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CANADA WEST FOUNDATION

# PATCHWORK POLLUTION \$OLUTION

Stitching together a  
Canadian climate plan

JULY 2015

ANNA CAMERON & TREVOR MCLEOD



## CANADA WEST FOUNDATION

This report was prepared by Anna Cameron and Trevor McLeod for the Canada West Foundation's Centre for Natural Resources Policy. The authors extend thanks to Dale Beugin and Velma McColl for providing comments on a draft of the report. Any errors or omissions remain the responsibility of the authors. Finally, the authors wish to acknowledge the contributions of Dylan Jones, Catherine Harder, Doug Firby, Jamie Gradon and Sophie Lacerte of the Canada West Foundation.

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ISBN 978-1-927488-69-0

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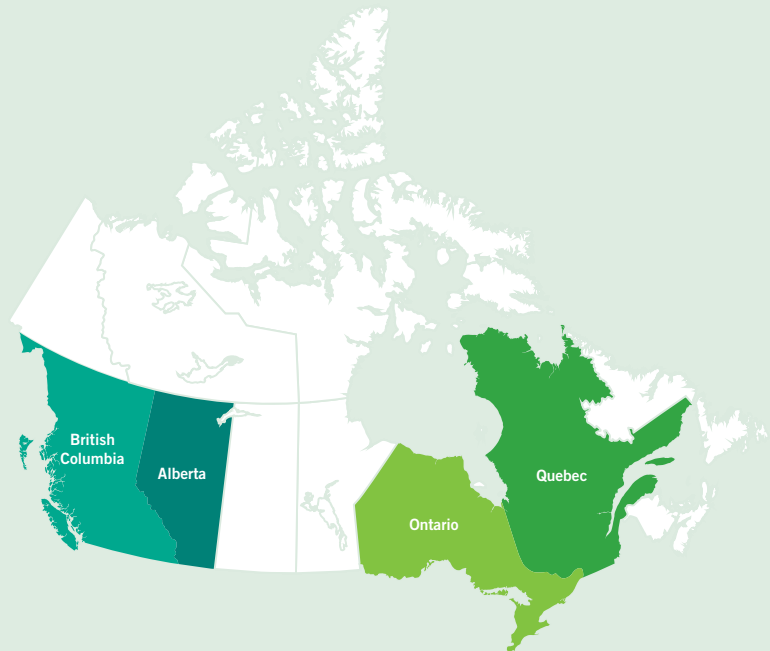
In December, the nations of the world will gather in Paris for the United Nations Climate Change Conference. The goal is to negotiate a universal, legally binding agreement to reduce global greenhouse gas (GHG) emissions that will enter into force in 2020. There has not been this much optimism in international climate change circles since the Copenhagen conference in 2009. Such optimism is reflected in a recent World Bank study that reports carbon pricing is on the rise internationally, with nearly 40 national jurisdictions implementing or planning to adopt either an emissions trading system or a carbon tax.

**BRITISH COLUMBIA,  
ALBERTA AND QUEBEC**  
HAVE ALL IMPLEMENTED  
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LINKS WITH QUEBEC'S  
CAP-AND-TRADE SYSTEM.



Canada did not get its act together in time for Copenhagen. Instead of presenting a coherent national approach to address climate change, provincial leaders showed up and aired our dirty laundry – exposing our national fault lines. Canada has an opportunity to write a very different script in Paris.

The federal government has set new targets but steadfastly resists a market-based emissions trading system. Rather, the federal government advocates a sectoral regulatory approach to reducing emissions. As Paris approaches, however, Canada's premiers appear poised to play a positive role. British Columbia, Alberta and Quebec have each implemented a price on carbon. Ontario has announced its intention to link with Quebec's cap-and-trade system. Once Ontario's system is in place, more than 75 per cent of Canadians will live in a jurisdiction with a carbon price. Meanwhile, both B.C. and Alberta are actively reimagining the way they price carbon. There is momentum in Canadian provinces in advance of Paris.

Provincial leadership on carbon pricing is welcomed, but this decentralized approach to carbon pricing has produced a patchwork of policies – and, perhaps more importantly, prices. Policy fragmentation often arises in Canada as a response to economic differences and political realities. When it comes to carbon pricing, however, fragmentation is not optimal. In particular, significant inefficiency concerns emerge in the face of asymmetrical prices and varying degrees of stringency. Since carbon pricing instruments can deliver emissions reductions effectively and at least cost, inefficiency concerns must be addressed to ensure that policies achieve their potential. One way in which provinces could address these issues is by aligning or linking their systems to achieve uniformity of price and stringency.



This will take time and effort, but there is low hanging fruit. With the Paris summit fast approaching, Canada has not yet articulated a cogent plan. This report provides provincial leaders with a pathway to aligning emission reduction policies.

The report is divided into three sections. It begins by providing an overview of carbon pricing systems at the provincial level. The second section explains in depth the inefficiency concerns associated with a fragmented policy approach to carbon pricing in Canada. The final section explores the various ways in which distinct carbon pricing systems can be linked to improve overall policy efficiency. The following public policy findings emerge from this analysis:

#### 01

**THE ESTABLISHMENT OF AN OFFSET MARKET, SHARED CANADA-WIDE, IS AN IMPORTANT FIRST STEP.**

#### 02

**IN RE-EVALUATING SYSTEMS AND DESIGNING NEW ONES, THE WEST SHOULD FIRST DETERMINE HOW ITS SYSTEMS CAN BE INTEGRATED, AND THEN CONSIDER HOW THESE SYSTEMS CAN BE LINKED TO THE REST OF CANADA.**

#### 03

**IN PURSUIT OF MORE EFFECTIVE CLIMATE POLICY, THE PROVINCES – AND CANADA AS A WHOLE – SHOULD BEAR IN MIND THAT CARBON PRICING REPRESENTS ONLY ONE POLICY TOOL AMONG THE MANY NECESSARY TO ACHIEVE SUBSTANTIAL EMISSIONS REDUCTIONS.**

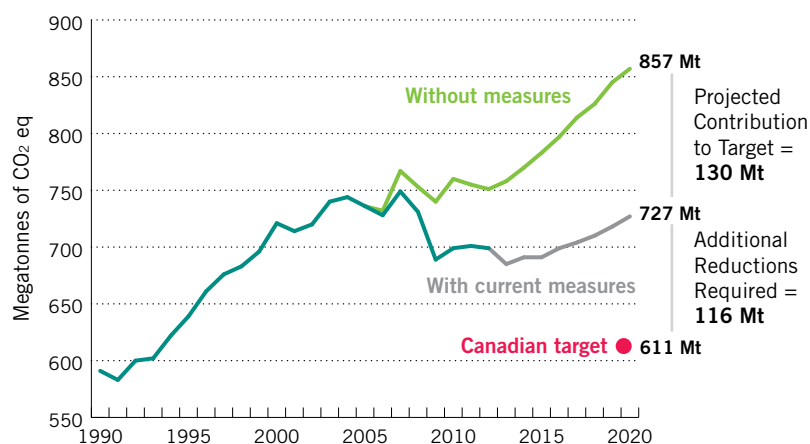


## INTRODUCTION

In May, the Government of Canada announced its new GHG reduction target – a 30 per cent cut in emissions below 2005 levels by 2030 – which will comprise part of the plan it will bring to the United Nations Climate Change Conference in December. However, the most recent government report on emissions trends suggests that Canada is not on track to meet its previous 17 per cent reduction target for 2020.<sup>1</sup> Further analysis reveals that all provinces, with the exception of Newfoundland and Nova Scotia, will fall short of their targets. Although plans to spur emissions reductions have proliferated across the nation, the most recent being Ontario's decision to link with Quebec's cap-and-trade system, a harsh reality remains: carbon emissions are rising, widening the gap between targeted and projected reductions, both provincially and in aggregate.



