

FOR A LOW CARBON ECONOMY



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Managing Carbon Revenue:

Institutional needs and models¹

Key Messages

- A carbon tax, cap-and-trade system or compliance regulations could generate significant government revenue, projected to be in the range of CAD \$18-50 billion per year. For the purposes of comparison, revenue of this scale could meet or exceed all federal corporate income tax receipts by 2020. As a result, decisions regarding the intended use of the revenue and the institutions that will administer it are crucial.
- Options for the use of carbon revenue can be placed into the following broad categories: investments to support a faster transition to a low-carbon economy, lessening the unintended consequences of carbon pricing (e.g. impacts on vulnerable populations) and addressing broad fiscal priorities.
- New institutions will likely be required if revenue is used to invest in low-carbon technology, but not for the other categories, though they may require increased governmental transparency, accountability measures and reporting.
- This analysis is jurisdiction neutral, in that it examines the institutional issues and options open to any jurisdiction that generates carbon revenue. This Policy Brief does not touch on the very important issue of institutional and policy options related to the federal-provincial-territorial management of carbon revenue from a national carbon pricing scheme.

Sustainable Prosperity is a national research and policy network, based at the University of Ottawa. SP focuses on market-based approaches to build a stronger, greener economy. It brings together business, policy and academic leaders to help innovative ideas inform policy development.

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The issue

Many Canadian jurisdictions² have (or plan to) put a price on carbon emissions using market-based instruments, namely either a tax or cap-and-trade system. Another possible option is for a regulatory framework for carbon emissions that would generate revenues through compliance charges and penalties.

The implementation of any carbon pricing instrument will generate revenue for the government. This brief explores the options for the use of this new revenue stream, as well as the institutional needs and considerations for each option. Considerations include the scale and reliability of revenue, options for revenue allocation, institutional capacity for revenue management, and models for new institutions (where needed).

The Knowledge Base

Type of Instrument³

A price on carbon emissions (through tax, trading, or as a compliance cost through regulation) is considered to be an essential mechanism for incenting the transformation to a low-carbon economy. Policies that encourage the research and development of low-carbon technologies and the removal of barriers to behavioural change, such as reliable information, transaction costs, and institutional inertia, also play important roles.⁴ The carbon price needs to be high enough to incent a consumer shift away from existing technologies⁵ and to build demand for alternative energy sources. The price also needs to be stable and steadily rising to provide certainty for investment decisions and innovation timelines.⁶

Most economists regard market-based approaches, such as carbon pricing, to be more economically efficient and lower cost than traditional “command and control” regulatory approaches, because they offer flexibility about where and how emission reductions will be achieved. They also create continuous incentives for innovation because there is an economic reward for each additional unit of emission reduction.⁷

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2 Most of the Canadian experience and interest in carbon pricing (and hence revenue) presently resides at the provincial and territorial level. Accordingly, this paper is focused on the sub-national level. The issues addressed are equally relevant to national level institutions, but additional considerations (primarily related to federal-provincial relations and wealth transfer) would also manifest.

3 A rich body of literature exists discussing the advantages and disadvantages of each type of instrument. See for example the work of Resources for the Future and The National Round Table on the Environment and the Economy.

4 Stern, Nicholas (2006). *Stern Review on the Economics of Climate Change. Executive Summary* HM Treasury, London.

5 Rivers, Nic, and Jaccard, Mark (2006). “Useful models for simulating policies to induce technological change,” *Energy Policy*, 34(15): 2038-2047.

6 Martin, Roger, and Kemper, Alison (2010). *Carbon Pricing, Innovation, and Productivity: Implications for Canadian Policy Makers*. Sustainable Prosperity.

7 Congressional Budget Office (2008) *Policy Options for Reducing CO2 Emissions*, Congress of the United States; and Robert Stavins (2001). *Experience with Market Based Environmental Policy Instruments*. Resources for the Future.

Sustainable Prosperity is neutral on the best policy choice for pricing carbon, believing good design is more important than the choice of specific pricing instrument.⁸ Both tax and cap-and-trade systems can be very effective if well-designed; however the two are not always equivalent. Depending on the design features of a cap-and-trade system – particularly the method of allocating allowances and the use of auction revenue – the incentives it provides may be quite different from those provided by a carbon tax.

Carbon Tax

Under a carbon tax, a fixed sum is levied on the carbon content of fuels. Revenue is collected through the existing tax administration infrastructure. The price certainty of a tax (the rate is set in advance) makes the revenue stream highly reliable. A broad-based carbon tax is presently in place in British Columbia; Quebec has a similar climate levy.

