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SUPPORTING CARBON PRICING

How to identify policies that genuinely complement an economy-wide carbon price June 2017



CANADA'S ECOFISCAL COMMISSION

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We represent different regions, philosophies, and perspectives from across the country. But on this we agree: ecofiscal solutions are essential to Canada's future.

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A thriving economy underpinned by clean air, land, and water for the benefit of all Canadians, now and in the future.

OUR MISSION

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

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EXECUTIVE SUMMARY

In December 2016, Canadian governments announced the Pan-Canadian Framework on Clean Growth and Climate Change. Under the framework, Canada will have nationwide carbon pricing in 2018, with prices rising until 2022. This is welcome news. As previous reports from the Ecofiscal Commission have argued, an increasing carbon price should be the centrepiece of each province's and territory's plan to reduce greenhouse gas (GHG) emissions. Yet for Canada to achieve its 2030 emissions-reduction targets in a cost-effective way, more will be needed.

As the Ecofiscal Commission has argued previously, carbon pricing should be trusted with the heavy lifting. It offers the most cost-effective way to reduce GHG emissions. It is flexible. It generates revenue that can be used to reduce other taxes or drive other benefits. And it drives lowcarbon innovation. A carbon price that continues to rise beyond 2022 is therefore a key piece of the policy puzzle.

However, even well designed carbon pricing can have limitations. Some GHG emissions are difficult to measure and price in practice. In some situations, specific market barriers might undermine the incentives from a carbon price and limit the extent to which it drives low-cost emissions reductions. And where GHG reductions are costly but come with offsetting, non-GHG benefits, the incentive from carbon pricing might not be enough. These issues can justify nonpricing climate policies as part of a larger policy package.

The best additional policies *complement* carbon pricing, driving more emissions reductions at a lower economic cost than carbon pricing can on its own. But simply adding more climate policies to the mix will not necessarily improve performance. Smart policy makes both environmental and economic sense. If additional policies are not chosen and designed well, they can *increase* costs of GHG mitigation. Identifying and designing effective, low-cost non-pricing policies is therefore a critical, but complex task. It raises challenging questions: What makes a given policy genuinely complementary to the carbon price? Which policies help achieve low-cost GHG emissions reductions, and which ones hinder? And how can governments ensure that they rely more on the former, and less on the latter?

This report is intended to help governments identify, design, and implement a package of complementary policies that can support their carbon prices. Developing a coherent and low-cost policy package is not easy, but it is worth the effort: with the right package, governments can make their carbon prices work better, and Canada can reduce its GHG emissions cost-effectively. But to get it right, some careful work will be required.

Complementary policies fill a role that carbon pricing cannot

Policies could have any of three distinct rationales for being implemented in addition to carbon pricing:

Gap-filling policies apply to GHG emissions not covered by the carbon price. Some GHG emissions do not lend themselves

so easily to carbon pricing. In particular, emissions from small, distributed, non-point sources can be challenging to measure, even though actions to reduce these emissions might have quantifiable outcomes. Extending the overall coverage of a package of policies to more GHG emissions can *reduce* costs of achieving a GHG target.

Our case study on regulations for methane emissions from oil and gas production, for example, highlights an opportunity for substantial emissions reductions. Methane emissions are not currently covered by carbon pricing policies, but reducing these emissions appears to be possible at relatively low cost.

Signal-boosting policies can address market problems and thereby enhance carbon pricing. A carbon price works by relying on price signals in markets—not governments—to decide where and how GHG mitigation occurs. In some specific cases, however, carbon pricing might not work to its full potential, given other problems in the market. As a result, policies that address these problems can make economic sense. In the absence of a clear rationale for policy, however, policies risk being driven purely by political or lobbying interests.