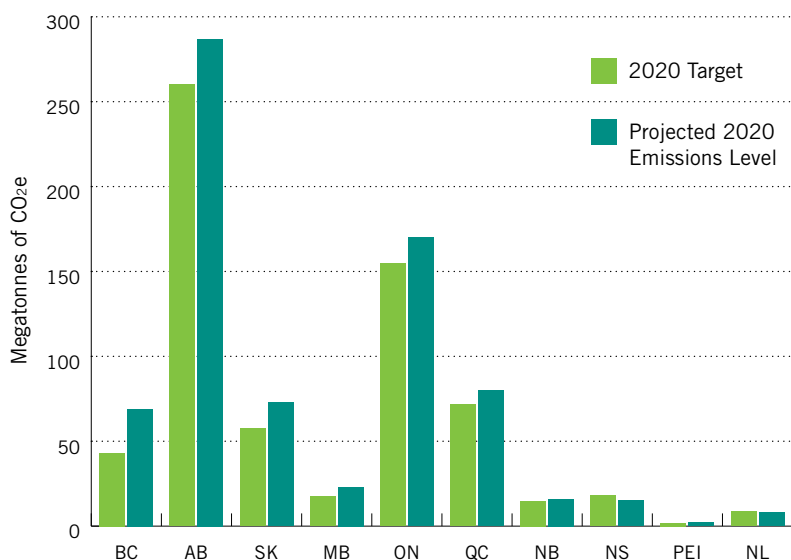
## PROGRESS ON CANADA'S 2020 TARGET (Mt CO<sub>2</sub>e)<sup>2</sup>



Source: Canada's Emissions Trends (Environment Canada, 2014)

## 2020 PROVINCIAL EMISSIONS REDUCTIONS

TARGETED & PROJECTED (MtCO<sub>2</sub>e)



Source: Canada's Emissions Trends (Environment Canada, 2012, 2014); Pembina Institute

Efforts to cut emissions must be strengthened and unified across the country if Canada hopes to get close to its established targets. New instruments must be designed, and current ones updated, with the goal of achieving more effective policy outcomes at the lowest possible cost. Carbon pricing is one market-based, cost-effective\* tool that aligns with these important environmental and economic objectives.

Forty national and more than 20 sub-national jurisdictions have adopted or will implement carbon pricing instruments as a part of broader climate change policies<sup>2</sup> this year, according to the World Bank. Putting a price on carbon emissions sends an economic signal to polluters, which creates an incentive to curb emissions and to invest in and adopt clean technologies. A cap-and-trade scheme, such as the European Union's Emissions Trading System (EU ETS), and carbon taxes similar to those applied in the Nordic countries, are two such examples.

GHG emissions can also be curbed through regulation that punishes polluting behaviour, often through emissions standards and technology-based mandates. In Canada, this includes standards for cars, light trucks and on-road heavy-duty vehicles; regulations for coal-fired electricity generators; and commitments to regulate hydrofluorocarbons (HFCs). Stringent regulation can lead to real emissions reductions, whereas carbon pricing is cost-effective but not necessarily as effective in lowering emissions.<sup>3</sup>

\*A cost-effective approach achieves emissions reductions at least cost.



## CARBON PRICING & TOOLS

Carbon pricing works by placing a dollar value (or price) on each tonne of CO<sub>2</sub>-equivalent emitted, thus increasing the cost of polluting. This creates an economic incentive for firms and individuals to reduce their emissions, or to invest in the research and development of more energy-efficient and environmentally friendly technologies.

Carbon can be priced in a variety of ways to achieve reductions in GHG emissions.

### Carbon Taxes

A carbon tax places a direct price on carbon emissions through the institution of a tax rate (dollar amount) on each unit of CO<sub>2</sub>e\* emitted. Governments often use the revenue generated by a carbon tax to finance other environmental initiatives, invest in programs to research and develop green technologies, or lower other taxes, such as personal and corporate income taxes. Since the price of one tonne of CO<sub>2</sub>e in a carbon tax system is always equivalent to the tax rate, carbon taxes provide price certainty. However, the total volume of emissions generated within the system will fluctuate based on the response of firms and individuals to the tax.

### Cap-and-Trade or Emissions Trading Systems

Cap-and-trade schemes set a cap on the total level of permitted GHG emissions within a system. Each tonne of CO<sub>2</sub>e accounted for within the system, as determined by the cap, represents a permit or an allowance, which the regulatory body distributes among participating firms. The regulator can issue these allowances free of charge and sell them at auctions. Firms that pollute below their allowance limit can sell (trade) any excess allowances to firms that emit in excess of their cap. This creates a market that determines the price of CO<sub>2</sub>e emissions. When the market price for allowances – the carbon price – is greater than the cost of emissions abatement, firms will take steps to reduce emissions, so as to avoid purchasing additional allowances. However, if the cost of allowances is lower than that of abatement, firms will purchase additional allowances to meet compliance standards. While the price of carbon fluctuates in a cap-and-trade system based on the market price for allowances, the total level of emissions generated by participating firms is certain.

Canadian provinces should be commended for implementing carbon pricing systems, but this fragmented approach to carbon pricing policy is not ideal. The inefficiencies inherent in a patchwork of provincial policies threatens the overall cost-effectiveness of the systems. Though provincial leadership on carbon pricing is the practical route, in the absence of federal leadership, harmonization of policies would reduce efficiency concerns. Accordingly, this report will examine the range of options available to provincial governments as they move forward with carbon pricing policies.

\*Carbon dioxide equivalent.





# Canadian Provinces are Implementing Distinct Carbon Pricing Systems

Canadian provinces have instituted distinct carbon pricing policies. Three provinces – British Columbia, Alberta and Quebec – have implemented policies that place a price on GHG emissions. A fourth, Ontario, announced in April it would link with Quebec's system. These policies range from a carbon tax in B.C. to a baseline-and-credit system in Alberta and a cap-and-trade scheme in Quebec. There is a patchwork of provincial carbon pricing schemes. It is apparent that, given economic differences and political realities (that is, sensitivity to natural resource ownership and the risk of interjurisdictional wealth transfer), a one-size-fits-all approach is often a non-starter.

## QUEBEC

The Province of Quebec regulates roughly 85 per cent of Quebec's GHG emissions through its Cap and Trade System for Greenhouse Gas Emissions Allowances. Launched in 2013, it was the first sub-national cap-and-trade scheme in Canada. In January 2014, it linked its system to California's cap-and-trade scheme through the Western Climate Initiative.

