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CARBON PRICING

A collection of the executive summaries of our carbon pricing reports (2015-2016)

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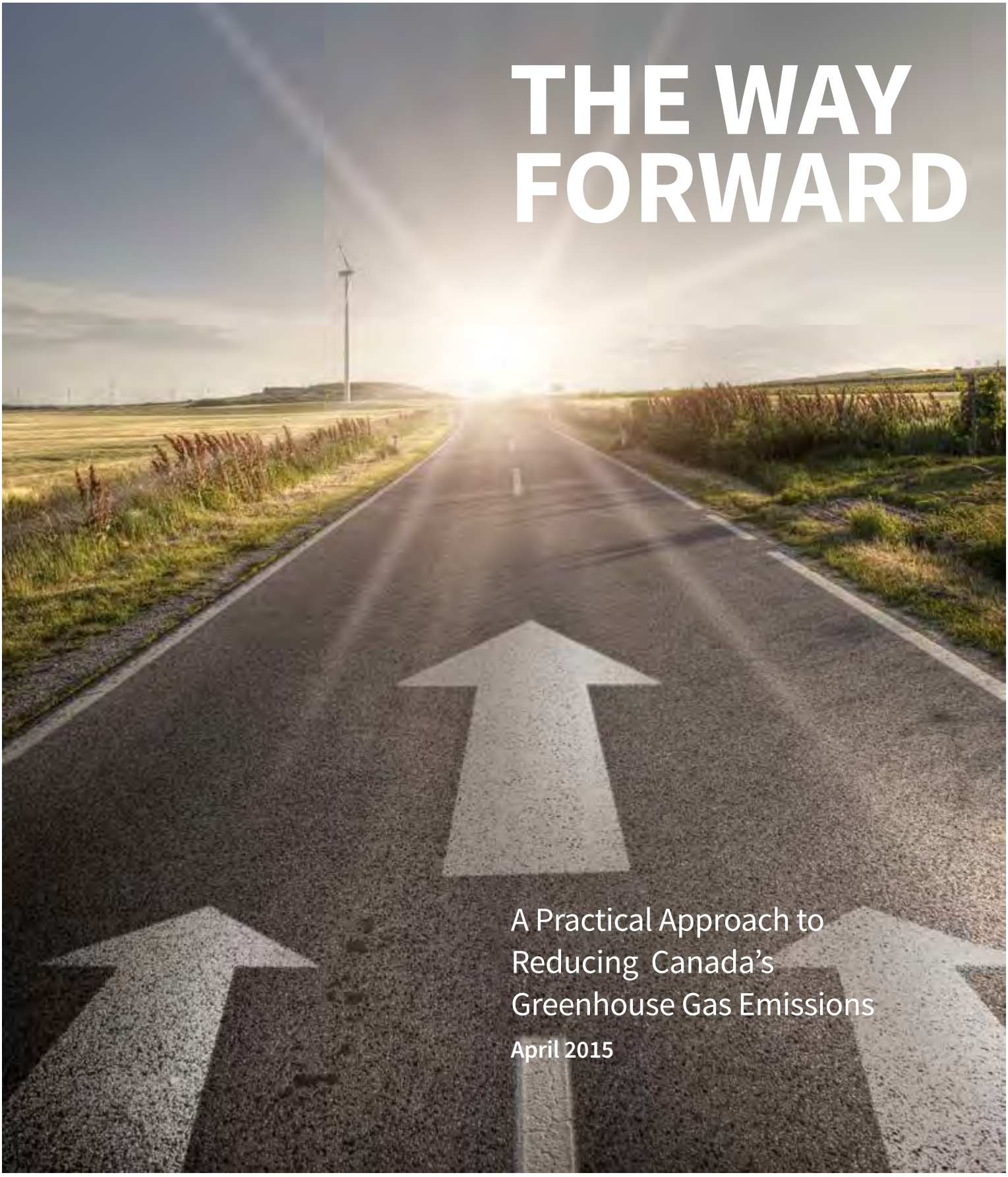
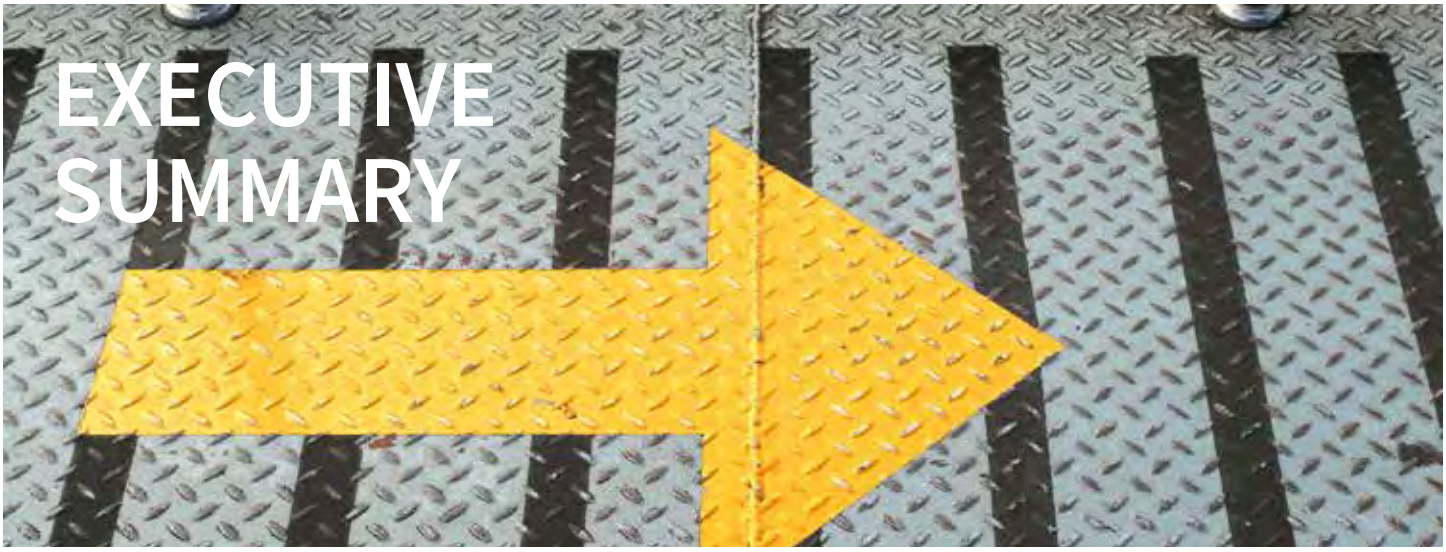