Our case study on subsidies for electric vehicles, for example, identifies specific market problems that *may* justify additional policy measures. There may be benefits to society from scaling up electric vehicles, such as enabling networks of charging stations or demonstrating that the technology works. On the other hand, a smaller or slower response to carbon price signals does not necessarily justify the creation of additional policies. Slower uptake of electric vehicles could also represent real underlying costs and preferences. As our case study indicates, the mere existence of these problems is not enough to justify a policy response. The benefits of overcoming these market problems must outweigh the costs of doing so. We find electric vehicle subsidies to be a high-cost approach relative to other policy alternatives.

Benefit-expanding policies achieve both GHG mitigation and other objectives. Other benefits, unrelated to GHG emissions reductions, might justify policies that drive relatively costly GHG emissions reductions. Still, policymakers should be wary of policies with ambitions of "killing two birds with one stone." Relying on a single instrument to achieve multiple objectives often means that *none* of the objectives are achieved at lowest cost.

Our case study of the phase-out of coal-fired electricity suggests that reducing air pollutants in conjunction with GHG emissions can lead to significant health benefits, and that these benefits help offset some of the costs of reducing GHGs under the policy. Our case study suggests coal phase-out in Alberta could have health *benefits* equivalent to about \$21 per tonne of CO_2e reduced.

Policies will interact with carbon pricing in different ways in different provinces

Interactions between climate policies can reduce effectiveness, and can also increase overall costs. These issues can be particularly challenging in terms of interactions between federal and provincial policies.

Adverse interactions can occur when multiple policies apply to the same sources of GHG emissions. Complementary policies might target emissions also covered by the carbon price. Provincial and federal policies might apply to the same sources of GHG emissions. Unless these overlapping policies have another rationale addressing market problems or driving other co-benefits—they will increase overall costs, and may not drive additional emissions reductions. Gap-filling policies are less prone to interaction problems, because they apply to emissions not covered by the carbon price.

In particular, additional policies that apply to emissions covered by a cap-and-trade system will tend not to lead to additional emissions reductions overall. While the policy may lead to additional emissions reductions *within a given sector*, the total number of permits in the system—and thus the total allowable number of emissions—remains unchanged. As a result, emissions reductions from the additional policy can be offset by higher emissions elsewhere in the cap-and-trade system. In the case of Ontario and Quebec, the outcome may be fewer permit imports from California through their linked permit markets, but not necessarily lower emissions overall.

These issues become even more complex in the context of multiple policies from multiple levels of government, where there is significant variation across provinces. As a result of interaction effects, complementary policies can create uneven impacts across provinces. Federal policies that overlap with carbon pricing policies will drive additional emissions reductions in provinces with carbon taxes, but not necessarily in provinces with cap-and-trade systems. Moreover, in provinces with cap-and-trade systems, provincial policies could contribute toward emissions reductions required under the cap, making it "easier" to achieve. These different impacts could raise challenging questions about how the burden of GHG mitigation is distributed across provinces. It could also increase differences in carbon prices across provinces, increasing the overall cost of mitigation in Canada.



Design choices strongly affect the performance of complementary policies

Even if a policy has a strong rationale for complementarity and does not interact adversely with other policies, it still might not perform well if it is designed poorly. Well-designed policies will generally drive more emissions reductions and have lower costs. When it comes to policy performance, five design features are particularly significant: *stringency, coverage, flexibility, predictability,* and *governance*.

Stringency is the extent to which a policy drives emissions reductions. More stringent policy is more effective policy, but may also create higher compliance costs for governments, businesses, or households. For example, the stringency of a policy to phaseout coal-fired electricity is defined by the timeline for phase-out the more aggressive the timeline, the more stringent the policy. Canada's 2012 federal regulation of coal-fired electricity called for coal plants to close or be retrofitted with carbon capture and storage only at their "end-of-useful-life." However, in November 2016, the federal government announced a policy with far greater stringency the phase-out of *all* coal-fired electricity by 2030. This roughly mirrors the timeline that Alberta is planning for its own phase-out of coal, a policy examined as a detailed case study in this report.