Cap-and-Trade (Emissions Trading)

Emissions trading creates a market where firms can buy and sell carbon allowances, depending on whether they are below or above their allocated level of carbon emissions. Initial allocations of carbon allowances to firms can be through free allocation on the basis of historical measures ('grandfathering') or on an updated basis (such as output-based allocation), or auctioning (sale of permits). Governments derive revenue from the auction, resulting in uncertain revenue streams, given that the carbon allowance price will fluctuate. There are price stabilization mechanisms that can be employed to reduce volatility, such as strategic allowance reserves, banking and borrowing between compliance periods, multi-year compliance periods, and price floors and ceilings (or "collars"). British Columbia, Manitoba, Ontario and Quebec have committed to introducing cap-and-trade systems as part of their participation in the multi-jurisdictional Western Climate Initiative, while New Brunswick, Ontario and Quebec are observers of the Regional Greenhouse Gas Initiative, a coalition of Northeastern US States.

Regulatory Instruments

Regulatory instruments can vary based on compliance options and the reduction target. The traditional "command and control" approach offers little compliance flexibility, though more flexible regulatory models have recently been adopted, for example in Alberta. Regulations can require reductions based on an absolute or intensity emissions reduction target.

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⁸ Sustainable Prosperity, based on an expert dialogue between leaders from business, non-profits and academia, has developed eight principles to guide to Canada's approach to carbon pricing (*Eight Principles for Pricing Carbon*, available at: <http://sustainableprosperity.ca/article11>).

The regulations can generate government revenue by requiring regulated emitters whose emissions exceed their allowed level or intensity target to pay a fixed carbon compliance payment. The level of reliability of the revenue stream depends on the design of the regulation – if it does not allow for offsets and credit trading, it is much like a tax; otherwise it can be as uncertain as an emissions trading system. Alberta has regulated emissions intensity reductions for large final emitters since 2008, and provides four choices for annual compliance: direct emission reductions, purchasing offset credits, trading emission credits, or contributing to a technology fund at a price of CAD \$15/t CO₂e.⁹ Saskatchewan has introduced legislation featuring regulation of major emitters, offset trading, and carbon compliance payment directly to a non-profit, third-party technology fund.

Scale of carbon revenue

A carbon tax and a cap-and-trade system will both generate significant government revenue, as shown in the examples and estimates below. A regulatory baseline and credit model with compliance payments will collect less government revenue.

The actual amount of revenue collected will depend on:

- the baseline emissions in a jurisdiction;
- the scope of emission sources that are subject to the price signal or regulation;
- the rate of the carbon tax, the level of the cap relative to baseline emissions, or the rate of the carbon compliance payment; and,
- the inclusion of alternative compliance choices, such as offsets.

Experience to date demonstrates that carbon pricing can generate substantial revenue, even at modest initial prices:

- The Regional Greenhouse Gas Initiative (RGGI), a cap-and-trade system for 225 fossil-fuel-fired electric power facilities operating in the Northeastern and Mid-Atlantic states, has held seven auctions since September 2008, raising USD \$582.4 million through allowance prices ranging between USD \$2.05-\$3.51/t CO₂e for the initial three-year period, and USD \$1.86-\$3.05 t/CO₂e for the future second period.¹⁰
- In Alberta, compliance contributions at CAD \$15/t CO₂e to the technology fund (Climate Change and Emissions Management Fund) have yielded CAD \$40 million since 2008.¹¹

⁹ Government of Alberta (2011). "Compliance Information for Industry." Available at: <http://environment.alberta.ca/01086.html>

¹⁰ Regional Greenhouse Gas Initiative, "Auction Results-Results by Auction." Available at: http://www.rggi.org/market/co2_auctions

¹¹ Government of Alberta: Environment (2011). "Climate Change." Available at: <http://environment.alberta.ca/01855.html>

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- In British Columbia, the broad-based carbon tax applied at a rate of CAD \$15/t CO₂e in July 2009 collected CAD \$542 million in 2009; this is projected to more than double, to CAD \$1.137 billion by 2012-13 when the tax rate is scheduled to rise to CAD \$30/t CO₂e.¹²
- Germany auctions the largest amount of emission allowances under the EU Emissions Trading Scheme. In 2008, auctioning of about 9 per cent of its allowances yielded €933 million in revenue.¹³
- At the national level, the National Roundtable on the Environment and the Economy's *Achieving 2050* cap-and-trade proposal, with full permit auctioning, predicts revenue of CAD \$18 billion in 2020 (based on a price of CAD \$100/t CO₂e, which is the figure that research suggests is the minimum price necessary to drive the technological and behavioural changes required to substantially reduce emissions). This CAD \$18 billion revenue figure is equivalent to 16 per cent of forecast total federal government receipts or all of federal corporate income taxes in the same year (2020).¹⁴
- The Organisation for Economic Co-operation and Development (OECD) estimates Canada's carbon revenue potential in 2020 to be even higher, at USD \$24 billion, assuming a federal target of a 17 per cent reduction from 2005 levels by 2020. This estimate also assumes that the carbon pricing system incorporates international linkages and offsets limited to 10 per cent of company emissions reductions.¹⁵
- Other Canadian organizations that have modeled potential carbon revenues, the David Suzuki Foundation and the Pembina Institute, estimated them to be approximately CAD \$50 billion per year by 2020, assuming a carbon price of \$200/t CO₂e by 2020.¹⁶

Carbon Revenue Management

Accountability and transparency

As with any revenue source, carbon revenue can and should be subject to a high level of scrutiny. Governments must also assume a high level of accountability¹⁷ for the use of carbon revenue.