Here's how it works: the government establishes a yearly cap on total emissions in the province. This number corresponds with the total number of emissions allowances circulating in the cap-and-trade system, which the government then allocates to regulated firms\* in the form of emission units. While some of these emission units are distributed free of charge, based on a firm's historic carbon intensity (to trade-vulnerable emitters exposed to international competition, for example), the rest are sold at auctions held quarterly by the Quebec government.\*\*

At the end of each three-year compliance period, firms must hold enough emission units to account for their reported GHG emissions. In addition to the allocated emission units, firms can purchase more allowances from other regulated firms (trade), or they can acquire offset credits from verified projects. Though Western Climate Initiative provisions state that offsets can comprise up to 49 per cent of a firm's compliance obligation, both Quebec and California have limited the use of offsets to eight per cent.

## WESTERN CLIMATE INITIATIVE

Started in 2007, the Western Climate Initiative (WCI) is an international partnership of Canadian provinces and American states committed to developing a joint strategy for the reduction of greenhouse gas emissions. In particular, WCI partners hope to create a regional carbon market through the implementation of a joint cap-and-trade program. At one time, WCI partners included British Columbia, Manitoba, Ontario, Quebec, Washington, Oregon, Montana, California, Arizona, New Mexico and Utah. However, all U.S. states with the exception of California withdrew in 2011. The remaining WCI partners are the Canadian provinces of British Columbia, Manitoba, Ontario and Quebec, and the U.S. state of California. These jurisdictions work collaboratively through the WCI to envision and align their emissions trading systems.

The Western Climate Initiative is the largest carbon market in North America. Emission allowances are fully tradable and indistinguishable between jurisdictions. The WCI also has created a larger market that should drive down the price of emission units.

\* Regulated firms are those in the electricity and industrial sectors, as well as fossil fuel distributors, that emit 25,000 metric tons or more of CO<sub>2</sub>e annually. Note that for the first compliance period (2013-2014) only the electricity and industrial sectors were regulated.

\*\* In Quebec, electricity producers and fossil fuel distributors do not receive free allocations, and must purchase emissions units at auctions held by the government four times a year. In 2013, the government established a minimum price of C\$10.75. Each year, this price increases at a rate of 5% plus inflation, until 2020.



## CARBON OFFSETS

A carbon offset is a credit that a firm receives for reducing greenhouse gas emissions, which another firm can then purchase in order to neutralize – or offset – the emissions that it generates. Measured in tonnes of CO<sub>2</sub>-equivalent (tCO<sub>2</sub>e), offsets represent projects or initiatives that have achieved emissions reductions, such as the installation of renewable energy infrastructure, and the implementation of energy-efficiency and carbon-sequestration projects.

Carbon offset systems are usually integrated alongside emissions trading programs as a compliance option for

regulated firms. For example, Alberta's *Specified Gas Emitters Regulation* allows regulated facilities to meet intensity targets by purchasing carbon offsets through the Alberta Offset System, wherein each offset represents a certain reduction in CO<sub>2</sub>e. In these cases, only emissions reduction projects implemented by firms not covered by the emissions trading system qualify as offsets. When such firms reduce emissions, they can register their reductions with an offset registry; however, before firms can receive credits, an independent third party reviews and verifies the credibility of the project.

PROVINCE	OFFSET SYSTEM	PARTICIPANTS/ PROTOCOLS	VERIFICATION	CONNECTION TO CARBON PRICING SYSTEM
B.C.	British Columbia-based offset purchase mentioned as a compliance mechanism for regulated LNG facilities <i>Proposed</i>	Limited to British Columbia	n/a	No limit on compliance through this mechanism
AB	Alberta-based Offset Credit System	Credits available to Alberta facilities, municipalities, agricultural producers, and others that emit less than 100,000 tCO <sub>2</sub> e/year; quantification protocols developed according to the ISO 14064-2 platform and standards.	Alberta Emission Offset Registry (AEOR): Managed by the CSA Group, in partnership with the Government of Alberta, administers the registry.  The registry is an online, publically accessible, platform. Registered projects require the following documentation: A third-party verified project plan and report, a verification report and a greenhouse gas assertion.	No limit on compliance through this mechanism
SK	n/a	n/a	n/a	
ON	Through cap-and-trade system (WCI)	TBD	TBD	WCI permits up to 49% of reductions through offsets
QC	Through cap-and-trade system (WCI)	Entities not covered under the cap-and-trade system.  Protocols: manure storage facilities (methane); landfill sites (methane); ozone depleting substances	Ministry of Sustainable Development, Environment, Wildlife and Parks administers the system through the Carbon Market Office. Projects must be entered in the register of offset credit projects, project reports must be submitted to and verified by an independent third party, and an offset credit issuance application must be submitted to the Carbon Market Office (along with the documentation mentioned above). Quebec has also established an Environmental Integrity Account (EIA) – a pool of offset credits created by withholding 3% of offset credits awarded for registered projects.	8% usage limit

## OVERVIEW OF PROVINCIAL CARBON PRICING SYSTEMS

PROVINCE	SYSTEM	PRICE	COVERAGE	LEGISLATION	REGULATIONS	OFFSETS
B.C.	Carbon tax	\$30 tCO <sub>2</sub> e	Nearly all fossil fuels (gasoline, diesel, natural gas, coal, propane, home heating fuel)	Carbon Tax Act	Carbon Tax Regulation	No
	LNG	\$25 tCO <sub>2</sub> e (tech. fund)	LNG Facilities emitting > 25,000 tCO <sub>2</sub> e/year	Greenhouse Gas Industrial Reporting and Control Act	<i>Regulations currently under consideration</i>	Yes – from within British Columbia
AB	Credit-based trading system	\$15 tCO <sub>2</sub> e (tech. fund) <i>Will increase to \$20 tCO<sub>2</sub>e in 2016, and \$30 tCO<sub>2</sub>e in 2017</i>	Facilities emitting > 100,000 tCO <sub>2</sub> e/year	Climate Change and Emissions Management Act	Specified Gas Emitters Regulation; Climate Change and Emissions Management Fund Administration Regulation	Yes – must be through Alberta Offset System and Registry (Alberta-based projects only)
SK	Credit-based trading system	\$15-25 tCO <sub>2</sub> e (tech. fund) – <i>proposed</i>	Facilities emitting > 50,000 tCO <sub>2</sub> e/year – <i>proposed</i>	Management and Reduction of Greenhouse Gases Act	Though enabling legislation exists, government has yet to develop/ implement regulations	<i>Proposed</i>
ON	Cap-and-trade (WCI)	TBD	TBD	Environmental Protection Amendment Act (Greenhouse Gas Emissions Trading)	n/a	Yes – WCI limits offset usage to 49%; common offset limit to be used across partner jurisdictions (8% in QC)
QC	Cap-and-trade (WCI)	\$15 tCO <sub>2</sub> e (at last auction)	Firms in the electricity and industrial sectors; fossil fuel distributors that emit > 25,000 tonnes/year	Environment Quality Act	Regulation respecting a cap-and-trade system for greenhouse gas emission allowances	Yes – 8% usage limit



Carbon Tax  
**\$30 tCO<sub>2</sub>e**  
LNG  
**\$25 tCO<sub>2</sub>e**  
(tech. fund)



Credit-based trading system  
**\$15 tCO<sub>2</sub>e**  
(tech. fund)



Credit-based trading system  
**\$15-25 tCO<sub>2</sub>e**  
(tech. fund)  
*proposed*



Cap-and-trade (WCI)  
**TBD**



Cap-and-trade (WCI)  
**\$15 tCO<sub>2</sub>e**  
(at last auction)

## ONTARIO

Ontario took early action of a regulatory nature to reduce carbon, including the phase out of coal fired electricity generation. Further, in April 2015, Premier Kathleen Wynne announced a plan for the Province of Ontario to introduce a cap-and-trade system as part of the Western Climate Initiative. The architecture of Ontario's system is expected to be similar to that in Quebec, since many design details are determined through the WCI (for example, price floors must be at the same level in partner jurisdictions). Wynne has noted that revenues raised through the implementation of the cap-and-trade system will be reinvested by the government into "projects that reduce GHG pollution and help businesses remain competitive,"<sup>4</sup> such as public transportation initiatives and building retrofits. The system could raise as much as \$2 billion per year, depending on the market price of carbon allowances.<sup>5</sup> As the system architecture is not yet known, it remains unclear whether, how and how much money will flow to the provincial treasury.

