OBSERVATION

TD Economics

December 14, 2016

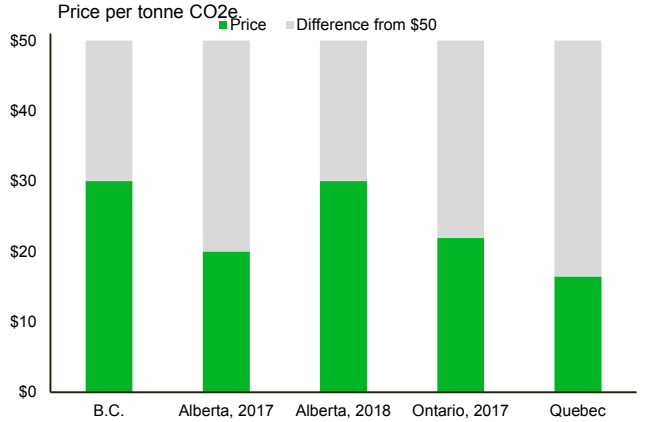
CANADA-WIDE CARBON PRICING OFFERS OPPORTUNITIES, BUT IS NOT WITHOUT RISKS

Highlights

- The federal government continues to push towards a national minimum price on carbon aimed at reducing emissions by equalizing the cost of carbon across provinces. Carbon pricing is the most efficient way of reducing emissions, and offers potential opportunities for the Canadian economy.
- The price of carbon emissions in 2018 will be set at $10 per tonne, and will rise by $10 every year to reach $50 by 2022. The potency of these plans means that Canada will be a leader in carbon pricing in North America. By comparison, the United States currently has two regional pricing initiatives with less stringent scope and prices, while Mexico is in the process of piloting a carbon pricing program. Carbon pricing may thus also pose competitiveness issues relative to lower- or non-priced jurisdictions.
- It is thus imperative that provincial governments use what looks to be relatively sizeable carbon revenues – ranging from 1% to 3% of GDP – efficiently by encouraging new industries and initiatives, while mitigating the impact on competitiveness.
- Keeping the aggregate tax burden unchanged by recycling the revenues into initiatives that focus on innovation and enhance competitiveness appears to be the optimal policy choice. If executed well, such actions should allow provincial governments to leverage carbon pricing for a cleaner and more prosperous future.

The federal government recently announced a minimum national price on carbon dioxide intended to equalize the cost across provinces. A minimum price of $50 per tonne will be required by 2022, with the federal government to impose a pricing mechanism on any province that does not have its own program, and return the revenues to the source province. The path forward was reconfirmed at a First Ministers' meeting on December 9, although Saskatchewan and Manitoba remain hold-outs. The implementation of national carbon pricing, the most efficient way of reducing emissions, is welcome. At the same time, the $50 target is aggressive, representing a significant step-up from the current level of pricing across provincial programs (Chart 1).

CHART 1. CURRENT AND PLANNED CARBON PRICES FALL SHORT OF $50/TONNE



Source: Provincial governments, MDDELCC Quebec, TD Economics.
Note: Ontario figure projected based on government statements.

A carbon price of $50 per metric tonne of CO2 equivalent emissions by 2022 will bring Canada much closer to achieving its Paris Accord commitments of reducing GHG emissions by 30% below 2005 levels by 2030, while generating significant government revenue. The initiative's pricing and stringency means that Canada will have the most ambitious pricing policy in North America. The U.S., Canada's main trading partner, does not currently have as ambitious plans and the recent election result

Michael Dolega, Senior Economist & Director, 416-983-0500
Brian DePratto, Economist, 416-944-5069

further dims the prospects for a similar plan over the next four years, at a minimum. This raises the risk that Canadian firms will see a reduction in competitiveness vis-à-vis their U.S counterparts (not to mention other jurisdictions without carbon pricing).