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12 British Columbia Ministry of Finance (March 2, 2010). *Revenue Neutral Carbon Tax Report* in Budget and Fiscal Plan 2010/11 – 2012/13, p. 105-106.

13 Organization for Economic Cooperation and Development (2010). *Interim Report of the Green growth Strategy: Implementing our Commitment for a Sustainable Future*, p. 22; and "Emissions Trading System: Auction" website, European Commission, at http://ec.europa.eu/clima/policies/ets/auctioning_en.htm.

14 National Roundtable on the Environment and the Economy (2009). *Technical Report on Achieving 2050: A Carbon Pricing Policy for Canada*.

15 Organisation for Economic Co-operation and Development (2010), *Interim Report of the Green growth Strategy: Implementing our Commitment for a Sustainable Future*, Table 1 and p. 22.

16 Pembina Institute and David Suzuki Foundation (2009). *Climate Leadership, Economic Prosperity*. Available at: <http://pubs.pembina.org/reports/climate-leadership-report-en.pdf>.

17 Accountability is defined as "the responsibility to answer, to explain, and to justify specific actions (or inactions), in part by keeping records of important activities". From Behn, Robert (2001). *Rethinking democratic accountability*. Brookings Institution Press.

In Canada, there are two different models of carbon revenue collection and management. In British Columbia, the carbon tax is placed into the province's general revenue, whereas in Alberta and Quebec, carbon levies are collected by government but then funnelled into separate low-carbon technology investment funds. Experts suggest that a best practice of carbon revenue management in Canada would entail annual reporting of the amount of revenue that has been collected in the preceding year, how it has been used, how much revenue is forecast for the coming year, and the plans for how this will be allocated.¹⁸ If managed within government, this revenue can be subject to normal government audit procedures, or if managed externally, to independent audit.¹⁹

Revenue Usage

The usage of carbon revenue (proportion of revenue by purpose or institution) is generally specified at the time that the carbon pricing or regulatory system is being designed.²⁰ A review of the literature shows that regulated companies prefer carbon revenue be used for climate mitigation initiatives (e.g., clean technology development funds, low-emission public infrastructure, or energy-efficiency outreach and subsidies). Regional circumstances (e.g. sources of emissions, trade intensity of economy) and cultural preferences will lead jurisdictions to make unique decisions on how to allocate their carbon revenue. Needs will shift at different stages of the transition to a low-carbon economy,²¹ and possibilities will expand as expected rising carbon prices yield higher revenue in the medium term.

Three broad categories of revenue use were identified in a scan of selected Canadian and international carbon pricing or regulatory programs or proposals, as shown in figure 1:

- investments to support a faster transition to a low-carbon economy;
- alleviating the unintended consequences of carbon pricing (e.g. impacts on vulnerable populations); and,
- addressing broad fiscal priorities.²²

Each option is briefly outlined below Figure 1.

18 Sustainable Prosperity (2009). *Eight Principles For Carbon Pricing*. Available at: <http://sustainableprosperity.ca/article11>.

19 BC's Revenue Neutral Carbon Tax Report, required under their Carbon Tax Act, provides an excellent model for this. It is 2-3 pages long and incorporated annually in the province's Budget and Fiscal Plan.


20 For example, this was the case for carbon pricing or regulatory systems in Alberta, BC, and Quebec; the RGGI; for the proposed Saskatchewan system; and in the *American Clean Energy and Security Act*.

21 National Roundtable on the Environment and the Economy (2009). *Achieving 2050: A Carbon Pricing Policy for Canada*. p. 25-26 and Martin, Roger, and Kemper, Alison (2010). *Carbon Pricing, Innovation, and Productivity: Implications for Canadian Policy Makers*. Available at: <http://sustainableprosperity.ca/article344>.

22 Sustainable Prosperity (2010). *Carbon Pricing, Climate Change, and Fiscal Sustainability in Canada*. Available at: <http://sustainableprosperity.ca/article586>.

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Figure 1: Carbon pricing instruments, revenue, and revenue use in selected jurisdictions (note: Jurisdictions may support additional programming from funds other than carbon revenue; only carbon revenue use is presented).