Coverage refers to the share of GHG emissions to which a policy applies. A policy with narrow coverage will focus on a specific subset of technologies or activities (e.g., a regulation focused only on fuel-oil furnaces), while a policy with broader coverage will focus on the larger set of technologies or activities (e.g., a regulation focused on all types of home-heating technologies). All else being equal, broader coverage means greater emissions reductions and lower costs. Yet there may be good reasons to keep coverage narrow in certain cases. If there is a specific market problem to be overcome with signal-boosting policy, or a specific co-benefit to be realized, these outcomes might be more cost-effectively realized with a tightly focused policy. Broader policies may also overlap (and interact) more with carbon pricing policies.

Flexibility generally refers to the extent to which emitters have choices regarding how they comply with a policy. Policies that emphasize flexibility typically focus on outcomes (i.e., performance standards) rather than means (i.e., specific technologies or activities). As a result, flexible policies tend to have lower costs than prescriptive policies. Flexibility can be introduced through market-based mechanisms such as credit trading, banking, and borrowing. For instance, zero-emission vehicle (ZEV) mandates, such as the policy implemented in Quebec, require manufacturers to produce and sell a certain number of zero-emission vehicles. Flexibility—through trading permits—allows firms with low costs to produce and sell the ZEVs, and to sell excess permits to firms with higher compliance costs. Indeed, our case study on electric vehicle subsidies suggests that flexible regulations might be a more costeffective approach to increasing ZEV uptake.

Predictability is the extent to which a policy establishes clear incentives over the longer term. It has three main dimensions: 1) *transparent* policies clearly lay out how the policy will work and the criteria under which changes to it might occur; 2) *credible* policies exist when firms and households are confident governments will consistently implement, enforce, and maintain the policy over time; and 3) *simple* policies are easy to understand, both now and in the future.

Firms' and households' expectations about future policy will affect their investment choices and their incentives to innovate. As a result, predictability has implications for both policy effectiveness and cost-effectiveness. For example, if oil and gas producers expect that their methane emissions will be subject to more stringent regulation in the future, they may choose a higher standard of leakdetection technology for projects they are currently planning. The policy's predictability makes it more cost-effective: the firm does not need to install one type of technology now and another when the regulation is announced in the future. Predictability in this example also increases effectiveness: firms reduce emissions earlier (possibly even in advance of the regulation taking effect) by adopting the superior technology in the first place.

Governance refers to oversight of the policy over time, including clear mechanisms for periodic review, improvement, and termination. Evaluating the performance of policies over time provides new information that can inform decisions about improving or terminating the policy. For example, Ontario's Feedin Tariff program initially experienced an unexpectedly large uptake. Recognizing that the feed-in-tariff rate was likely higher than necessary, policymakers eventually reduced the rate, thereby improving the policy's cost-effectiveness. Notably, however, the Ontario government had ignored early warnings from the provincial auditor general about the tariff rate, suggesting shortcomings in the policy's larger governance procedures.

Applying our findings

Overall, we find that some—but not all—additional, non-pricing climate policies can genuinely complement carbon pricing. For these policies to contribute to an effective and cost-effective package of policies, they must be chosen and designed carefully. Truly complementary policies must 1) have a clear rationale; 2) not adversely interact with the carbon pricing policy; and 3) be designed well.

Given these findings, we make the following recommendations to Canadian provincial, territorial, and federal governments:

RECOMMENDATION #1:

Governments should make carbon pricing the core of their climate policy, with steadily increasing stringency

There is a role for non-pricing policies as part of an effective and cost-effective policy package for reducing GHG emissions. Yet to achieve reductions at lowest cost, these policies should *complement* rather than substitute for carbon pricing. The price of carbon should continue to rise—steadily, consistently, and predictably—beyond 2022 and well past \$50 per tonne.