## ALBERTA

Alberta's *Specified Gas Emitters Regulation* (SGER) was introduced in 2007, and covers roughly 50 per cent of Alberta's GHG emissions. Under the SGER, large final emitters (LFEs) – industrial facilities that emit more than 100,000 tonnes of GHG annually – are required to reduce the intensity of their emissions by 12 per cent below an established baseline level. There are 106 facilities regulated under the SGER, spanning 13 economic sectors and accounting for roughly 70 per cent of industrial emissions.<sup>6</sup> Facilities in operation before 2000 determine their emissions-intensity baselines by calculating the average emissions intensity between 2003 and 2005. For newer facilities, the baseline is established based on emissions during the first three to five years of operation. Companies must phase in compliance with the 12 per cent intensity reduction target at a rate of two per cent per year. To comply, facilities can:

- improve facility performance to generate on-site emissions reductions
- purchase Emissions Performance Credits (EPCs) from facilities that have achieved emissions reductions beyond their targets
- acquire offsets from Alberta-based projects in uncovered/non-regulated sectors through the province's offset system, and

→ pay into the Climate Change and Emissions Management Fund (CCEMF) at a rate of \$15/tonne of CO<sub>2</sub>e to obtain compliance credits. Money collected in the technology fund is invested into "initiatives and projects that support emission reduction technologies and improve... [Alberta's] ability to adapt to climate change."<sup>7</sup>

Alberta's offset system allows facilities, municipalities, agricultural producers and other Alberta-based entities not covered under the SGER to obtain offset credits for emissions reduction activities. Entities partaking in Alberta's offset system can register their emissions reductions with the Alberta Offset Registry. They receive one offset credit for every tonne of reduced emissions. Large emitters regulated under the SGER can then purchase these credits to help achieve their emissions intensity benchmarks.

Alberta achieves on average seven megatonnes per year of emissions reductions,<sup>8</sup> according to Alberta Environment. Since 2008, facilities have contributed \$575 million to the technology fund, \$350 million of which has been invested into 109 clean energy projects by the Climate Change and Emissions Management Corporation (CCEMC).<sup>9</sup>

On June 25, 2015, the Alberta government announced a two-year renewal of the SGER, with two interim amendments to the regulation. Though the coverage of the policy will not change, stringency will increase to a mandatory intensity reduction of 15 per cent as of Jan. 1, 2016, and 20 per cent as of Jan. 1, 2017. In addition, the rate at which facilities will be required to pay into the technology fund will increase to \$20/tonne in 2016, and \$30/tonne in 2017. These updates are really interim measures, intended as short-term, placeholder updates while the government undertakes a comprehensive review. It is possible that Alberta will introduce an entirely different system when the review is complete.

## SASKATCHEWAN

Saskatchewan has focused its GHG emissions reduction efforts on developing a technological fix, rather than carbon pricing. It implemented the Boundary Dam Integrated Carbon Capture and Storage Demonstration project, a clean coal demonstration and storage project near Estevan, Sask. SaskPower hopes the project will demonstrate that carbon capture and storage technology is a viable emissions reduction tool for large, industrial emitters. There is potential to export the technology to countries like China which account for the lion's share of global emissions.



Saskatchewan has also passed legislation – the *Management and Reduction of Greenhouse Gases and Adaptation to Climate Change Act* – that supports the implementation of a system similar to Alberta's SGER. This legislation will let the province regulate major emitters through provisions for measurement, reporting and verification of GHG emissions. It also provides for the administration of an offset system. Proposed regulations drafted under the act require regulated emitters – that is, facilities that emit in excess of 50,000 tonnes of CO<sub>2</sub>e annually – to establish a baseline emissions level. They will be required to reduce emissions by two per cent of that baseline annually. During the bill's creation, policy-makers supported a system that would see firms reduce emissions by two per cent annually from 2010 to 2019. This would aid in achieving the government's target of a net reduction by 2020 of 20 per cent below 2006 levels.<sup>10</sup> Under the proposed framework, facilities can meet compliance obligations through a variety of mechanisms, including by paying into a technology fund at a rate of \$15-25/tonne,<sup>11</sup> by submitting earned or purchased performance credits, by purchasing Saskatchewan-based offsets and by submitting either pre-certified investments or credits recognizing early action.

The system has not yet been implemented. Consultations that have occurred with affected stakeholders suggest they want to link with Alberta, at least through the imposition of a common offset market.<sup>12</sup> A common offset market with Alberta represents a potential economic opportunity for Saskatchewan, the argument goes: large industrial emitters in Alberta are in need of offset credits, while Saskatchewan's projects are able to supply such credits.

## BRITISH COLUMBIA

### Carbon tax

In 2008, British Columbia implemented a broad-based\* carbon tax of \$10/tonne CO<sub>2</sub>e. It applies to roughly 70 per cent of total emissions in the province.<sup>13</sup> Phased in at an annual rate increase of \$5/tonne, the tax met its final scheduled increase in 2012, and sits at \$30/tonne. That is equal to 6.67 cents/litre of gasoline.<sup>14</sup> British Columbia's carbon tax is revenue-neutral – i.e., none of the revenue generated by the tax – an estimated \$1.25 billion for 2015/2016<sup>15</sup> – is used to fund government programs. Instead, it is returned to taxpayers through credits and reductions to various taxes, such as personal and corporate income taxes. The Carbon Tax Act requires that policy-makers table a plan each year outlining how carbon tax

revenue will be used to ensure equivalent cuts to other provincial taxes. For example, in 2013-14, revenue generated by the carbon tax allowed the B.C. government to cut corporate income taxes by \$440 million and personal income taxes by \$237 million.<sup>16</sup> To compensate those affected disproportionately by the tax, legislation also provides for a Low-income Climate Action Tax Credit (\$100/year for adults, and \$30/year for children), and a Northern and Rural Homeowner Benefit (up to \$200/year).

