market Outlook," July 2018.



5- *Staying Current with National and International Policy Development*

CO₂ offsets and carbon trading policies are being proposed within the Pan-Canadian Framework for Clean Growth and Climate Change, and a growing number of companies are considering them. Articles 6.2 and 6.4 of the Paris Accord allow for the transfer of internationally traded mitigation outcomes (ITMO) among countries.⁹ Keeping pace with the offset and carbon trading policies of other countries and the international framework creates a business opportunity for B.C. and Canada to acquire offsets in exchange for more sustainable products, or sell offsets or offset technology to other countries.

Carbon Offsets, the LNG Sector and Real Reductions

As our industrial export sector grows, it is extremely important to find ways to remain competitive, keep the investment in Canada and continue to reduce our overall GHG footprint. Carbon offsets and trading are important policy tools which provide an alternative compliance mechanism for industry to deliver real reductions, particularly for new growth areas such as the LNG sector.

The emerging LNG sector in B.C. is forecast to produce roughly 14 million tonnes per year (mtpa) of LNG by 2025.¹⁰ This would result in roughly 2.0 million additional tonnes CO₂/yr. in B.C. from the LNG facilities if they meet the province's new performance benchmark. The LNG facilities in B.C. are designed to be the lowest in GHG emissions intensity in the world and will be approximately 25 per cent better than the new facilities being built on the U.S. Gulf Coast, and 50 per cent better than the global LNG facility intensity average.¹¹ The facilities in B.C. presently being built will have little room for further improvement based on their chosen technology, which is a mix of highly efficient gas turbines and hydro-based electricity from the B.C. grid. LNG operators will pay a net carbon tax of \$30/tonne of CO₂ resulting in annual payments to the B.C. government of approximately \$60 million for their CO₂ emissions. This payment affects the competitiveness of these facilities, and will not result in additional CO₂ reductions for B.C., since these carbon tax dollars are proposed to go to general revenue.

If LNG operators were allowed to invest in projects outside their facility that reduce CO₂ emissions (biomass energy, fuel switching, reforestation, carbon capture and storage, etc.) they should then get a reduction in their carbon tax payment for every tonne of CO₂ emissions that was reduced through the offset projects. Their carbon abatement dollars would therefore be directed toward offset projects that result in real reductions in CO₂ emissions in the province and Canada. If the offsets are within the province, then the money remains in the province. The offset project developers use the money to improve their economic viability, allowing them to get

⁹ United Nations, *Paris Agreements*, 2015:7. Available at https://unfccc.int/sites/default/files/english_paris_agreement.pdf

¹⁰ Navius Research Inc., "Supporting the Development of CleanBC: Methodology Report for Assessing the Impact of CleanBC Policies," March 2019: 37. Available at https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/supporting-development-cleanbc_methodology-report_navius.pdf

¹¹ Delphi, "Global LNG Facility GHG Benchmarking," report, 2018.



financing for the capital dollars needed to build their facility or project. Constructing and operating the offset project creates jobs in the province, contributes to innovation and green technologies, and adds corporate and personal taxes for the government. A win-win-win!

There is a perception that offset projects are not real reductions. This is simply not true. Offset projects do contribute to real CO₂ reductions. Examples of offset projects providing real reductions include: i) A biomass energy project replacing a diesel generator at an off-grid location. The offset purchaser pays for a good portion of the capital needed for the fuel switching project in exchange for a stream of CO₂ reduction credits over a number of years; ii) An investment in a carbon capture and storage project at an upstream gas, cement manufacturing or pulp and paper facility. Process CO₂ emissions, which are presently not regulated or taxed, would be captured and sequestered. The offset purchaser's investment in the facility would result in a stream of CO₂ offsets for an agreed number of years; and iii) A forest management project which uses additional resources for the selective harvesting, replanting, monitoring and maintenance of a forested area, resulting in a greater net carbon sequestration rate per hectare of forest.

Availability of B.C. Offsets to Meet the LNG Sector's GHG Compliance Needs

Demand for offsets in B.C. today is limited, as the province's climate regulations allow offsets only for emissions reduction by public sector agencies, and only the government purchases offsets. B.C. offsets developed and purchased over the past several years by the provincial government have averaged between 600,000 and 900,000 tonnes/yr., at an average price below the carbon tax price set by the government in the year of purchase.¹² The 600,000 to 900,000 tonnes/yr. of offsets is a relatively small demand and offset project developers in B.C. have struggled in this business environment due to the low demand.