JURISDICTION	CARBON PRICE INSTRUMENT	REVENUE (ENACTED MEASURES ONLY)	USE OF REVENUE		
			Transition to low carbon economy	Mitigation of unintended consequences	Broad fiscal priorities
Canada 					
Alberta	<ul style="list-style-type: none"> Intensity-based baseline and credit large final emitter regulation with Alberta-based offsets and credit trading; carbon compliance payments. 	CAD \$82 million (2008, CAD \$15/tonne CO ₂ e)	✓		
British Columbia	<ul style="list-style-type: none"> Broad-based carbon tax; carbon neutral regulation with offsets for public sector institutions; large final emitter cap and trade with offsets (WCI, proposed). 	CAD \$542 million (2009, CAD \$15/tonne CO ₂ e)		✓	✓
Saskatchewan	<ul style="list-style-type: none"> Baseline and credit large final emitter regulation with carbon compliance payments (proposed). 	(not enacted)	✓		
Quebec	<ul style="list-style-type: none"> Climate levy at the point of distribution on natural gas, gasoline, diesel fuel, light heating oil, heavy heating oil, propane, petroleum coke, and coal, based on their CO₂ emission co-efficient; large final emitter cap and trade with offsets (WCI, proposed). 	CAD \$200 million/year (0.8¢/litre on gasoline & 0.9¢/litre on diesel)	✓		
International					
Norway Global Pension Fund	<ul style="list-style-type: none"> Petroleum-based tax (e.g. tax on petroleum companies, exploration license fees; dividends from partial state ownership in Statoil-Hydro). 	NOK 3 077 billion (USD \$525 billion) (2010)			✓
United States: Regional Greenhouse Gas Initiative (RGGI), Northeastern and Mid-Atlantic states	<ul style="list-style-type: none"> Cap-and-trade for fossil-fuel-fired electric power facilities with offsets; 100% auction. 	USD \$494.4 million (Sept 2008-Dec 2009, USD \$2.05-3.51/tonne for first 3-yr period; USD \$1.86-3.05 for second period)	✓	✓	✓
United Kingdom	<ul style="list-style-type: none"> Climate levy on lighting, heat and power in industry, commerce, agriculture, public administration, and other services; possibility of up to 80% relief for energy-intensive businesses meeting energy-efficiency or carbon-saving targets; European large final emitter cap and trade with offsets. 	£716 million (climate levy only; 2008/09; rates to rise in line with inflation)	✓	✓	✓
United States (Kerry-Lieberman discussion draft)	<ul style="list-style-type: none"> Economy-wide cap and trade with offsets. 	(not enacted)	✓	✓	✓

Source: Various

*Investments to support a faster transition to a low-carbon economy*²³

Given that, in the initial stages of a carbon pricing regime, prices are generally kept low to both ease the transition and gain political acceptance, carbon prices on their own are insufficient to drive the shift to a low-carbon economy. This is particularly true for the research and development, and deployment of transformative new low-carbon technology.²⁴ The need for substantial investments in low-carbon infrastructure, technology, and innovation is strongest at the research and commercialization stages. This need subsides at later stages as carbon prices rise, driving higher demand for low-carbon technologies.²⁵

While substantial capital investments are required, care must also be taken not to flood the research landscape with funding.²⁶ Examples of the types of investments that could be funded include: low-carbon public infrastructure (e.g., expansion of public transit, utility transmission upgrades), emission reduction financial incentives and/or technical outreach programs (e.g. energy-efficiency programs for households and businesses), and investments in clean technology research and development.

Investments to support a faster transition to a low-carbon economy are widespread in carbon policies. Alberta, Quebec, and proposed Saskatchewan carbon revenue are entirely allocated to this category of use; also, many of the RGGI states are using the majority of their auction revenue to support energy efficiency and clean renewable energy programs.²⁷ Roughly 15 per cent of the UK Climate Change Levy is directed to this purpose through the UK Carbon Trust; and the US Kerry-Lieberman discussion draft proposed that roughly 18 per cent of initial auction revenue be directed to such investments.²⁸ Some jurisdictions fund equivalent investment from general government revenue or other levies rather than carbon revenue: British Columbia finances a similar fund through the Innovative Clean Energy (ICE) Fund Levy, and the federal government's Sustainable Development Technology Canada (SDTC) Fund has received one-off injections of capital from general government revenue.²⁹

Lessening the unintended consequences of carbon pricing

Carbon pricing may have unintended consequences, such as imposing a disproportionate

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23 By "low-carbon economy," we mean an economy that minimizes its outputs of CO₂. For more details, see: http://en.wikipedia.org/wiki/Low-carbon_economy

24 Galiana, I., & Green, C. (2009). *An Analysis of a Technology-led Climate Policy as a Response to Climate Change*. Copenhagen Climate Consensus, Denmark: Copenhagen Consensus Center.