In the first five years following the implementation of the tax – from 2008 through 2013 – fuel use in B.C. declined by 16.1 per cent while consumption increased by three per cent in the rest of the country.<sup>17</sup> There is also evidence that the carbon tax is not hindering B.C.'s economic performance. Economic growth measured in per capita GDP improved by 1.75 per cent in B.C. between 2008 and 2013, compared to 1.28 per cent in the rest of Canada.<sup>18</sup> However, since 2012, gasoline sales in the province have increased six per cent, suggesting that the carbon tax might not be changing behaviour as much as initially expected.<sup>19</sup>

### Greenhouse Gas Industrial Reporting and Control Act

In November 2014, the British Columbia legislature passed the *Greenhouse Gas Industrial Reporting and Control Act* (GGIRC), which sets emissions intensity standards for liquefied natural gas (LNG) terminals. The act repeals the *Greenhouse Gas Reduction (Cap and Trade) Act*, which provided the authority to regulate emissions from large industrial emitters.<sup>20</sup> This responsibility, as well as provisions for reporting, offset and compliance requirements are instituted under the act. Of course, the architecture of this policy is not yet finalized and it is not clear how the policy will interact with the province's carbon tax.

LNG facilities are subject to an emissions intensity limit of 0.16 tonnes of CO<sub>2</sub>e for every tonne of liquefied natural gas produced. Regulated LNG facilities – those that emit in excess of 25,000 tonnes of CO<sub>2</sub>e/year – must measure and report emissions annually, ensuring that emissions generated are below the 0.16 tonne limit. If facilities do not achieve these reductions through operational changes, they can purchase emission offsets from within B.C., or pay into a technology fund at \$25/tonne, similar to the option available through Alberta's SGER. Facilities that achieve reductions beyond the established benchmark receive performance credits, which can be sold or banked for future compliance use.

\*The tax applies to nearly all fossil fuels, including gasoline, diesel, natural gas, coal, propane and home heating fuel.





# A Bottom-Up Approach is Not Ideal

The bottom-up approach to carbon pricing in Canada has resulted in a provincial patchwork of policies. These include multiple sets of regulations, an assortment of instruments, varying degrees of sectoral coverage and, most notably, different prices across jurisdictions. As a result, it is difficult to articulate a cohesive national climate strategy on the world stage. In Canada, however, a bottom-up approach is often required to satisfy economic and political imperatives. Stephane Dion, former leader of the Liberal Party of Canada, learned this the hard way with his Green Shift policy – a national emission policy that failed largely because it paid insufficient attention to the flow of wealth between Canadian regions.

The patchwork approach is also inefficient, especially when considering that policies pursued in isolation may not achieve their intended effect. In essence, a national stew of inconsistent policies sends conflicting price signals. This causes costs to rise while diminishing our ability to achieve our GHG reduction goals.<sup>21</sup>

There are three main reasons why different prices are problematic. We discuss each reason in turn.

**TABLE 1: CARBON PRICES ACROSS CANADA<sup>22</sup>**

PROVINCE	MARGINAL COST	AVERAGE COST
British Columbia	\$30/tonne (carbon tax)	\$30/tonne
Alberta	\$15/tonne (technology fund)	\$1.14/tonne
Ontario	TBD	TBD
Quebec	~\$15/tonne (at last auction)	\$11.41/tonne

Note: Given the recent changes to the SGER announced by the Alberta government on June 25, marginal cost will be \$20/tonne in 2016 and \$30/tonne in 2017. The higher intensity threshold and higher price will also increase the average cost. **Average cost understates the impact of regulatory systems as it does not capture investments made by firms to reduce emissions, only payments from carbon emitted.**

## TRANSACTIONAL INEFFICIENCY

### Avoiding unnecessary red tape

The variety of carbon pricing regulations across Canada's provinces creates costly red tape, both for the firms that operate across jurisdictions and for the governing bodies that administer regulations and related programs. The stringency of the rules varies, as do reporting requirements. Each program also has unique program components. As a result, firms operating in more than one province face high compliance costs and administrative headaches. These are costs that could better be directed at emissions reduction.

Harmonizing carbon pricing systems – or certain elements of them – through direct or indirect linking could enable provinces to align design and administrative elements. Streamlining compliance could reduce administrative costs for businesses that operate in more than one jurisdiction<sup>23</sup> and help ease concerns with Canada's fragmented policy environment.

Such aligning of carbon pricing policies could also ease the task for regulators. Working toward alignment of policies could also make it easier to share best practices in program administration and overall program design, especially in terms of emissions measurement, reporting and verification.<sup>24</sup> As well, containing administrative functions to a single regulatory body – through a common offset market and registry, for example – could reduce system costs overall.



## COMPETITIVENESS

### The level playing field

In Canada's fragmented policy environment, both firms and individuals experience costs that vary from province to province. Firms operating within jurisdictions with weak regulations and low prices enjoy competitive advantages. It also incents firms to move their operations to a jurisdiction where regulations are less stringent and costs are lower. This can result in increased emissions in aggregate (Canada-wide) in a phenomenon known as carbon leakage.

Carbon leakage describes a "leakage" of economic activity to jurisdictions with easier regulations. In such cases, emissions actually increase in jurisdictions with weaker policy, because firms that relocate there can pollute more at a lower cost.<sup>25</sup> Levelling the playing field could reduce this trend; if there is a uniform price on carbon emissions, firms face the same costs when they pollute, regardless of location. Industrial emitters in Alberta, for example, would face the same costs as those in B.C. and Ontario.

However, carbon leakage is not only an issue in terms of inter-provincial competition. Strong carbon pricing policies in Canada could also lead to carbon leakage to jurisdictions elsewhere in the world that do not price carbon at as high of a level. Carbon leakage is a two-fold competitiveness issue for countries adopting stringent regulations. The first problem<sup>26</sup> is that countries with strong carbon policy are at risk of losing global market share to those without controls.<sup>27</sup> The second is that carbon leakage encourages future investments by carbon-intensive industries to be directed away from countries with strong policy, and toward those with weaker controls.<sup>28</sup> To maintain economic prosperity,

Canada must remain an attractive place to do business internationally – an issue that must be considered in the design and implementation of carbon pricing policies. A carbon pricing policy that merely displaces polluting behaviour from Canada's borders is ineffective as it does little to achieve real emissions reductions at the global level.

One can imagine a scenario in which a cement firm, for example, decides to move production to a jurisdiction without a carbon price. If inputs are more GHG intensive (e.g. coal-fired vs. hydro-electricity) in the new jurisdiction then, perversely, the carbon price leads to increased global emissions.

Fortunately, it is possible to assist trade-exposed industries so that these problems pose less of a threat to international competitiveness. This can be accomplished at the domestic level by compensating trade-sensitive industries that are impeded by a carbon policy. Compensation can include allocating free allowances under a cap-and-trade program (which Quebec is already doing for trade-vulnerable emitters) and awarding tax credits under a carbon tax system.<sup>29</sup> The European Union has adopted a similar approach for dealing with carbon leakage concerns under its Emissions Trading System (EU ETS). Sectors that face significant carbon leakage (because there is competition from industries in countries that have weaker emissions restrictions) receive a higher share of allowances during trading periods.<sup>30</sup> Every five years, the EU Commission drafts a list of eligible sectors and sub-sectors based on criteria that define significant risk of carbon leakage.\*

\* The ETS directive states that a sector or sub-sector faces a significant risk of carbon leakage if: (1) the sum of direct and indirect additional costs induced by the ETS would lead to an increase in production cost of at least 5% AND the trade intensity of the sector with countries outside of the EU is above 10%; or (2) the sum of direct and indirect additional costs is at least 30% or the non-EU trade intensity is above 30%. (EU Commission – Carbon Leakage)