If the industrial sector were eligible to offset roughly 20 per cent of its 25 million tonnes/yr. combustion emissions, the demand for offsets in B.C. would increase to approximately five million tonnes of CO₂/yr.¹³

Expanding the B.C. CO₂ offset program from the present state of 0.7 million tonnes of CO₂/yr. to roughly five million tonnes of CO₂/yr. by 2025 would be relatively straightforward. Although offset protocols in B.C. are presently under review, protocols have been developed over the past 10 years for most of the offset types. Certified verifiers and validation resources are in place as needed for verification of the B.C. government's carbon offset purchases to meet its carbon-neutral commitment.¹⁴ The B.C. carbon registry is also in place under the *Greenhouse Gas Industrial Reporting and Compliance Act* (GGIRCA) and the Ministry of Environment has been overseeing the regulatory aspects of offsets since 2010. A five-million-tonne/yr. reduction in CO₂

¹² ÉcoRessources, 13; International Emission Trading Association, "BC Carbon Offsets," March 2015. Available at <https://www.ieta.org/resources/Resources/101s/bc-carbon-offsets-101-mar15.pdf>

¹³ Government of British Columbia, "CleanBC: Our Nature, Our Power, Our Future," March 2019. Available at https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf

¹⁴ International Emission Trading Association, "BC Carbon Offsets."



emissions by 2025 due to offset projects would contribute most of the remaining reductions that the CleanBC program needs to meet B.C.'s 2030 target. Furthermore, a five-million-tonne/yr. reduction from offsets is greater than the total emissions estimated from the LNG facilities that are under construction.

A recent study by Bluesource International has estimated that based on the B.C.-identified offset protocols either in place or under development, 5.8 million tonnes/yr. of CO₂ offsets could be available by 2025 and 19 million tonnes/yr. of CO₂ offsets could be available by 2030.¹⁵ The offset types included in the study were:

- Fuel switching
- Pneumatic controllers
- Forest carbon
- Landfill gas capture
- Organic waste diversion
- Recovery/destruction of ozone
- Cement carbon sequestration
- Anaerobic digestion in wastewater management
- Agricultural – tillage and manure management
- Coastal/tidal wetland restoration
- Carbon capture utilization and storage

Offset Contribution to GDP Outweighs Carbon Tax Revenue Loss to Government

The B.C. government is concerned about losing carbon tax revenue if alternative policy tools such as carbon offsets and trading are implemented. However, if the carbon tax revenue were to go to offset project developers as an additional revenue stream instead of to carbon tax, then jobs, new investment and capital infrastructure would be created, and new revenues to the B.C. government from corporate and personal taxes would follow. And of course, there would be a net reduction in emissions for the province.

According to the ÉcoRessources report on B.C. carbon offset projects completed between 2010 and 2014, the province has invested \$53.4 million for the purchase of roughly 4.5 million tonnes of offsets (an average of 900,000 tonnes per year and an average price of \$12/tonne). This has resulted in total capital expenditures by offset project developers of \$327 million, GDP contribution of \$372 million, revenues to governments of \$76 million, and roughly 4,400 jobs measured in person-years.¹⁶ This analysis demonstrates the multiplier effect on the economy from investment in offset projects. The funds going to the offset project developers for offset purchases over a five-year period resulted in a multiplier of roughly six times for capital

¹⁵ Bluesource Canada, "BC's Offset Carbon Market Outlook."

¹⁶ ÉcoRessources, *Economic Analysis of BC's Carbon Offset Projects: Final Report*.



investment and 1.4 times for government revenues. In particular, the purchase of CO₂ credits from offset project developers is an enabler for the green and clean technology sector and provides these projects with another revenue stream, allowing them to secure financing and become financially viable.

If the industrial sector purchased offsets for the five mtpa of CO₂ emission at a price of roughly \$25/tonne, this would contribute \$125 million/yr. to offset project developers. The revenue to offset project developers over a five-year period would total \$625 million. Assuming the same multiplier effect as the ÉcoRessources report, this could result in additional capital investment for green and/or clean technology projects in B.C. over the same five-year period of over \$3.5 billion, with a GDP impact of approximately \$4 billion, revenues to government of \$875 million and creation of over 50,000 jobs.