THE WAY FORWARD

A Practical Approach to Reducing Canada's Greenhouse Gas Emissions

April 2015



EXECUTIVE SUMMARY

For most Canadians, "doing nothing" in response to climate change is simply not an option. Canadians already bear significant economic costs associated with the climate impacts from rising greenhouse gas (GHG) emissions; almost all regions and economic sectors are vulnerable. However, most provinces and the country as a whole are not on track to achieving existing emissions-reductions targets for 2020, let alone the deeper reductions required over the longer term. Achieving meaningful reductions will require the design and implementation of more-stringent policies.

Delaying such policy actions will mean higher future costs for Canadians. Getting moving now allows policy to begin reducing GHG emissions and then ramping up to yield more significant reductions over time. In this way, households will have the ability to adapt their behaviour, and businesses will have the flexibility to adopt and develop technologies required to transform our energy system. Falling behind the rest of the world can lead to competitiveness challenges in a global economy that increasingly recognizes the economic value of low-carbon activities.

The question we now face in Canada is *how* to move ahead in the most practical and cost-effective way. This report offers a clear way forward—through provincial carbon pricing.

The report explores two central issues. First, why provincial carbon pricing is the most practical way to move forward on achieving meaningful, low-cost reductions in GHG emissions. Second, which details and fundamentals of policy design need to be considered as provinces take their next steps.

These ideas are explored by drawing on analysis and evidence from economic theory, from policy experience both internationally and in Canada, and from new economic modelling. Three key policy criteria are emphasized throughout the report: (1) policies are *effective* if they achieve the required level of emissions reductions; (2) policies are *practical* if their designs reflect local economic contexts and priorities; and (3) policies are *cost-effective* if emissions reductions are achieved at least cost.

The report concludes with four recommendations for Canadian policymakers.

Recommendation 1: All provincial governments should move forward by implementing carbon-pricing policies.

Making national progress on reducing GHG emissions is necessary, and the longer progress is delayed, the more it will cost Canadians. Provinces have the jurisdictional authority and policy momentum to make important headway on this issue now by adopting carbon-pricing policies, which achieve emissions reductions at the lowest cost.

Carbon pricing is increasingly emerging as a central policy instrument for reducing GHG emissions, with support from a broad range of influential entities, such as the World Bank, the Organisation for Economic Co-operation and Development, the International Monetary Fund, and the Canadian Council of Chief Executives. The

analysis presented in this report demonstrates the considerable economic benefits of carbon pricing relative to other policies in every Canadian province. Carbon pricing provides emitters with the flexibility to identify least-cost ways to reduce emissions. It also generates revenue that governments can use to drive additional environmental or economic benefits. And, over time, carbon pricing will also drive more innovation, further reducing costs.