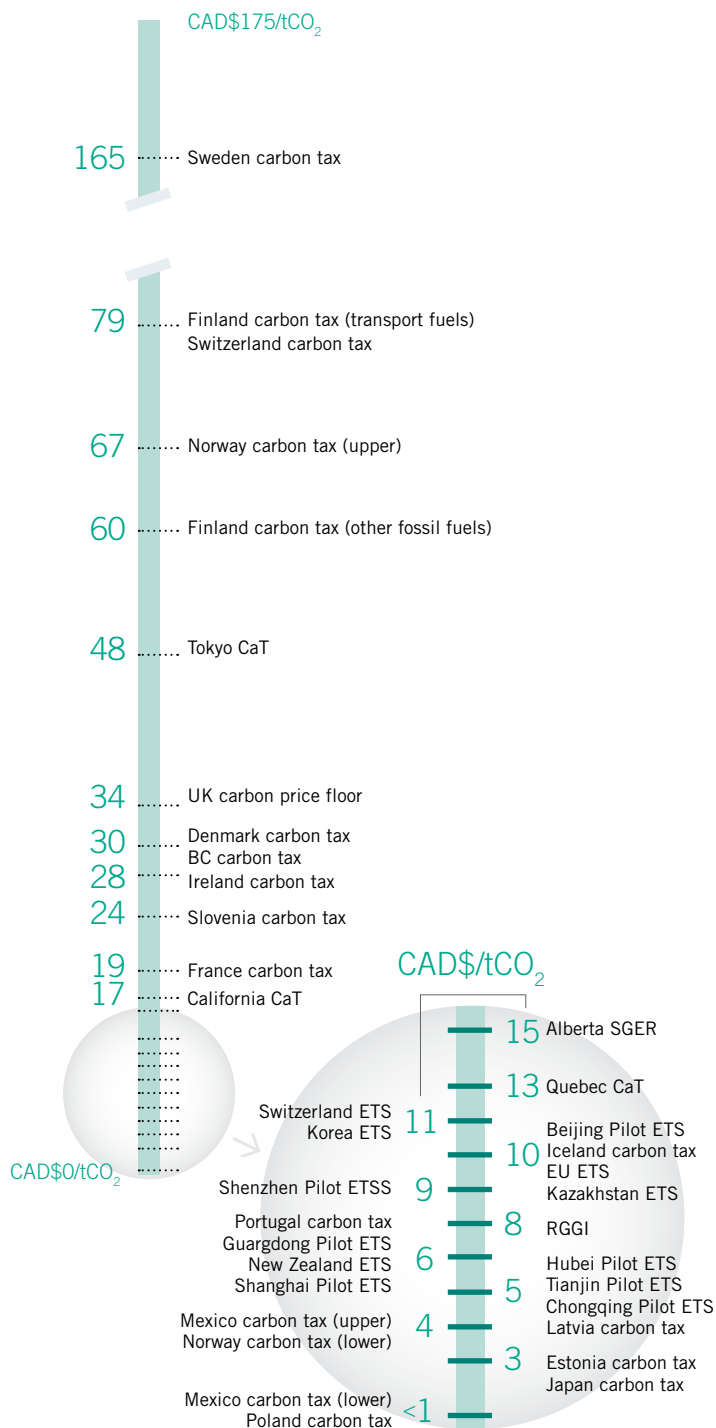
## COST EFFECTIVENESS

### Getting the lowest cost reductions

Canada's patchwork of carbon pricing systems mean firms face different emissions costs in each of the provinces in which they operate. There are varying prices on carbon, and inconsistent incentives to reduce GHG emissions across provinces. Firms regulated by less stringent policy face a lower polluting cost, and thus are not motivated to reduce emissions as much as those operating in jurisdictions with stronger policy.

This creates a risk that some of the lowest-cost reductions, when considering Canada as a whole, are not realized. Firms and individuals operating in provinces with higher prices will end up pursuing more expensive abatement opportunities than those available in lower-cost jurisdictions.<sup>31</sup> For carbon pricing to be effective across all of Canada, provinces must develop policies that reflect similar levels of stringency and price. This ensures that the distribution of emissions reduction activities shifts to achieve those reductions that are most efficient economically, and reductions in aggregate are attained at the lowest possible cost.<sup>32</sup> Put another way, linked systems allow for higher-cost reductions in one jurisdiction to be replaced by lower-cost reductions in another. This allows for flexibility in achieving emissions reductions, particularly in terms of location, without compromising overall reduction targets. By aligning carbon prices, Canadian provinces can ensure that the most economically viable emissions reductions are made, benefitting both our environment and our economy.

## GLOBAL CARBON PRICES



Source: World Bank, Carbon Pricing Watch 2015





# Refashioning the Patchwork:

## Options for Harmonization

None of this requires a one-size-fits-all approach at the federal level. Though federal leadership would simplify the coordination of provincial initiatives into an integrated national system, a harmonized, bottom-up approach to carbon pricing is possible if provincial schemes can be linked.

Carbon pricing systems are proliferating across the globe (at both the national and sub-national levels), which means that a global carbon pricing system will most likely develop from the bottom up. This will require nations and sub-national jurisdictions, such as provinces, to link instruments with the goal of a uniform global price over the long term. If provinces can coordinate their systems, the Canadian model could serve as a novel example for future international efforts.

Linking is the effort to harmonize carbon prices across different pricing systems. Broadly speaking, linkage occurs when jurisdictions adopt policies that make it easier for carbon pricing systems to interact. This would reduce or eliminate differences in the marginal cost of abatement.<sup>33</sup> In terms of efficiency, it does not matter whether there is one broad carbon policy or several distinct systems, as long as the price of carbon is uniform across jurisdictions. This helps ensure that firms will pursue the most efficient emissions abatement options.<sup>34</sup> Leveling the playing field in this way will also ensure competitiveness concerns are kept to a minimum when firms operate across provinces.

Other benefits of linking include the reduction of price volatility in cap-and-trade systems, an increase in market liquidity and a reduction in the potential for a small number of firms to exercise market power.<sup>35</sup> Linking also creates more certainty around future rules and schemes; a shared framework, rather than a constantly morphing patchwork; and builds confidence in the price of carbon emissions, while creating consistency in stringency and regulation.<sup>36</sup>

According to the Stern review,\* the full efficiency benefits of carbon pricing mechanisms cannot be reaped without deep, liquid and efficient markets.<sup>37</sup> Emitters respond best to predictable and stable carbon prices.

### LINKING CARBON PRICING SYSTEMS

#### Direct linkage of cap-and-trade systems

There are several types of linkage. In the case of multiple cap-and-trade systems, direct linking through trading of emissions permits can help to reduce the cost of meeting emissions reduction targets. Trading permits across systems allows higher-cost abatement choices in one system to be replaced by lower-cost reductions in another, without compromising emissions reductions in aggregate.<sup>38</sup>

When two cap-and-trade systems are linked through full trading of emissions permits, the prices of permits or allocations in each market settle to the same level. An example of this type of linking is the joint cap-and-trade market established by Quebec and California through the Western Climate Initiative. The cap-and-trade linking agreement mutually recognizes GHG emission allowances issued in both jurisdictions. They are fully tradable and indistinguishable, which renders the market price of allowances uniform.