Canada-wide carbon pricing represents a significant step towards addressing the challenge of climate change. Now that 'what needs to be done' has been decided, just as important will be the 'how' of carbon pricing. Balancing the need to address climate change with the need to maintain or even expand Canadian competitiveness means that the proper use of carbon pricing revenues will be of paramount importance. Getting policy wrong will result in higher costs of doing business in an economy that is already trending towards subdued growth. This report will cover several important topics related to carbon pricing. First, the specifics of the government's plans; Second, the industries most likely to be impacted, and by extension, provinces; Third, comparing impacted industries with those located in our neighbour to the south; Fourth, the degree of revenue gains from carbon pricing; Finally, we provide some advice on what provinces should do to recycle carbon pricing revenues to both cushion the blow and provide opportunities for competitive boosts.

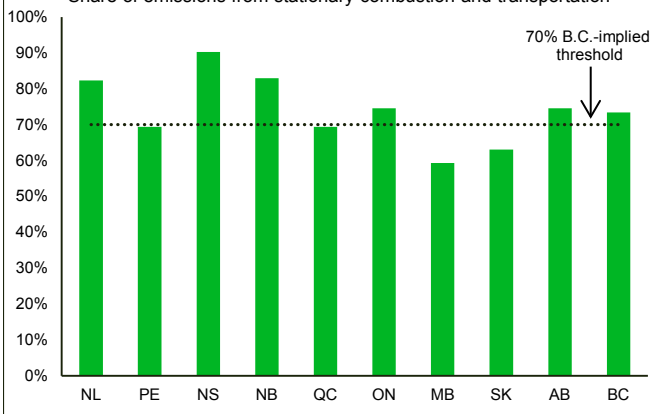
Setting the stage: what is the government planning?

The federal government's carbon pricing policy is fairly straightforward, designed to be flexible and take into account existing carbon pricing policies. For jurisdictions with existing cap-and-trade schemes the requirements are modestly more complex. These provinces need a reduction target of 30% below 2005 levels by 2030 (as per the Paris Agreement). In addition, the cap and trade systems in Ontario and Quebec will likely be required to generate a price equivalent to the prevailing carbon tax.[1] Any province that does not implement a pricing mechanism will have a tax imposed by the federal government, with all revenues returned back to that province.

Beyond the price, the government will also enforce a minimum stringency with pric`ing required to apply to "substantively the same sources as British Columbia's carbon tax". The B.C. tax currently applies to nearly all fossil fuel combustion, covering 70% of emissions.[2] This is in line with what could be called "easily priced" emissions: emissions from stationary combustion sources (such as power plants and factories) and transportation. Focusing on these sources reveals the provincial variation in potential stringency (Chart 2).

CHART 2. MANITOBA AND SASKATCHEWAN LIKELY TO HAVE LESS STRINGENT COVERAGE

Share of emissions from stationary combustion and transportation



Source: Environment Canada, United Nations, TD Economics. 2014 Data.

While more clarity is needed, the government's language suggests that rather than needing to price to the dotted line in Chart 2, provinces will be able to price to their own specific sources of fuel consumption. In the case of Manitoba and Saskatchewan, this will likely come as a relief, as reaching 70% of total emissions would require pricing across sources that are often difficult to measure and/or implement, including enteric emissions found in many agricultural processes – such as the gas expelled by cows, for example. Several of the Atlantic Provinces may argue in favour of a pre-defined share of emissions. Such an approach would reduce the burden of carbon pricing in these provinces, in light of the predominance of easily priced sources in their overall emissions mix. Given that British Columbia prices slightly less than its total stationary combustion and transportation emissions, there is some precedent to support this argument. Indeed, Nova Scotia has already been granted a concession around coal generation, recognizing that the province has already achieved the federal emissions reduction target.

Beyond these core elements, the government will require provinces to provide regular reports on the impacts and outcomes of carbon pricing. Five year evaluations will be undertaken. These reviews will include potential increases in stringency, while taking into account progress in other jurisdictions and other unresolved issues, such as the recognition of imported carbon permits and/or credits.