RECOMMENDATION #2:

Governments should clearly demonstrate complementarity before adopting non-pricing policies

More GHG policies do not necessarily make for a better climate strategy. Additional, non-pricing policies can increase costs and undermine the effectiveness of a carbon price. Policymakers should focus their efforts on policies that clearly have one of the three rationales explored in this report. They should fill gaps in carbon pricing policies, boost the signal of the carbon price, or generate significant co-benefits. Policies that do *not* fall into at least one of these categories will not be complementary to a carbon price. Governments should therefore *clearly demonstrate* the complementarity of proposed non-pricing policies prior to their adoption. This requirement can help limit high-cost policies. It can also limit undue influence from interest groups and industries seeking preferential treatment under prescriptive or technologyspecific climate policies.

RECOMMENDATION #3:

Governments should strive to coordinate carbon pricing and complementary policies across the country

Over time, if differences between carbon prices across provinces and territories increase, pan-Canadian climate policy will have higher costs than necessary. Similarly, differences in complementary policies—and differences in interactions between carbon pricing and other policies—can increase overall costs. In both cases, the issue of inter-jurisdictional coordination and burden sharing is complex. All levels of government will continue to share jurisdiction over climate policy. Therefore, it is all the more important that they continue to cooperate to ensure that policies work together coherently.

RECOMMENDATION #4:

Governments should regularly review and assess both individual climate policies and the larger policy package

The many design details of complementary policies have significant implications for emissions reductions and the costs of achieving them. Interactions between policies add to the complexity of designing an overall package. And as this paper illustrates, identifying effective and low-cost complementary policies requires judgment and leaves room for debate. Identifying cost-effective signal-boosting policies can be particularly challenging, given uncertainty around the nature of potential market problems. As a result, no matter how carefully governments design a policy package, they should plan for regular review and assessment of its actual performance. Policy review and evaluation creates an opportunity for ongoing adjustment and improvement, and is always well advised-but especially so for complementary climate policies. Such "ex-post" analysis can provide critical insight into the coherence of the climate policy package, and how efficiently the burden of emissions reductions is being distributed across provinces and territories. Strong processes for review and adjustment to policies can create space for taking measured risks in implementing policy: high-cost or ineffective policies are less problematic in the long term if mechanisms exist to phase out those that perform less well in practice than theory. Governments can carry out this evaluation themselves, or they can choose to commission independent, objective evaluations of policy performance.

RECOMMENDATION #5:

Governments should rely on integrated modelling to assess the overall effectiveness of proposed and existing policies

This report highlights interactions between policies as a particularly thorny issue, especially in terms of their potential asymmetric impacts across provinces. These interactions clearly merit special attention. Indeed, the combined impact of federal and provincial climate policies should be regularly assessed. The means by which the interactions are assessed, however, is important. Only economywide, integrated modelling can provide a full examination of these effects.

To a limited extent, the federal government currently performs this function, through its annual Canada's Emissions Trends publication, which projects future Canadian emissions using Environment and Climate Change Canada's (ECCC) integrated modelling system, E3MC. Though not explored by this publication, ECCC's modelling system is well suited to take into account the interactions between policies. Future public analysis from ECCC could explore policy interactions in more detail. By comparing modelling analyses with and without overlapping policies, it could examine the significance of policy interactions between different policies at different levels of government, which would help in identifying opportunities for harmonization and coordination. However, it may be more appropriate that this function be performed by an independent agency or commission, or new institutions providing oversight of the Pan- Canadian Framework. Notwithstanding the important governance issues to be resolved, making this type of analysis and assessment publicly available would improve transparency and accountability as Canada moves toward achieving its longer-term emissions-reduction targets.

RECOMMENDATION #6:

With the implementation of an economy-wide carbon price, governments should phase out and avoid redundant, high-cost, or ineffective policies

All Canadian governments should seek to identify and eliminate existing policies that no longer make sense given the implementation of economy-wide carbon pricing. In past years, these existing policies may have represented practical policy approaches in the absence of carbon pricing; today, they are unlikely to be either as effective or cost-effective as a broad-based carbon price. The emergence of pan-Canadian carbon pricing as a policy norm creates an important opportunity to shift toward more cost-effective policy by clearing the books of some older and higher-cost regulations and subsidies. Governments should only employ additional policies that are genuinely complementary to carbon pricing.