Keeping Pace with Other Provinces on Offset and Carbon Trading Policy Creates a Future Business Opportunity for British Columbia

Without an offset program and carbon trading, B.C. offset project developers and buyers would likely not be able to take full advantage of developing and selling offsets to markets outside of B.C., and purchasing offsets outside of the province. This is an important requirement for the future. The Pan-Canadian Framework on Clean Growth and Climate Change has included offsets and carbon trading which will evolve in the provinces. As these programs expand, the market for offsets will become more liquid, and developers will be able to sell into the broader Canadian market more easily. Eventually, a liquid offset market in Canada would mean investment in offset projects and clean technology across Canada, and likely lower compliance costs for those industries that cannot meet the performance target through internal abatement technology. If an offset and trading program does not evolve in British Columbia in step with the federal offset program for industry, B.C. will be missing out on a significant economic opportunity.

Offset and Carbon Trading Policy Provides the Mechanism for Future Clean Energy Export Credits

Of particular interest for B.C. and Canada would be the acquisition of international credits for producing clean energy which is exported to other countries. Under article 6 of the Paris Accord, ITMOs can be traded between governments or sub-governments if the country has made a nationally determined contribution to CO₂ reductions.¹⁷ This could be the case for LNG produced in B.C. and sold to China to replace coal-fired applications. According to the recent IEA report titled “The Case for Gas in the Energy Transition”, CO₂ emission reductions are roughly 50 per cent when switching from coal to natural gas to produce power on a life-cycle basis. The CO₂ emission reduction is roughly 33 per cent when switching from coal to natural gas for industrial

¹⁷ United Nations, *Paris Agreements*, 7.



heat applications on a life-cycle basis.¹⁸ According to a recent study by researchers from Johns Hopkins University, the Massachusetts Institute of Technology, the University of Calgary and Southern Methodist University, if 18 million tonnes of LNG per year from B.C. were sold to China to produce power, this could result in net global GHG reductions of 25- to 52 million tonnes of CO₂/yr. due to the displacement of coal-fired power.¹⁹ This is roughly equal to between 40 per cent and 82 per cent of B.C.'s total annual GHG emissions. China may agree to transfer a small portion of these reductions (enough to cover B.C.'s emission increase for the production and liquefaction of the gas) back to B.C. or Canada at a negotiated price. The process is unclear at this time, but would likely need a country-to-country agreement, and a commercial agreement between LNG seller and buyer. A trading system and verification process would need to be in place in each country to enable this type of transaction.

CO₂ offsets and trading are important policy tools to be considered by B.C. and Canada to help lower their GHG emissions, enable innovation and broader participation in climate solutions, and create room for economic growth within the provincial and national climate goals.

CO₂ offsets and trading can assist in lowering carbon compliance costs for industry, but do not fully address industry competitiveness, particularly for our resource export sectors. These emission-intensive and trade-exposed industries need to be protected from escalating carbon tax and other fiscal policies, which make them less competitive, and can lead to carbon and investment leakage. According to the recent British Columbia Business Council analysis of the GHG emissions of B.C.'s export industries, B.C. industries are achieving a level of CO₂ intensity performance that is well below their competitors and is among the best in the world.²⁰ This is a result of GHG policy and the availability of low carbon electricity from BC Hydro. The GHG and fiscal policies of Canada and B.C. need to include new tools to ensure these high-performing sectors remain competitive such that investment remains in Canada and B.C., and the global GHG advantage is sustained.

¹⁸ Fatih Birol, "The Role of Gas in Today's Energy Transition," International Energy Agency, January 2019. Available at <https://www.iea.org/publications/roleofgas/>

¹⁹ Adebola S. Kasamu et al., "Country Level Life Cycle Assessment of Greenhouse Gas Emissions from Liquefied Natural Gas Trade for Electricity Generation," *Environmental Science Technology*, 52, no. 4, January 2018: 1735-1746. Available at <https://pubs.acs.org/doi/abs/10.1021/acs.est.7b05298>

²⁰ British Columbia Business Council, "Low Carbon Industrial Strategy," Phase 1 Report, September 2019.

▶ **About the Author**

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► **Canadian Global Affairs Institute**

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