Independent provincial carbon-pricing policies offer a practical way forward. Coordination of these policies may be desirable down the road, and different paths to that coordination, including a role for the federal government, are possible. However, it makes good sense to lead action from the provinces. These policies already exist in some provinces and there is momentum building in other provinces to follow suit. The Council of the Federation has now signalled that provincial carbon pricing has a role to play in a provincially led national energy strategy. Furthermore, provinces have unique economic structures, emissions profiles, and political contexts, to which carbon-pricing policies can be customized. Using provincial policies can ensure that carbon-pricing revenues remain within the province in which they are generated, avoiding both real and perceived challenges of a centralized system. Moving forward with provincial policies now allows Canada to make crucial progress on the necessary and inevitable transition toward a cleaner, lower-emissions economy.

Recommendation 2:
Provincial carbon-pricing policies—existing and new—should increase in stringency over time.

Carbon-pricing policies are not automatically environmentally effective; stringency is essential. A more stringent policy has a higher carbon price. A carbon tax with a very low price is weak policy, as is a cap-and-trade system with a very high cap. Similarly, a policy with a high carbon price that covers only a small fraction of emissions is weak policy. To achieve the required economy-wide emissions reductions at least cost, and to produce the necessary incentives for innovation, any carbon-pricing policy needs to be stringent.

What is the "right" level of stringency? Our modelling analysis uses the provinces' current 2020 targets as a convenient, though arbitrary, benchmark. With the exceptions of Nova Scotia and Newfoundland and Labrador, no Canadian province is projected to meet its emissions-reductions targets for 2020; in this sense, current policies are insufficiently stringent. These targets, in any event, are only relevant for the short term. Much deeper reductions will be required over the next few decades. Even those provinces now pricing carbon lack policies stringent enough to achieve their stated targets.

The dynamics of stringency are also important. Ramping up the stringency of policies over time will avoid unnecessary shocks to the economy, but will nonetheless encourage households and businesses to change their behaviours. The sooner policies are put in place, the more time is available for the carbon price to increase smoothly, rather than abruptly. An economic environment with a predictable escalation in price is conducive to long-range planning.

Existing provincial policies vary in terms of stringency. British Columbia's carbon tax is the most stringent, and appears to have driven notable emissions reductions. The price of carbon in B.C. is now static at $30 per tonne, however, with no increases since 2012. Quebec's comparatively new cap-and-trade system has a lower carbon price, but its cap on emissions is scheduled to decrease steadily each year. Alberta's system with flexible regulations has led to minimal emissions reductions, partly due to its limited stringency.

Recommendation 3:
Provincial carbon-pricing policies should be designed to broaden coverage to the extent practically possible.

Broad coverage creates incentives for emissions reductions throughout the economy. Coverage also matters for minimizing the costs of any given amount of emissions reduction. The more emitters (and emissions) are covered by the policy, the more incentives exist to realize all available low-cost reductions. Carbon-pricing policies should thus be as broad as possible. The most cost-effective policy would impose a uniform price on all GHG emissions, irrespective of their source. Specific sectoral exemptions not only introduce inequities, but also raise the overall cost of the policy.

The British Columbia carbon tax and the Quebec cap-and-trade system both have reasonably broad coverage. Alberta's flexible regulation, however, creates no incentives for emissions reductions from small emitters, including buildings, vehicles, and small industrial sources. And only a very small fraction of emitters actually pays the price on carbon. This narrow coverage contributes to the limited effectiveness of Alberta's existing policy.

Recommendation 4:
Provinces should customize details of policy design based on their unique economic contexts and priorities; they should also plan for longer-term coordination.

While consistency of provincial carbon prices is a desirable goal, other dimensions of policy design can remain customized to provincial contexts.

Revenue recycling, in particular, provides an opportunity for diverse provincial policy choices. Some provinces may choose to reduce existing business or personal income taxes, as in British Columbia. Others may prefer to use the revenue to invest in the development of new technology, as in Quebec and, to some extent, Alberta. Carbon-pricing revenue could also be used to finance investments in critical public infrastructure, to address competitiveness risks for exposed industrial sectors or to ensure fairness for low-income households. Different provinces with different contexts and priorities are likely to make different choices. This flexibility is a key strength of the provincial approach to carbon pricing.

Over the longer term, consistency of the carbon price across provinces is desirable for two reasons. First, such consistency improves overall cost-effectiveness by ensuring incentives exist for realizing all potential low-cost emissions reductions, whatever their location. Second, a common price avoids policy-induced challenges of interprovincial competitiveness. When policy is equally stringent across provinces, all firms face a level playing field.

While a consistent carbon price across Canada is eventually desirable, it is not critical in the short term. Nor should the pursuit of such a common price be an obstacle to effective and timely provincial action. Canadian provinces have a long history of differential policies. By developing effective provincial policies now, and thereby beginning to mobilize markets toward low-carbon innovation, provinces can make crucial headway on an important challenge.