Putting carbon revenues into the industrial and provincial context

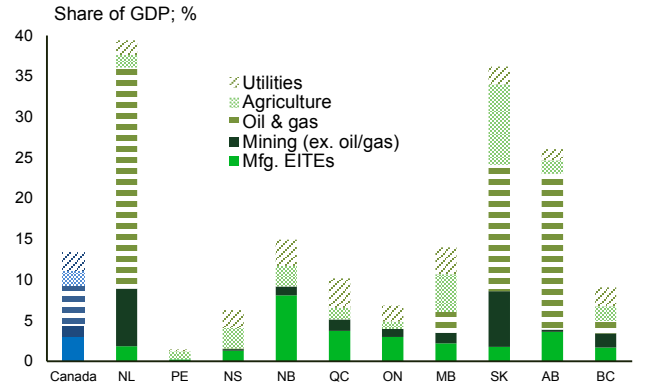
A national carbon price will have diverging impacts on Canadian industries, and by extension, provinces. The most pronounced effects will undoubtedly be on the most energy-

intensive sectors, comprised of fossil-fuel electric utilities, natural gas distributors, and petroleum refiners. Together these sectors account for about one-quarter of all Canadian emissions, with another quarter stemming directly from oil and gas production – concentrated in Alberta, Saskatchewan, and Newfoundland and Labrador. Agricultural activities, particularly important for the economies of Saskatchewan and Manitoba, comprise about one-tenth of Canadian emissions, while another ten percent is related to other emission-intensive and trade exposed (EITE) industries. Defining EITE industry thresholds is somewhat subjective, but is typically a function of trade intensity (share of exports and imports to total activity) and energy usage (energy costs as a share of total output).[3]

EITE industries comprise primarily of mining (ex. oil/gas) and energy-intensive manufacturing industries, such as chemicals, primary metals, pulp & paper, and non-metallic minerals. Primary metals manufacturers, particularly those engaged in iron, steel, zinc, and aluminium smelting and/or production, are most at risk with Ontario, Quebec, and Manitoba accounting for nearly 90% of the national output. Chemical manufacturers particularly vulnerable are those that produce basic chemicals, fertilizers, and synthetic fibres – industries most prevalent in Alberta, Saskatchewan and Ontario which together account for three quarters of national output.

Pulp & paper is also likely to suffer from competitiveness issues, with B.C., Quebec, and Atlantic Canada accounting for two-thirds of national output. Lastly, non-metallic mineral manufacturers of products including cement, lime, and glass also stand to face competitiveness pressures – with many of these found in Alberta, B.C., and Nova Scotia.

CHART 3: CARBON INTENSIVE SECTORS OFTEN A SIGNFICANT SHARE OF PROVINCIAL OUTPUT



Note: Shares based on latest nominal value-added output where available, imputed from manufacturing shipments or export shares otherwise.
Source: Statistics Canada, TD Economics.

While the EITE industries typically account for less than 5% of GDP (Chart 3), they make up as much as 20% of industrial production in some provinces, with spillover impacts that could extend further upstream. Auto parts makers, for instance, will likely feel the effects indirectly through suppliers, such as aluminium smelters. Negative economic impacts could also be significantly amplified in instances where EITE industries form a backbone of the regional economy. Most of the remaining emissions are related to service sector activities, including air and truck transportation, which can typically pass on the higher costs to customers and are not very mobile.

From an economic and environmental policy standpoint the most concerning is the impact on industries that are both energy-intensive and trade-exposed. These activities are most at risk of moving to a non-participating jurisdiction, leaving overall carbon emissions unchanged but harming economic growth at home. This dynamic, termed 'carbon leakage,' could manifest in lower net exports and higher carbon intensity of foreign economies. While leakage rates depend on the industry characteristics and policy details, estimates suggest they could be significant (between 5 and 20 per cent). As such, policy decisions need to be taken with great care to ensure that the domestic economy does not suffer, particularly if it does not lead to lower emissions globally.