It is important to note the impact that the size of each linked market has in determining permit prices in the joint market. In the case of two linked markets, the larger market will dominate, influencing greatly the linked price of permits. However, both California and Quebec gain economically from linking their cap-and-trade systems, according to a report developed by Sustainable Prosperity.<sup>39</sup> In particular, Quebec will experience a net gain of between \$34 and \$110 million

\* The Stern Review on the Economics of Climate Change is a 700-page report released for the British government in 2006 – it was authored by Nicholas Stern, Chair of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics.

by linking its cap-and-trade system with California's. Although allowance prices rose in California when the state linked with Quebec's system, California's net gain from trade is expected to be between \$284 million and \$442 million, based on an inflow of allowance revenues from Quebec.

In linking cap-and-trade systems, it is necessary to align key design elements, such as offset provisions and price-containment mechanisms (e.g. Quebec's price floor and stability reserve, which acts as a soft price ceiling). This is the primary challenge, but it will lead to price harmonization. If alignment of these elements is not feasible, then it is possible for jurisdictions to impose restrictions on cross-border flows (allowance limits) or to institute an exchange rate, although these measures would limit the efficiency gains of linking.<sup>40</sup>

### **Linking a cap-and-trade system to a carbon tax**

When carbon-pricing systems vary, as is the case in Canada, linkage is still conceivable. For example, it is possible to link cap-and-trade and tax systems by recognizing cap-and-trade allowances as a form of payment under the carbon tax system. Payments in excess of the mandated carbon tax rate can be translated into allowances to be sold to firms operating in the cap-and-trade market.<sup>41</sup> The result of this interaction is the alignment of permit prices in the cap-and-trade jurisdiction with the tax rate in the carbon tax system; depending on which price is higher, the carbon tax will create either a price floor or a price ceiling in the cap-and-trade jurisdiction.

If linkage is unrestricted between such systems, the result defeats the purpose of the cap-and-trade system – to establish an absolute cap on emissions. The carbon tax jurisdiction also risks experiencing a shortfall in tax revenue. However, it is possible to contain these issues by placing limits on the number of tradable permits during a set period.<sup>42</sup>

Another way of linking a carbon tax to a cap-and-trade system involves pinning the carbon tax rate to the market price in the cap-and-trade system. In this case, the jurisdiction implementing a carbon tax could determine its annual carbon tax rate by calculating the average market price of allowances in the cap-and-trade system for a given year. However, the price certainty of the carbon

tax – the instrument's key advantage – would be reduced, since it would fluctuate annually to match allowance prices. Moreover, linking such systems would create a certain degree of uniformity in carbon price between the two jurisdictions, even in the case of differing policy designs. This would require significant political and inter-jurisdictional coordination, including the establishment of a body to oversee the process.<sup>43</sup>

## **LINKING A CAP-AND-TRADE SYSTEM OR A CARBON TAX TO A BASELINE-AND-CREDIT SYSTEM**

It is also possible to link a cap-and-trade system to a baseline-and-credit system, such as the SGER. To do this, the safety valve or price ceiling in the baseline-and-credit system (the \$15/tonne technology fund price, if considering the case of Alberta's SGER) can be pinned to the average market price of allowances in the cap-and-trade system. This brings the two systems closer together in terms of marginal cost of abatement. Alternatively, the technology fund price could be applied in the cap-and-trade system as a price ceiling.

Linking a carbon tax to a baseline-and-credit system can be accomplished in a way similar to the alignment of a carbon tax and a cap-and-trade system. Again, there are two options for bringing the two systems closer to alignment in terms of the marginal price signal: permits from the baseline-and-credit system can be accepted in the carbon tax system in lieu of tax payments, or the price ceiling in the baseline-and-credit system can be pegged to the carbon tax rate, or vice versa, causing prices to converge. As with the previous scenario, this would require the establishment of a regulatory body to coordinate the policies.

## **LINKING OF OFFSET SYSTEMS**

There are less direct ways to link carbon pricing systems. Provinces could achieve price convergence across distinct systems, for example, by creating a common offset market or by aligning existing offset systems to render offsets fully tradable across jurisdictions. In such a case, the prices on carbon in various jurisdictions would converge to the market price for offsets in the shared system, resulting in a uniform

price signal.<sup>44</sup> Indirect linking through a common offset system would not result in the emergence of a single carbon price, but bring prices closer together. This is a great first step.

Offsets refer to measurable emissions reductions achieved by firms operating in sectors not regulated or covered by a carbon pricing system, such as forestry and agriculture. Once an offset project is verified as legitimate, entities can register their offsets for sale to firms regulated under a carbon pricing system. Regulated firms then use these offset credits to meet compliance standards. Overall, offsets involve both the displacement of emitting activities (in the case of reductions in an uncovered sector being transferred) and the capture of carbon emissions (in the case of planting trees, for example).<sup>45</sup> Offset markets provide regulated emitters with an additional compliance option, and given them more flexibility in the face of carbon pricing regulations. By extending coverage to unregulated sectors and firms, an offset market broadens the reach of a carbon pricing policy, making more reductions available and reducing compliance (and mitigation) costs.<sup>46</sup>

Linking offset systems across jurisdictions to expand the size and reach of the offset market increases the number of low-cost mitigation options available to emitters. According to the International Institute for Sustainable Development (IISD), this is particularly appealing in the absence of an economy-wide carbon pricing system, as is the case in Canada.<sup>47</sup> Consultation documents surrounding the implementation of carbon pricing regulations in Saskatchewan suggest that many participants supported developing a common offset market with Alberta, since it would generate advantages for both provinces. Specifically, large emitters in Alberta could benefit from the large supply of offset credits available through zero-till and other low carbon farming projects in Saskatchewan.<sup>48</sup> The price of compliance for firms in Alberta would also come down at a time when government take is increasing.

Linkage of offset systems would reduce abatement or mitigation costs, while increasing the number of reductions available, making for a more cost-effective system in general. Many scholars suggest that the alignment of offset systems is critical to aligning carbon pricing systems.<sup>49</sup> Creating a common market price for offsets in Canada

represents the first step in the full alignment of carbon pricing policies across provincial jurisdictions.

In linking distinct pricing systems through the establishment of a common offset market, special attention must be paid to the development of provisions to prevent double-counting and to ensure additionality. Since offsets represent real emissions reductions, it is important that they reflect activities that would not have happened otherwise.

Linkage of offset systems would reduce abatement or mitigation costs, while increasing the number of reductions available, making for a more cost-effective system in general. Many scholars suggest that the alignment of offset systems is a critical prerequisite to the direct linkage of carbon pricing systems. Creating a common market price for offsets in Canada represents the first step in a staged approach to harmonizing provincial carbon pricing systems.

## POINTS TO CONSIDER

The best linking situation in terms of price harmonization, environmental effectiveness, cost-effectiveness and competitiveness is one in which two or more emissions trading systems are linked directly. In this scenario, a single carbon price is possible, cost-effectiveness increases significantly, and the risk of carbon leakage is reduced as much as possible.<sup>50</sup> Linking emissions trading systems to carbon taxes also increases cost-effectiveness if tradable units are allowed to flow across jurisdictions.<sup>51</sup> However, if systems are only aligned to achieve price coordination, there are no guaranteed improvements in terms of cost-effectiveness.<sup>52</sup> In all scenarios, the risk of carbon leakage is reduced.<sup>53</sup>

As demonstrated through the example of Quebec and California, all jurisdictions benefit when systems are linked to facilitate emissions trading. Yet, when these gains are not immediately visible, challenges emerge making linking a harder sell. Accordingly, efforts to link carbon pricing systems will require political will, especially in the face of international competitiveness and wealth transfer concerns. Fortunately, the tools to mitigate these concerns exist. This could mean sheltering trade-sensitive industries, or placing percentage limits on out-of-province offsets.