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THE WAY FORWARD FOR ONTARIO

Design Principles for Ontario's New Cap-and-Trade System

June 2015

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EXECUTIVE SUMMARY

Over the next year, Ontario will design and implement a cap-and-trade system for reducing greenhouse gas emissions. Much public discussion has focused on the effectiveness of cap-and-trade as an overall approach to pricing carbon. While it is possible to debate the inherent advantages and challenges of cap-and-trade compared with other carbon-pricing approaches, the fact is, these differences are small. Effective cap-and-trade systems can, and do, exist. But various problems also exist. In Ontario, as in any other jurisdiction, the success of the cap-and-trade system will hinge on the design details.

Drawing on the Ecofiscal Commission's April 2015 report, *The Way Forward*, this brief outlines four fundamental principles of good cap-and-trade design. It offers a practical roadmap and specific recommendations to Ontario as the province moves toward developing its policy. The same principles could be used as a guide by any province considering the introduction of a cap-and-trade system.

A common theme runs through these principles and recommendations: transparency. It is not enough to design a policy that is effective, cost-effective, and fair. It must also be clear, predictable, and immune to political interference. The confidence of Ontarians—everyday consumers and big emitters alike—is critical to the success of the province's new policy. While the principles outlined in this brief do not address every detail of policy the government will need to consider, they offer the basis for a well-designed cap-and-trade system for Ontario.

Principles and Recommendations

1. Stringency of policy should rise gradually and predictably over time in order to drive meaningful emissions reductions.

Ontario should

- introduce a "cap" on emissions that results in meaningful reductions. That cap should steadily and predictably decline over time;
- manage price volatility to ensure long-term incentives for innovation and deep reductions;
- enforce strong non-compliance penalties.

2. Coverage of policy should be as broad as practically possible.

Ontario should

- use a combination of upstream and downstream points of regulation;
- avoid exemptions or exclusions to ensure cost-effective, fair, and transparent policy;
- carefully handle the use of offsets, if used, which can further broaden coverage, but only if they are credible and represent real and verifiable emissions reductions.

3. Aim to auction all allowances. The scope for free allocations should be narrow, rules-based, and transitional.

Ontario should

- auction allowances as a rule to enable more cost-effective, simple, and transparent policy;
- allocate free allowances only as an exception to reduce adverse competitiveness impacts, but provide this support based on clear, transparent rules and for a limited period;
- avoid free allowances in sectors in which emitters can pass on costs.

4. Seek out opportunities for linkage.

Ontario should

- link with Quebec and California, as planned, to improve cost-effectiveness reinforcing an existing template for inter-jurisdictional carbon-pricing;
- encourage other provinces and jurisdictions to join the linked system, broadening the scope of the cap-and-trade system
- design its system for harmonization on elements such as price floors/ceilings, reporting, and monitoring, verification, and enforcement.

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PROVINCIAL CARBON PRICING AND COMPETITIVENESS PRESSURES

Guidelines for Business and Policymakers

November 2015

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EXECUTIVE SUMMARY

Carbon pricing in individual Canadian provinces—if not matched by equivalent carbon prices in other jurisdictions—can potentially create competitiveness pressures on individual economic sectors. A sector's "carbon costs," as a share of its GDP, and its "trade exposure" are two key determinants of these pressures.

Data analysis for British Columbia, Alberta, Ontario, and Nova Scotia suggests that these pressures are significant for only a few sectors, representing only a small share of total provincial economic activity. Overall, the business community should not perceive carbon pricing as a significant economic threat.

The identification of competitiveness pressures also relies on firm-level data that is generally not publicly available. Differences in cost structures among firms within a sector, firms' abilities to influence their selling prices, the extent of firms' responses to carbon pricing, and the stringency of policies in other jurisdictions all need to be examined to determine which firms are genuinely exposed to competitiveness pressures. Policymakers will need access to firm-level data to assess the credibility of firms' claims of significant exposure.

For those firms and sectors facing genuine competitiveness pressures, governments can design the carbon pricing policy to address these challenges while still retaining the policy's overall effectiveness at reducing greenhouse gas emissions in a cost-effective manner. Any measures designed to support specific firms or sectors should be targeted, transparent, and temporary.

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PROVINCIAL CARBON PRICING AND HOUSEHOLD FAIRNESS

April 2016

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ACKNOWLEDGMENTS

We thank Jennifer Jones, Shawna Brown, and the Social Analysis and Modelling team at Statistics Canada for their help with the COMTAX modelling and SPSD/M coding. We also thank Nicholas Rivers and Krishna Pendakur for their valuable comments on a preliminary draft.

EXECUTIVE SUMMARY

Well-designed carbon pricing policy must consider the costs imposed on households of different incomes, and ensure overall fairness. Recycling revenue generated from the policy back to the economy is the central way to design fair policy. This paper assesses the extent to which a carbon price—on its own, *without* considering revenue recycling—could be unfair for lower-income households. It then identifies the share of carbon revenue required to address these concerns.