While the best scenario to protect economies from the effects of carbon taxes is a coordinated global initiative to price carbon, such an outcome is not likely during this decade. Other ways of mitigating the effects include industry exemptions, rebates tied to output, and carbon tax on imports for industries that are EITEs.[4]

Canada ahead of the curve in North America

The U.S. doesn't have a federal carbon tax, and such an initiative appears unlikely in the current political climate. But, there are two different initiatives at the regional level. The first market-based U.S. initiative was the Regional Greenhouse Gas Initiative (RGGI), which became effective in 2012. It includes all six states in New England, as well as New York, Maryland, and Delaware – accounting for nearly 16% of U.S. GDP, but only 9% of manufacturing output. The scope of the RGGI is relatively narrow and covers only fossil-fuel fired power plants which generate 25 MW or more. The other currently active scheme is the Western Climate Initiative (WCI), in which California is the only participating U.S. state – accounting for about 14%

of national GDP and 13% of manufacturing output. The cap-and-trade scheme is broader in scope than the RGGI, covering electric utilities and facilities emitting over 25kt of CO_2e per year. It has been active since 2013 and last year was expanded to transportation fuel and natural gas distributors – covering about 85% of the state's GHG emissions. The system, which is designed to link to other jurisdictions, is connected to Quebec's cap-and-trade scheme, with Ontario soon to join the initiative.

In other major economies that export to the U.S., carbon pricing is either in play, or coming into effect. Mexico is currently piloting a cap-and-trade system, with 60 companies volunteering to help test the system before its launch in 2018. Current indications are that the system will aim for a similar level of stringency as the Canadian system, as the Mexican government has committed to implement measures to meet the Paris Accord. Once fully implemented, the Mexican program is thus likely to be as comprehensive as the Canadian, and more stringent than U.S. pricing schemes.

Looking beyond North America, China is a bit further along than Mexico, with cap-and-trade pilot projects in place in two provinces. Plans exist for a national cap and market trading mechanism by the summer of 2017. Importantly, China may not need as stringent caps as might be expected given their overall emissions numbers. This is because there remains significant coal power generation which the government is attempting to move away from. Even a modest reduction in the number of coal fired plants can greatly reduce carbon emissions.

Barring the widespread introduction of stringent carbon pricing at the state or federal level – a highly implausible scenario given the current political climate – both Canada and Mexico (and potentially China) are thus likely to experience some deterioration of competitiveness vis-à-vis the U.S. as a result of carbon pricing.[5] This is particularly true for states with no carbon-pricing schemes, but will also be the case relative to RGGI member states and even California – where the system is by far the most comprehensive.

Carbon pricing a significant revenue driver

There are many moving parts that must be accounted for in calculating potential revenues, including emissions reductions that occur as a result of pricing mechanisms. The modelling required to estimate dynamic responses of emissions are beyond the scope of this report. However, we can still derive some rough figures that can help inform our discussion of revenue usage. We consider two scenarios.

Table 1. Carbon Pricing a Significant Driver of Revenue

	Pricing applied to 'easily priced' emissions $mln (% of GDP)		Pricing applied to 70% of total emissions $mln (% of GDP)	
Newfoundland + Labrador	$ 436.5	(1.3)	$ 371.0	(1.1)
Prince Edward Island	$ 62.5	(1.0)	$ 63.0	(1.0)
Nova Scotia	$ 749.0	(1.9)	$ 581.0	(1.5)
New Brunswick	$ 618.0	(1.9)	$ 521.5	(1.6)
Quebec	$ 2,780.0	(0.8)	$ 2,894.5	(0.8)
Ontario	$ 6,345.0	(0.9)	$ 5,957.0	(0.8)
Manitoba	$ 638.0	(1.0)	$ 752.5	(1.2)
Saskatchewan	$ 2,380.0	(2.9)	$ 2,642.5	(3.2)
Alberta	$ 10,215.0	(2.7)	$ 9,583.0	(2.6)
British Columbia	$ 2,310.0	(1.0)	$ 2,201.5	(0.9)