25 Martin, Roger, and Kemper, Alison (2010). *Carbon Pricing, Innovation, and Productivity: Implications for Canadian Policy Makers*. Available at: <http://sustainableprosperity.ca/article344>.

26 Rivers, Nic, and Jaccard, Mark (2006). *Useful models for simulating policies to induce technological change*. *Energy Policy*, 34(15): 2038-2047.

27 For a complete list, see www.rggi.org.

28 Larsen, John, Bradbury, James, Kelly, Alexia, Bishins, Alison and Ziegler, Micah (2010). *WRI Summary of the American Power Act (Kerry-Lieberman Discussion Draft)*. World Resources Institute.

29 For more information about SDTC, see: <http://www.sdtc.ca>. For more information about BC's ICE levy, see: http://www.leg.bc.ca/38th3rd/1st_read/gov30-1.htm

cost burden on low-income households, or those in remote or particularly cold regions.

Energy-intensive, trade-exposed sectors of the economy may be vulnerable to competition from producers in regions without equivalent carbon policies (this is known as “carbon leakage”).³⁰

At lower carbon prices during the early stages of carbon pricing, these unintended negative impacts are muted, though vulnerable households and industries still need protection. As prices rise, negative impacts on households and vulnerable sectors will also rise,³¹ although some of this impact will be moderated as new technologies are adopted.³²

A portion of carbon revenue can be used for targeted rebates and refunds, tax credits, and transfer payments, to address disproportionate impacts on vulnerable households, based on objective qualifying formulas. These can be designed to maintain the emission-reduction price signal but be budget-neutral for households.³³

This category of expenditures dominates the proposed disbursement of revenue under federal US bills for a cap-and-trade system (under the name “consumer protection”).³⁴ Research has shown that predicted competitiveness effects of carbon pricing on sectors significantly overstates what has been observed empirically.³⁵ For this reason, British Columbia has chosen to consider mitigation measures for industry on the basis of ex-post demonstration of actual impact, rather than forecasts. BC carbon tax revenue does, however, provide a tax credit to low-income households and other forms of financial assistance for remote communities.³⁶

Broader fiscal priorities

Carbon revenue is also being used to address broader fiscal priorities such as reducing deficits (drawing on new carbon revenue as an alternative to raising income or other taxes) and improving the economic efficiency of the tax system (by using the fiscal space created by carbon revenue to reduce distortionary taxes on income, investment, labour or consumption).³⁷ Some jurisdictions (e.g. BC, UK, Norway) have from the outset used

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30 See Sustainable Prosperity's March 2011 policy brief on the topic of competitiveness: *The Competitiveness of a Trading Nation: Carbon Leakage and Canadian Climate Policy*. Available at: <http://sustainableprosperity.ca/dl414>

31 National Roundtable on the Environment and the Economy (2009). *Achieving 2050: A Carbon Pricing Policy for Canada*. p. 25-26.

32 Martin, Roger, and Kemper, Alison (2010). *Carbon Pricing, Innovation, and Productivity: Implications for Canadian Policy Makers*. Available at: <http://sustainableprosperity.ca/article344>.

33 Sustainable Prosperity will be releasing a background report and policy brief on the distributional impacts of climate policy on vulnerable populations, and the potential for carbon revenue to be used for poverty reduction, in the summer of 2011.

34 Larsen, John, Bradbury, James, Kelly, Alexia, Bishins, Alison and Ziegler, Micah (2010). *WRI Summary of the American Power Act (Kerry-Lieberman Discussion Draft)*. World Resources Institute; and Larsen, John, Kelly, Slexia, and Heilmayr, Robert (2009). *WRI Summary of H.R. 2454, the American Clean Energy and Security Act (Waxman-Markey)*. World Resources Institute.

35 Reinaud, Julia (2008). *Issues behind competitiveness and carbon leakage: Focus on heavy industry*. International Energy Agency. Available at: http://www.iea.org/textbase/papers/2008/Competitiveness_and_Carbon_Leakage.pdf; and Cosbey, Aaron (2008). *Border Tax Adjustment, Background Paper, Trade and Climate Change Seminar*, June 18-20 2008, Copenhagen Denmark. International Institute for Sustainable Development.

36 British Columbia Ministry of Finance (March 2, 2010). *Revenue Neutral Carbon Tax Report* in Budget and Fiscal Plan 2010/11 – 2012/13. p. 105-106.

37 Sustainable Prosperity issued a policy brief in December 2010 on the use of carbon revenue for fiscal sustainability: *Carbon Pricing, Climate Change, and Fiscal Sustainability in Canada*. Available at: <http://sustainableprosperity.ca/article586>.

carbon revenue primarily to address broader fiscal priorities, while others plan to phase in this use as revenue grows and other needs wane (e.g., US federal climate change bill proposals).