A carbon price can affect household budgets in different ways. It increases the prices of emission-intensive goods and services, which represent a larger share of expenditure for lower-income households. A carbon price can also reduce household employment or investment income, which are more important income sources for higher-income households. Assessing the overall fairness of carbon pricing on households therefore requires looking at these two effects together.

Economic modelling for Alberta, Ontario, Manitoba, and Nova Scotia suggests that carbon pricing would impose small overall costs on households, and the impact could be slightly regressive or slightly progressive, depending on the income measure used to assess relative costs. In either case, our analysis finds that the costs imposed on lower-income households can be entirely offset by using a relatively small proportion of the revenues generated by carbon pricing policies.

In addition, analysis of the impact of carbon pricing on households residing in areas of different sizes for the four provinces suggests that carbon costs for households do not vary significantly across rural and urban areas.

Finally, the estimates presented in this report should be viewed as overestimates of the true costs for households. As discussed, they do not consider the benefits for households from recycling carbon pricing revenues back to the economy. They also exclude changes in household and firm behaviour in response to the carbon price, which will reduce the overall household cost.

Carbon pricing policies implemented in Canadian provinces should certainly be designed to be fair across households of different incomes. However, the analysis here suggests that concerns for household fairness need not preclude policy action, given that smart recycling of revenue can significantly improve the fairness of carbon pricing policy in all provinces.

CANADA'S **ECOFISCAL** COMMISSION
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CHOOSE WISELY

Options and Trade-offs in Recycling Carbon Pricing Revenues

April 2016

EXECUTIVE SUMMARY

The primary objective of carbon pricing is to reduce greenhouse gas (GHG) emissions. A carbon price creates financial incentives for businesses and households to adjust their current consumption and investment patterns, and also to adopt and develop cleaner technologies in the future.

But the price is only half the story. Carbon pricing policies can generate substantial revenue for the provincial governments involved. How this revenue is recycled back to the economy has important implications for both economic and environmental performance.

Carbon pricing gives governments choices around revenue use

Carbon pricing revenue presents governments with many options, but also with the need to choose among them. With only a limited amount available, any revenue used for one option means less is available for others. Should revenue be used to reduce existing tax rates? Should it be transferred directly to households? Should it be used to address transitional challenges from pricing carbon, such as industrial competitiveness? Should it be used to invest in government priorities such as infrastructure, clean technology, or debt reduction? Or should it be used for multiple purposes to achieve multiple objectives?

These choices and trade-offs apply for any government implementing carbon pricing. This report, however, focuses on revenue recycling by Canada's provincial governments, which are currently moving forward with carbon pricing. Even if the federal government were to implement carbon pricing in the future, pragmatism may well require revenue to be returned to the province in which it was generated, thus placing the focus back onto the provincial use of revenues.

There isn't a single right answer to the question of how a province can best recycle its revenue. Different stakeholders have diverse perspectives. And each province has its own unique circumstances and context. Carbon pricing thus creates an opportunity for provinces to customize policy according to their own priorities and an opportunity to carve out broad support for smart policy to reduce GHG emissions.

This report develops a framework for governments examining how to recycle their carbon pricing revenues. Its goal is to consider the leading options for governments in recycling this revenue, the trade-offs among different recycling options, and how the specific economic context of different provinces will likely influence their ultimate choices. Four main conclusions emerge from our research.

Carbon pricing is the way forward for Canada, but it generates two clear challenges

As we argued in *The Way Forward*, carbon pricing makes economic sense for Canadian provinces. It reduces GHG emissions at the lowest possible cost, contributing to global efforts to avoid costly impacts of climate change. Carbon pricing can also help position Canada to better compete in carbon-constrained international markets by sparking low-carbon innovation. Finally, by representing a transparent and credible climate policy, and one known to be effective, carbon pricing may help to secure crucial market access for our abundant and valuable natural resources.

At the same time, however, carbon pricing by Canadian provinces poses two clear challenges. The first is related to the fact that carbon pricing invariably leads to changes in product prices. In particular, the price of carbon-intensive energy will increase. Since it is usual that lower-income households spend a higher fraction of their income on energy-related products than do households with higher incomes, carbon pricing has the potential to be regressive and thus unfair. While carbon pricing is not necessarily regressive, this possibility is more likely in provinces with electricity-generation systems based on the burning of coal and other fossil fuels (Canada's Ecofiscal Commission, 2016). When designing carbon pricing policies, provincial governments must pay close attention to the different impacts on households of different incomes.