## CONCLUSIONS & PUBLIC POLICY RECOMMENDATIONS

Canada's political leadership can reimagine provincial climate strategies (and carbon pricing systems) but it will take guts. This report shows that distinct carbon pricing systems can be linked effectively—the key is to send a uniform price signal across all provinces. When the price signal is consistent, firms operating within Canada (regardless of whether they are in B.C., Alberta or Ontario) face the same incentives to reduce emissions. Carbon leakage is contained. A first step is to establish a shared offset system which will force price convergence and gain much needed political support. Yet, when it comes to deeper integration or linkage of pricing systems, real progress may be more prospective if undertaken on a regional basis before bringing all of Canada together under one system.

## WE MAKE THREE RECOMMENDATIONS:

### 01

#### **CANADA-WIDE, THE ESTABLISHMENT OF A SHARED OFFSET MARKET IS AN IMPORTANT FIRST STEP TOWARD NATIONAL HARMONIZATION.**

The Council of the Federation notes that cooperation on carbon pricing should figure into any national energy strategy carried out by Canadian provinces.<sup>54</sup> Though the complete integration of provincial carbon pricing systems – especially without the involvement of the federal government – is a daunting task, Canadian provinces can take meaningful strides. Creating a shared offset market accessible across Canadian provinces would be a significant and feasible first step, achievable without a major reworking of the architecture of current systems. Acting together to take the initiative on offsets now will produce a strong foundation for deeper harmonization in the future.

Experts note that the alignment or harmonization of offset credit systems is a critical first step in any full-linking process. Linking offset markets would also alleviate some of the efficiency and competitiveness concerns associated with Canada's patchwork approach to carbon pricing. In practice, a shared offset market would help distinct provincial systems to achieve price harmonization, since offset prices across jurisdictions would converge with the existence of a common market. Linking smaller, province-specific markets (some of which – like Alberta's – operate in isolation) would also create a single market of viable size. Boundaries could be expanded to encompass a greater variety of sectors and to cover more project types. By bringing additional sectors – such as forestry, agriculture, and transportation – into the mix, linking offset systems could alleviate concerns over varying degrees of sectorial coverage among provinces.

Provincial rules and provisions surrounding offset markets are as diverse as the carbon pricing policies that they support. The creation of a common market would require provinces to align their offset protocols, including existing provisions

for offset project verification. To encourage this transition, provinces could work together to create a regulatory body for verification and other administrative purposes. Much of the technical work could draw on the work already done by WCI.

This type of governance mechanism would also act as a tool to streamline – and reduce – administrative costs across the country, both for regulators and emitters. This would alleviate some of the transactional efficiency concerns associated with a patchwork of policies. The common regulatory body could also set the stage for further collaboration, and be a venue for the sharing of best practices. Finally, collaborating to create a shared offset system and corresponding governance mechanism would signify a shared effort to reduce GHG emissions on the part of Canadian provinces. As the 2015 United Nations Climate Change Conference draws near, it is vital for Canada to present a unified climate vision, and a practical plan to achieve it. Provincial collaboration on carbon pricing policy would help do so.

The prospect for unified provincial action on carbon pricing exists. The fast-approaching summer meeting of the Council of the Federation represents a key opportunity to take meaningful steps toward a Canadian energy (and climate) strategy. The creation of a Canada-wide offset market in July would be a feather in the caps of Canadian provinces as they prepare for Paris in December.

### 02

#### **IN RE-EVALUATING SYSTEMS AND DESIGNING NEW ONES, THE WEST SHOULD FIRST DETERMINE HOW THEIR SYSTEMS CAN BE INTEGRATED, AND THEN CONSIDER HOW THEY CAN BE LINKED TO THE REST OF CANADA.**

Together, Saskatchewan and Alberta account for more than 45 per cent of emissions generated in Canada, while representing no more than 15 per cent of the nation's total population.<sup>55</sup> Alberta's SGER, which has been criticized



for a lack of effectiveness, has been extended for now. Saskatchewan has not yet introduced a carbon pricing system, even though the province passed legislation years ago to enable the creation of regulations similar to those in Alberta. As these provinces revisit their approaches to carbon pricing, opportunities for western alignment should figure heavily into discussions around policy design.

In fairness to Alberta and Saskatchewan, both provinces have prioritized technology – improving Canada’s ability to contribute to reductions in rapidly industrializing countries such as India and China. This technology focus in their approaches is worth protecting even while greater effort is made to reduce Canadian emissions.

Western Canadian provinces should work to align as many features of their respective carbon pricing systems as possible. However, it is most critical to streamline certain policy elements, such as target stringency and type (intensity or absolute), enforcement provisions, offset system design and cost-containment measures.<sup>56</sup> When distinct systems diverge along these lines, there are significant barriers to linking.

Luckily, Canada’s West is familiar with collaboration. Established in 2010, the *New West Partnership* (NWP) between B.C., Alberta, and Saskatchewan has eliminated barriers to trade and investment across the three provinces. With this collaborative platform in place, western Canadian provinces have an incredible resource at their disposal to harmonize carbon pricing policies. This would be a perfect issue for the NWP’s Energy Memorandum of Understanding to take on. The forum was created in 2010 to tackle complex inter-jurisdictional issues, but it has been underutilized, and when it has been employed, has generally focused on minor issues. Once western Canadian provinces establish these vital links, a unified West should consider the ways in which it might establish direct links with the rest of Canada, namely the joint cap-and-trade system in Quebec and Ontario.

A starting point for collaboration, if Alberta and Saskatchewan pursue policy designs similar to those they have implemented in the past, is to link B.C.’s LNG regulations with those covering large emitters in Saskatchewan and Alberta. With similar design elements around target stringency and type, compliance mechanisms and cost-containment measures, the overlap among these systems represents an opportunity for meaningful collaboration.

As noted in this paper, there are technical mechanisms to mitigate strong wealth transfer elements which could be adopted early to ease risk.

### 03

**IN PURSUIT OF MORE EFFECTIVE CLIMATE POLICY, THE PROVINCES – AND CANADA AS A WHOLE – SHOULD BEAR IN MIND THAT CARBON PRICING REPRESENTS ONLY ONE POLICY TOOL AMONG THE MANY NECESSARY TO ACHIEVE SUBSTANTIAL EMISSIONS REDUCTIONS.**

Policy-makers and political leaders must remain aware that any effective climate change policy will be comprised of a range of policy tools. While policies that place a price on carbon emissions will play a major role in achieving emissions reductions, especially based on their cost-effectiveness and revenue-generating potential, additional command-and-control regulations (such as transit and pedestrian-friendly planning, building standards, funding for green technology research and development) are a vital complement. If Canada is to achieve its latest emissions reduction targets, overall policy must be holistic, responsive and adaptable. Carbon pricing will certainly constitute an important policy element of any such strategy.

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## NOTES

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