Use of Revenue

The limited modeling research that has been conducted on the Gross Domestic Product (GDP) and welfare impacts of different uses of carbon revenue concludes that the specific choices of which taxes are reduced will influence the net impact of the carbon price on the jurisdiction's international competitiveness, economic efficiency, household welfare, and greenhouse gas reductions.

For example, the National Roundtable on the Environment and the Economy conducted general equilibrium modeling of two revenue-use options for a Canada wide cap-and-trade system with full auctioning. The authors concluded that cuts in corporate taxes stimulate growth more than other tax cuts; cuts in sales taxes are the most attractive in the short-term but reduce the economic efficiency of carbon pricing and depress economic growth in the long term; and cuts in labour and payroll taxes do not stimulate growth as much as cuts in corporate taxes, but perform better than cuts in sales taxes. The reduction in sales tax has a beneficial impact on consumer welfare in the medium term (2020), but by 2050 the reduction in corporate taxes moves to having the least negative impact on consumer welfare.³⁸

Modelling of the possible economic and environmental effects of a large-scale green fiscal reform in the UK, conducted by the UK's Green Fiscal Commission, reached parallel conclusions about the significant influence of how revenue from higher fossil fuel prices is recycled on greenhouse gas emissions and GDP.³⁹

Using carbon revenue to create the fiscal space to change the existing tax system may be revenue neutral at a government scale, but is bound to involve a redistribution of burdens between firms, sectors and between regions both within and between provinces.⁴⁰ In smaller jurisdictions with fewer corporate taxpayers, tax shifting could lead to major tax windfalls. Views vary widely as to whether such redistribution of burden based on carbon emissions is appropriate or not,⁴¹ but it is bound to be politically complex and contentious.

British Columbia has used its carbon tax revenue to reduce personal and corporate income

British Columbia has used its carbon tax revenue to reduce personal and corporate income taxes.

38 National Roundtable on the Environment and the Economy (2009). *Technical Report on Achieving 2050: A Carbon Pricing Policy for Canada*. p. 52 and 53.

39 Green Fiscal Commission (March 2010). *A Major Green Fiscal Reform for the UK: Results for the Economy, Employment, and the Environment*. Briefing Paper Five. Available at www.greenfiscalcommission.org.uk.

40 This is illustrated at the national level in: Bramley, Matthew, Sadik, Pierre, and Marshall, Dale (2009). *Climate Leadership, Economic Prosperity: Final Report of an Economic Study of Greenhouse Gas targets and Policies for Canada*. Pembina Institute and David Suzuki Foundation.

41 For example, see Canada West Foundation's rebuttal to the above report: Gibbins, Roger (2009). *Sharing the Load: Addressing the Regional Economic Effects of Canadian Climate Policy*. Canada West Foundation.

taxes.⁴² In the RGGI states, New York and New Jersey have diverted portions of the auction proceeds originally set aside for clean energy investments to pay for deficit-reduction programs.⁴³ In the UK, funds raised from the Carbon Reduction Commitment (CRC) Energy Efficiency scheme, originally intended as a revenue neutral cap-and-trade scheme, will now be retained by the UK Treasury to support public finances.⁴⁴ While not strictly a carbon tax, for the last 20 years Norway has been collecting all royalty revenue from its petroleum industry into a separate fund, which now totals over US \$325 billion; the interest funds the growing pension costs of an aging population, and other budget deficits.⁴⁵

New Institutional Needs

Trading systems also require the creation of extensive new capacity and institutional structures within governments and the regulated firms (e.g. carbon brokers and trading exchanges; offset protocols, project developers, validation and verification; etc), whereas tax systems can readily be piggybacked on existing tax-collection infrastructure and capacity. For this reason (among others), evidence also demonstrates that, at the sub-national level, carbon taxes (and regulatory instruments, see below) can be swiftly implemented whereas trading systems require many years of planning and institutional development. British Columbia's carbon tax came into force within a year of initial consideration and Quebec's carbon levy took 16 months, whereas the Regional Greenhouse Gas Initiative (RGGI) took six years and the Western Climate Initiative (WCI) will take five years (if it keeps to schedule).

A selective review of how jurisdictions are administering the use of carbon revenue reveals that two of the categories of use previously identified are primarily being managed through existing government agencies: addressing regressive or disproportionate impacts on households and competitiveness impacts on business, and broad fiscal priorities. In contrast, creation of dedicated new institutions is the norm for administering funds to accelerate the transition to a low-carbon economy (Figure 2).

Evidence also demonstrates that, at the sub-national level, carbon taxes (and regulatory instruments, see below) can be swiftly implemented whereas trading systems require many years of planning and institutional development.


42 British Columbia Ministry of Finance (March 2, 2010). *Revenue Neutral Carbon Tax Report* in Budget and Fiscal Plan 2010/11 – 2012/13. p. 105-106.