The second challenge follows from the fact that different jurisdictions are not equally far down the road of carbon pricing, and differences between carbon prices across jurisdictions can create problems. Specifically, a more aggressive carbon pricing policy in any one Canadian province can lead to competitiveness pressures for businesses in that province, especially ones that are both emissions intensive and actively competing with firms from jurisdictions with a lower carbon price (Canada's Ecofiscal Commission, 2015a). Provinces must therefore be mindful of carbon policies in other jurisdictions—including other provinces—when designing their own carbon pricing policies. And governments must also begin considering how to coordinate provincial policies into a coherent pan-Canadian carbon price.

Revenue recycling can address fairness and competitiveness challenges

Yet these two challenges need not be obstacles to designing and implementing carbon pricing policies. In particular, well-designed policy—which includes the careful recycling of revenue—can effectively address both challenges.

Providing low-income households with direct transfers—as British Columbia does through rebates delivered in parallel with GST rebates, for example—can address fairness concerns while still providing low-income households with an incentive to reduce emissions. Indeed, analysis of B.C.'s carbon tax suggests that when the tax and associated revenue recycling (including tax cuts and transfers to households) are considered together, the policy is actually progressive, meaning low-income households face a smaller proportionate burden than higher-income households (Beck et al., 2015).

Similarly, for those industries most exposed to competitiveness pressures, the provision of well-designed transitional support can combine incentives to reduce GHG emissions with incentives to maintain economic activity in the home province. Specifically, support that is linked to firms' current level of activity can offset any incentives to move facilities to other jurisdictions with lower carbon prices, without undermining incentives for reducing emissions. In this way, carbon pricing within any one province need not lead to the "leakage" of economic activity and corresponding emissions.

Revenue recycling can also support economic and environmental objectives

The analysis in this report shows how carbon pricing can reduce GHG emissions without adversely affecting the economy, no matter what approach governments take to recycling revenue. Yet revenue recycling can also support both environmental and economic objectives.

Some approaches to revenue recycling can generate significant economic benefits. Reducing existing income taxes, for example, can improve how efficiently the economy uses labour and capital, and this can lead to greater productivity and stronger economic growth. Well-chosen investments in public infrastructure can also improve productivity, again driving growth and prosperity. For provinces with high levels of public debt, using revenue to reduce debt could lead to long-term economic benefits, partly by avoiding the need for future increases in growth-retarding income taxes.

Other approaches to revenue recycling can lead to reductions in GHG emissions, beyond those generated by the carbon price. Such reductions could be achieved by using carbon revenue to invest in research and development related to new technologies and production processes; or the funds could be invested to improve the adoption of superior technologies. These approaches can complement an existing carbon price by targeting specific barriers and easing firms' adjustment to the carbon price.

Provinces can customize revenue recycling to achieve their own distinct priorities

This report further explores the provincial differences we first considered in *The Way Forward*. These differences—in economic structure, energy mixes, and policy context—provide provinces with a strong justification for designing and implementing their own carbon pricing policies. Revenue recycling is an opportunity to tailor carbon pricing policy to a province's unique circumstances.

Some provinces are more exposed to competitiveness pressures created by carbon pricing (e.g., Alberta and Saskatchewan). Fairness concerns are heightened in provinces with carbon-intensive electricity systems (e.g., Alberta and Nova Scotia). Some provinces have much higher provincial debt (e.g., Quebec and Ontario), while others face more immediate fiscal challenges (e.g., Alberta). Still others have economic challenges associated with high income-tax rates (e.g., Quebec and Nova Scotia). Additional investments in emissions-reducing technology can make it possible to achieve ambitious targets (e.g., British Columbia and Ontario); technology investments could also be justified to improve the long-term performance of emissions-intensive sectors (e.g., Alberta and B.C.).

How should provinces manage these trade-offs? In this report, we do not provide detailed, prescriptive recommendations to provinces: each one is best situated to make its own choices about revenue recycling. Instead, we provide broader guidance on the factors that policymakers should examine when considering trade-offs and making revenue-recycling choices.

Our recommendations are as follows:

RECOMMENDATION #1: Governments should use revenue recycling to address fairness and competitiveness concerns around carbon pricing.

Carbon pricing is the economically sensible way forward for Canadian provinces. Challenges associated with pricing carbon—disproportionate costs for low-income households and competitiveness pressures for vulnerable industries—should not preclude implementing carbon pricing policies. These issues can be effectively addressed through well-designed revenue recycling. Our earlier recommendations therefore still hold: provinces without broad carbon pricing should implement it; provinces with existing policies should gradually increase the carbon price.

RECOMMENDATION #2: Governments should clearly define their objectives for revenue recycling.

Achieving multiple objectives usually requires multiple policy instruments. Pricing carbon has the primary objective of reducing GHG emissions, but the associated revenue can be recycled to achieve additional objectives. Different provinces will have different objectives, depending on their unique provincial context and priorities.