Source: Environment Canada, United Nations, TD Economics.
Note: 2014 emissions, $50/tonne price applied

The first scenario is based on the B.C. carbon tax stringency by source, and so is applied to what we termed 'easily priced' emissions. As a result, fugitive emissions, emissions from agriculture, and the impacts of land use changes are excluded.[6] The second scenario considers the imposition of a 70% of emissions threshold across all provinces, in line with the effective stringency of the B.C. system. The stringency of the two scenarios varies by jurisdiction: the former is much more stringent for the Atlantic Provinces, relative to the latter, while the converse is true of Manitoba and Saskatchewan.

As shown in Table 1, the potential revenue generated by carbon pricing can be significant. Albertan revenues may be as high as C$10.2 billion (nearly 3% of GDP). Across all provinces, revenues are likely to be close to 1% of GDP, reaching 3% of GDP in Alberta and Saskatchewan. When considered relative to government revenues and expenditure, the significance of these revenues becomes more apparent. Alberta could eliminate its corporate income tax using less than half of the pricing revenues. Quebec is likely to generate sufficient revenue to offset a quarter of its provincial sales tax. Any way you slice it, potential carbon pricing revenues are likely to be sizeable,which can place a significant burden on the economy if not put to good use.

Provinces should exercise caution in revenue usage

Given the significantly higher price of carbon relative to our main trading partners, without effective offsets, the tax has the potential to significantly raise the costs for consumers and alter the competitiveness of provincial industries, negatively affecting economic growth.[7] As such, much of the

revenue should be targeted at offsetting the negative effects of higher energy costs, while promoting initiatives that lead to efficiencies in carbon usage. It is likely best for provincial governments to target 'revenue neutrality' – that is, for every dollar in carbon revenue, a dollar should be removed from taxes elsewhere. The province of British Columbia provides a useful example of a successfully implemented revenue neutral carbon tax. Revenue from higher household utility costs should be prioritized for areas likely to reduce carbon emissions in the longer run and promote energy efficiency. At the same time, it is important to ease the impact on lower-income households – which tend to spend a larger portion of their income on utilities and so may be disproportionately impacted by rising prices.

Offsetting the negative impact of higher carbon prices is also important across the business sector. Transitional support for EITE industries will be important, as they are most at risk from diminished competitiveness related to the lack of comparable measures across the economies of their main trading partners. Performance based measures, which reward energy efficiency, are optimal but more difficult to implement; partial exemptions may be utilized during the early years of implementation. Ultimately these industries will need to adapt to a lower carbon world, and competitiveness issues will be mitigated as more jurisdictions adopt carbon pricing,[8] although this trend could be slowed by recent changes in political climates.

Beyond the most exposed industries, it may be useful for governments to provide support for industrial competitiveness more broadly, while encouraging firms to invest in increased energy efficiency and improving industrial processes.[9] Provincial priorities will vary, but in broad terms, a modest reduction of corporate tax rates and tax credits targeted at investment in upgraded equipment and skills training may be a good starting point for discussion. If done correctly, these incentive structures could mean Canada enjoys a first mover advantage, opening new markets for Canadian innovation to other countries as carbon pricing is more widely adopted. The converse is also true however, and governments should be careful to ensure that pricing doesn't result in little more than an additional competitive drag on Canadian industry. Regardless of specifics, it is likely that revenue neutrality is the best starting point to achieve ideal outcomes.