43 In March 2010, New Jersey transferred USD \$65 million from the state's Global Warming Solutions Fund to its general fund in order to address a USD \$11-billion state budget shortfall. New York diverted USD \$90 million in RGGI proceeds to its general fund for deficit reduction in 2009. Source: Jones, Steve (April 19, 2010). *Congress to Consider Preemption of Regional Climate Pacts*. Marten Law Newsletter. Accessed June 26, 2010, from www.martenlaw.com/newsletter/20100419-regional-climate-compacts.

44 HM Treasury (October 2010). *Spending Review 2010*. Page 62. Available at: http://cdn.hm-treasury.gov.uk/sr2010_completereport.pdf

45 Norwegian Ministry of Finance (March 2009). *Global Pension Fund Fact Sheet*.

Figure 2: Use of carbon revenue and new institutions: selected jurisdictions

JURISDICTION	USE OF REVENUE AND NEW INSTITUTIONS, WHERE RELEVANT		
	Transition to low carbon economy	Mitigation of unintended consequences	Broad fiscal priorities
Canada 			
Alberta	Climate Change and Emissions Management Corporation	✓	
British Columbia	(Innovative Clean Energy Fund – separate funding)	✓	✓
Saskatchewan	i) Technology Fund Corporation, ii) Climate Change Foundation, iii) Climate Research and Development Corporation, iv) Environment Foundation	✓	
Quebec	Green Fund	✓	
International			
Norway (petroleum sector revenue only)			Global Pension Fund ✓
Northeastern and Mid-Atlantic States (RGGI members)	Some, for example Delaware Sustainable Energy Utility; Maine Energy and Carbon Savings Trust; but mostly through existing agencies	✓	✓
United Kingdom	Carbon Trust	✓	✓
United States (Kerry-Lieberman discussion draft)	Some, for example for low-carbon industrial technology R&D, but mostly managed through existing agencies	✓	✓