Given that only a finite level of revenue will be available for each province, not all objectives can be achieved through the recycling of carbon pricing revenue. Governments must always confront the reality of scarcity; the need to make difficult choices is the nature of their business. Identifying the government's priorities is a crucial first step in defining appropriate province-specific approaches to revenue recycling.

Not only are there multiple objectives, there are multiple approaches to revenue recycling. Yet no single revenue-recycling approach is a clear winner across all dimensions and for all provinces. Optimal revenue recycling within any province will depend on the relative weights placed on the different objectives, and these weights will naturally depend on the provincial context.

RECOMMENDATION #3: Governments should use a portfolio of approaches to revenue recycling.

Genuine trade-offs exist across the different approaches to revenue recycling. No single approach examined here can improve household fairness, address business competitiveness, and improve broad economic and environmental performance as well. Some methods of recycling are good for economic growth but have little effect on GHG emissions; other approaches are good for addressing household fairness but do not help to protect business competitiveness. Still others successfully address the competitiveness issue but weaken the reductions in GHG emissions. Multiple priorities can justify multiple approaches to revenue recycling.

At the same time, achieving more along one dimension invariably means achieving less along another. Further, the scale of revenue recycling matters, particularly for some approaches. Significant benefits from infrastructure or clean-technology investments, for example, are only likely to be realized through larger investments.

Using only a small percentage of carbon revenue to reduce taxes could lead to imperceptible changes in tax rates. As a result, prioritization is critical. Governments cannot expect to achieve all objectives using carbon revenue.

Provincial priorities will naturally vary. Choosing priorities is the task of governments, and beyond the mandate of the Ecofiscal Commission. However, our analysis of the various recycling options, when combined with the various provincial contexts, allows us to identify the possible higher, moderate, and lower priorities for each of five Canadian provinces. These assessments are shown in the table below.

Possible Revenue-Recycling Priorities for Five Canadian Provinces

	British Columbia	Alberta	Ontario	Quebec	Nova Scotia
Household Transfers	Moderate priority	Higher priority	Lower priority	Lower priority	Higher priority
Personal and Corporate Income-Tax Cuts	Lower priority	Lower priority	Lower priority	Higher priority	Higher priority
Investments in Low-Carbon Technology	Higher priority	Higher priority	Higher priority	Moderate priority	Moderate priority
Investments in Infrastructure	Moderate priority	Moderate priority	Moderate priority	Higher priority	Moderate priority
Reduction of Public Debt	Lower priority	Lower priority	Moderate priority	Moderate priority	Lower priority
Transitional Support to Industry	Moderate priority	Higher priority	Lower priority	Lower priority	Moderate priority

RECOMMENDATION #4: Revenue-recycling priorities should be adjusted over time.

Provincial priorities generally change over time, and revenue-recycling approaches should similarly evolve. Some changes in circumstances will be predictable, while others will be unexpected. Like other fiscal decisions, revenue-recycling choices can and should be revisited periodically.

Competitiveness pressures, for example, will predictably change over time. In the long term, other jurisdictions will begin to implement comparable carbon policies to achieve their own international obligations. As a result, comparable carbon prices will lead to a level playing field in international markets, thus reducing the need for provinces to provide transitional support to industries.

In the longer term, total revenue from carbon pricing will eventually begin to decline. As emitters respond to the price by finding ways to reduce their GHG emissions, the revenue base for the carbon pricing policy will decline (whereas in the short term, the price of carbon will likely rise by a greater proportion than the decline in total emissions). Revenue-recycling decisions must account for this long-term change in total carbon revenues.

In selecting their approach to revenue recycling, provincial governments should consider carefully the trade-offs of each available option. This report provides a framework with which to do so. We all stand to benefit when our provincial governments choose wisely.

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COMPARING STRINGENCY OF CARBON PRICING POLICIES

July 2016

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EXECUTIVE SUMMARY

Carbon pricing is not automatically effective at reducing greenhouse gas (GHG) emissions. Effectiveness depends on *stringency*, a measure of the policy's ability to drive emissions reductions. More stringent policy creates stronger incentives and leads to deeper emissions reductions over time.

How can we measure the stringency of any given carbon pricing policy, and do so in a consistent manner that allows for comparisons across Canadian provinces? This report seeks to provide governments with a common, consistent framework for comparing provincial carbon pricing policies.

Given the gap between projected GHG emissions under current policies and Canada's existing 2030 target, more stringent policy will clearly be required, across the country. The framework developed here can support federal–provincial efforts to *benchmark* the stringency of existing provincial carbon pricing policies.

This report considers five metrics for stringency, as summarized in the table below. To make these metrics concrete, we estimate them for four different provincial policies—British Columbia's carbon tax, Alberta's carbon levy and (proposed) Carbon Competitiveness Regulation, and the linked cap-and-trade systems in Ontario and Quebec. Each of the metrics shows slightly different aspects of policy stringency. Some are directly observable, while others can only be estimated using economic modelling. Overall, it is useful to consider multiple metrics in benchmarking provincial policies.