Bottom Line

Pricing is the most efficient way of reducing carbon emissions, and so will be the key driver for Canada to reach its Paris Agreement targets. Carbon pricing is likely to generate significant government revenue, on the order of 1% to 3% of GDP. At the same time, Canada appears likely to have the most aggressive pricing policy in North America, with potential negative implications for competitiveness. As such, it will be crucially important that provincial governments make effective use of carbon revenues. Revenue neutrality is an excellent guiding principal to ensure that individuals and businesses do not, in aggregate, face a greater cost burden. Within this framework, important price signals can be sent, not just to discourage emissions (via the carbon price itself), but to encourage innovation and competitiveness through targeted tax reductions and/or subsidies. Helping the most impacted industries transition will also be important. Ultimately, the move to nation-wide carbon pricing may appear as a fork in the road, with one path choosing climate objectives while the other one prioritizes economic growth. The fork is an illusion however: the right mix of policies can achieve both objectives. Still, the path that leads to a more prosperous and cleaner future is not easy to map out, with diligent planning and pursuit of such a plan of utmost importance for governments.

How are revenues recycled in the U.S.?

The price of emission allowances in the RGGI has ranged from US$1.86 to US$7.50 per metric tonne of CO2, with participating states having discretion as to how they invest proceeds that have amounted to US$2.6bn thus far. Most of the revenues (about 60%) have been invested in boosting energy efficiency measures for the nearly 1 million households and more than 20 thousand businesses that span the nine state area with about 13% also used to invest in clean and renewable energy initiatives for households and businesses. Nearly 10% of the proceeds have been used for greenhouse gas abatement programs, with about 15% returned to consumers directly on their utility bills.

Within the WCI, California offers free allowances of up to 90% of emissions to electrical and natural gas distributors (which must be used for ratepayer benefit) as well as large industrial customers (based on performance benchmarks) with the share designed to decline over time. California recycles the proceeds of the carbon credit auctions, which have brought in about US$2.5 billion thus far. Prior investments have included transportation, sustainable communities, clean energy and energy efficiency, natural resources, and waste diversion.

ENDNOTES

1 Minimum prices have been incorporated to account for internal competitiveness concerns (raised by British Columbia). British Columbia has indicated that it is unwilling to increase its carbon tax beyond its current $30/tonne level in 2021 if Ontario and Quebec do not have similar prices. Given Ontario and Quebec's cap and trade schemes will be linked with California's, the potential existed for significantly lower carbon pricing in these jurisdictions, even given emissions caps consistent with a $50/tonne carbon tax.

2 See http://www.fin.gov.bc.ca/tbs/tp/climate/A6.htm

3 As an example, according to the American Clean Energy and Security Act (H.R. 2454), the EITE industries were defined as having trade intensity of 15% or more and energy intensity of 5%.

4 The logic here is that, absent these support measures, production will migrate to low or no carbon price jurisdictions, reducing Canadian industrial output but leaving global emissions unchanged. Measures to assist EITE industries are further discussed in a subsequent section.

5 It should be noted that competitiveness does not come down to price alone, and carbon pricing is only one of many factors that determine the relative competitiveness of a product or industry.

6 The term 'fugitive emissions' refers to leaks and other unintended releases of gas, generally from industrial activities.

7 It is worth noting that to the extent that carbon pricing replaces inefficient regulations (so called 'green tape'), it may improve industrial competitiveness.

8 The speed at which other countries adopt carbon pricing should help determine the pace of reduction of supports to these industries: in an (ideal) world of global carbon pricing, industry exemptions clearly don't make sense.

9 Another tool to maintain competitiveness are Border Tariff Adjustments, where goods from non-carbon pricing jurisdictions would face tariffs equivalent to the domestic price for associated with the emissions resulting from the production of the good. This is made possible by the national imposition of carbon pricing, as tariffs fall in federal jurisdiction. There are two drawbacks to this approach however. First, while the approach would likely be allowable under international trade agreements, it would almost undoubtedly face a legal challenge from one or more trading partners which could take years to resolve. Second, it does not necessarily address the potential reduced competitiveness of the export sector, as exports would still compete with goods from non- or low-carbon cost jurisdictions.