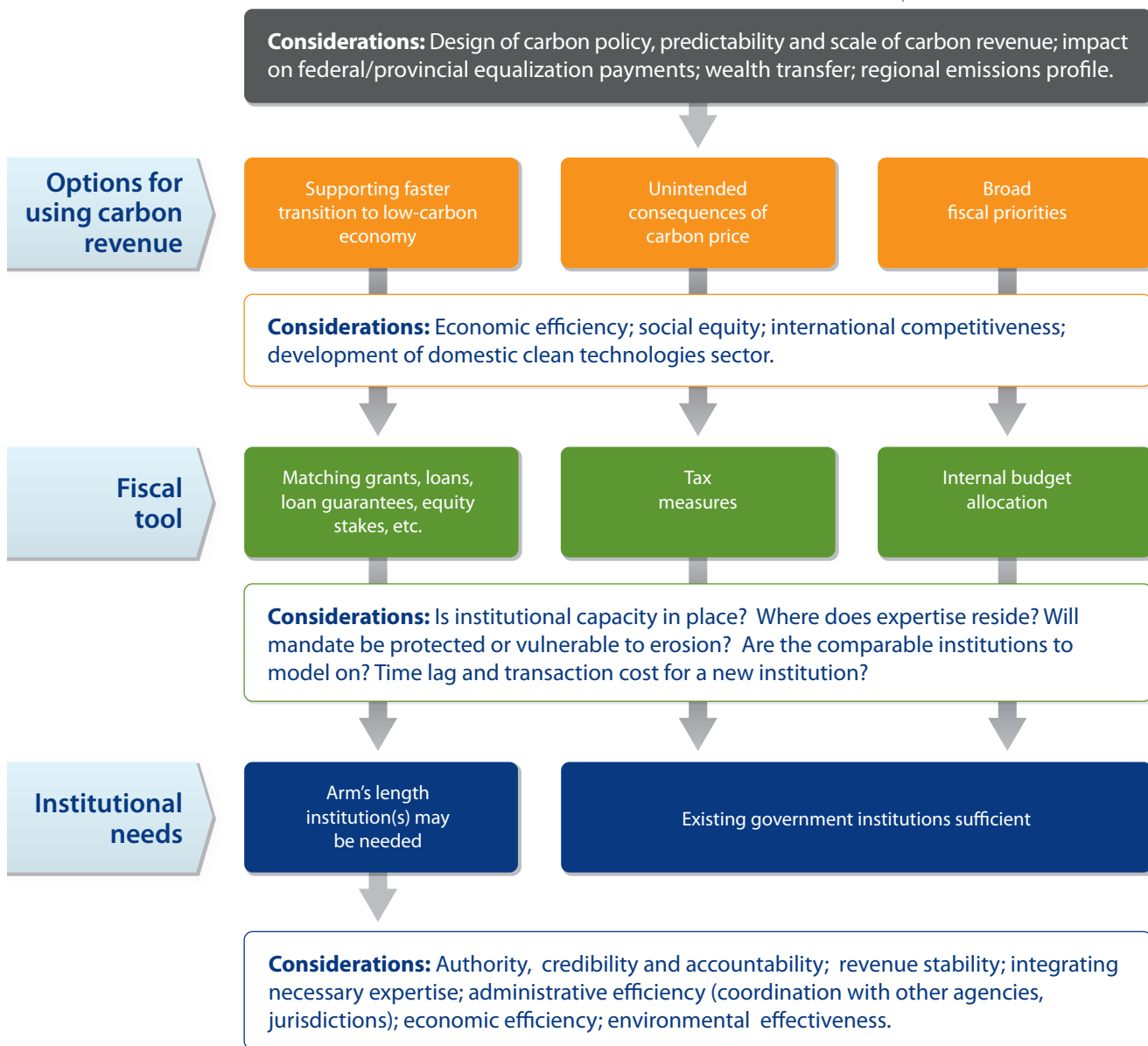
Source: Various

Reflecting on this pattern, it appears that the objective of the disbursement of funds is the dominant determinant for institutional need, with secondary considerations being protection of the revenue envelope and location of specialized expertise. In summary (and in figure 3):

- Investments to support a faster transition to a low-carbon economy are made through instruments ranging from matching grants, to loans and loan guarantees, to equity positions in projects. The institutions need to be tailored to deliver timely, informed, effective and accountable funding decisions in high-risk, highly specialized fields. In most circumstances, this is best done through arm's length, independent institutions.
- Addressing the unintended consequences of carbon pricing is implemented primarily through tax measures, targeted rebates and refunds, and utility rate relief. This requires no new institutions. However, to meet expectations of accountability and to avoid wealth transfer, windfalls and potential protectionism, transparent criteria for eligibility and a high standard of transparency in reporting on the tax expenditure side are necessary.

- Broader fiscal priorities are implemented through internal budget allocation. New institutions are generally not needed since decision-making, disbursement, reporting and auditing infrastructure are already established within Finance departments and Treasury and Auditor General offices. The exception would be where an inter-generational Trust Fund is being established, and needs distinct fiduciary governance (e.g., Norway’s Global Pension Fund).

Figure 3: Typical institutional models



Source: Sustainable Prosperity

Implications for policy-makers:

This brief is meant as an overview of the theory and experience on carbon revenue choices and associated institutions. From the overview, Sustainable Prosperity believes that the following implications are of direct relevance to policy-makers engaged in the development of carbon policy in Canada:

1. Establishing a price for carbon emissions (through tax, trading, or through compliance costs) is the essential foundation to spur the transformative changes in systems of energy production, distribution and use, which are needed to limit the scale of anthropogenic climate change.
2. Cap-and-trade systems with auctioned emission allowances, carbon taxes or levies, and carbon emission regulations with compliance payments are now in place or are being planned by most provincial and territorial governments in Canada. These systems have been used successfully in other jurisdictions, such as the European Union and its individual member states.
3. A selective scan of Canadian and international carbon-pricing and regulatory programs and proposals reveals a range of approaches to pricing carbon; both the choice of primary pricing instrument and design details such as reduction targets, coverage, free allocation of allowances, and use of offsets will influence the scale and the predictability of carbon revenue. Nonetheless, experience to date demonstrates that carbon pricing can generate substantial revenue even at modest initial prices. Also, analysis concludes that if prices rise in line with official reduction targets, this revenue could meet or exceed all federal corporate income tax receipts by 2020. As such, increased debate on how to manage and use this revenue is warranted.
4. As with any revenue stream, governments have multiple choices for how to disburse carbon revenue. Regional circumstances (e.g. sources of emissions, trade intensity of economy) and cultural preferences will lead jurisdictions to make different decisions on how to allocate their carbon revenue. Needs will also shift at different stages of the transition to a low-carbon economy, and possibilities will expand as rising carbon prices yield higher revenue in the medium term.
5. Three broad categories of revenue use were identified in a scan of selected Canadian and international carbon pricing or regulatory programs or proposals: investments to support a faster transition to a low-carbon economy, mitigation of the unintended consequences of carbon pricing, and broad fiscal priorities. This scan revealed that investments to support a faster transition to a low-carbon economy are the dominant choice for use of carbon revenue.

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6. A high onus has emerged on accountability and transparency for the use of carbon revenue, as a revenue envelope separate from the general revenue stream. Stakeholder consent for the carbon pricing or regulatory policies, with their implicit ‘new tax’ association, is contingent on parallel consent for the use to which the revenue will be put. In some – but not all – jurisdictions, special funds or not-for-profit third parties have been created to manage (and in some cases even collect) carbon revenue in order to insulate them from general government revenue.

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