As Canadian policy continues to evolve, metrics for comparing stringency can also support efforts to *coordinate* provincial carbon pricing policies. There are different paths to a coordinated pan-Canadian system. The provinces themselves, for example, could choose to align their respective policies. Alternatively, the federal government could define a minimum level of stringency, with provincial policies meeting or exceeding that level being deemed "equivalent." In either case, some metric of stringency is needed to define equivalent policy.

In the context of coordinating provincial carbon pricing policies, equalizing marginal carbon prices can minimize the overall costs of emissions reductions. Yet when provincial policies have different designs—in particular with respect to coverage and international permit trading—price alone may be less useful as a metric for coordination. As a result, the new metrics proposed here that account for these differences in policy design could support efforts to compare and coordinate provincial policies.

No metric of stringency is perfect. Yet even imperfect metrics can be useful and can aid in developing smart climate policy. This report examines differences between provincial policy designs and seeks to find common ground between different perspectives. It recognizes the importance of both quantities of emissions reductions and explicit carbon prices, but explores practical ways to compare them in a common framework.

Summary of Stringency Metrics and Estimates for Canadian Provincial Policies

Metric	Significance	British Columbia	Alberta	Ontario	Quebec
Quantity of emissions reduced	**Advantages:** • Measures emissions reduced by policy • Has a direct connection to policy objective (targets) **Disadvantages:** • Emissions data lags by several years • Emissions reductions are not observable • Emissions levels often imply very different emissions reductions • Quantities do not reflect different costs of abatement across provinces	2020: 5-15%	2020: 7%	2020: 11%	2020: 15%
Marginal price of carbon	**Advantages:** • Measures incentive to reduce emissions • Easily observable • Reflects cost-effective distribution of emissions reductions **Disadvantages:** • Does not account for differences in policy coverage • Does not account for international permit trade	2016: $30 2020: $30	2016: $20 2020: $30	2016: n/a 2020: $19	2016: $16 2020: $19
Average carbon cost	**Advantages:** • Measures all policy costs to emitters • Measures incentives regarding building new facilities (and resulting emissions) **Disadvantages:** • Challenging to estimate in practice • Reflects both policy stringency and revenue-recycling choices	2016: ~$30 2020: ~$30	2016: ~$3 2020: ~$10	2016: n/a 2020: ~$17	2016: ~$12 2020: ~$16
Coverage-weighted carbon price	**Advantages:** • Measures incentive to reduce emissions • Accounts for coverage of policy **Disadvantages:** • Shifts provinces away from most cost-effective method of coordination	2016: $21 2020: $21	2016: $10 2020: $23	2016: n/a 2020: $16	2016: $14 2020: $16
Trade-adjusted carbon price	**Advantages:** • Measures incentive to reduce emissions • Accounts for coverage of policy • Accounts for international permit trade **Disadvantages:** • Shifts provinces away from most cost-effective method of coordination	2016: $21 2020: $21	2016: $10 2020: $23	2016: n/a 2020: $18	2016: $14 2020: $18

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To identify and promote practical fiscal solutions for Canada that spark the innovation required for increased economic and environmental prosperity.

For more information about the Commission, visit **Ecofiscal.ca**

A REPORT AUTHORED BY CANADA'S ECOFISCAL COMMISSION

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This report is a consensus document representing the views of the Ecofiscal Commissioners. It does not necessarily reflect the views of the organizations with which they are affiliated.

ACKNOWLEDGMENTS

Canada's Ecofiscal Commission acknowledges the advice and insights provided by our Advisory Board:

Elyse Allan
Dominic Barton
Jean Charest
Karen Clarke-Whistler
Jim Dinning
Peter Gilgan
Michael Harcourt
Bruce Lourie
Janice MacKinnon
Preston Manning
Paul Martin
Jack Mintz
Peter Robinson
Bob Rae
Lorne Trottier
Annette Verschuren
Sheila Watt-Cloutier
Steve Williams

We also acknowledge the contributions to this report from the Commission's staff: Jonathan Arnold, Antonietta Ballerini, Adam Baylin-Stern, Dale Beugin, Annette Dubreuil, Jessie Sitnick, and Vincent Thivierge. Additional analysis was contributed by Navius Research and Abacus Data. We thank Trevor Tombe at the University of Calgary, Randy Wigle at Wilfred Laurier University, and Marisa Beck at the Balsillie School of International Affairs for valuable comments on a preliminary draft of the report. Finally, we extend our gratitude to McGill University and the University of Ottawa for their continued support of the Commission.

Canada's Ecofiscal Commission recognizes the generous contributions of the following funders and supporters: