STEP CHANGE

FEDERAL POLICY IDEAS TOWARD A LOW-CARBON CANADA

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FOREWORD

Over the past several years, Canadians have witnessed a significant decline in our federal government's global leadership on climate change. Late-comers to the Kyoto process, Canada is now the only country to have pulled out of the agreement. At UN climate gatherings we have become accustomed to Canada being given "fossil awards" for actively undermining progress on addressing climate change. And within Canada, the federal government has scaled back or eliminated programs to reduce GHGs and enable the Canadian economy to prosper from the new and emerging markets for clean technology.

The refrain from the apologists for this approach has been that Canada emits less than 2% of global GHG emissions (and is only 2% of the global economy), so any impact we can have would be minimal. But as 2% of the problem, we should be prepared to be at least 2% of solution, and we should ramp up our economy for the benefits that will flow from this effort. We should aim to have 2% of the rapidly growing, trillion-dollar market in environmental goods and services. Yet we now have just 1.3% of this market, down from 2.2% in 2005 (Analytica Advisors, 2015). As a resource-based economy, we should have the most efficient performance from these sectors, extracting as much value as we can from our resources with as little waste as is feasible. Yet Canada has among the highest GHG emissions per capita in the world. And we should have the most efficient infrastructure to serve our economy, yet our failure to make investments to modernize our electricity grid, car-dependent communities and energy-inefficient buildings are costing us jobs and economic opportunities in the sectors that need reliable and cost-effective support systems.

A price on carbon is a necessary first step, and one that is increasingly becoming the norm in the industrialized world. But it can't do the job alone. First, the price on carbon would have to jump too quickly to create the changes in behaviour needed in the short term. Second, while carbon pricing is likely the most efficient economy-wide measure to address GHG reductions, there are many specific instances of market failure that carbon pricing fails to address. One such example, in the buildings sector, is the problem of landlords bearing the costs of energy retrofits, which then only benefit tenants who are the ones who pay the electricity or gas bill. There are many other examples in this and other sectors.

We need to look beyond carbon pricing and ensure there are broader changes to our economy if we are to meet scientifically rigorous carbon reduction targets that will stabilize the world's temperatures.

In the lead up to the late-November UN Conference on Climate Change in Paris, our new federal government must articulate a broad agenda that will captivate the support of the vast majority of Canadians, and inspire thought leaders and political actors who recognize that climate change is a fundamental global threat that demands Canadian leadership.

Given the past decade and a half of foot-dragging, it is unrealistic to expect that in a matter of weeks or months we can become global climate leaders. However, we can demonstrate our resolve by making a significant commitment.

This report, prepared by Dunsky Energy Consulting, outlines a package of policy measures that would signal this commitment — a package that aggressively tackles GHG emissions, while leveling the playing field for renewable and clean technology.

Our ultimate objective with this report is to lay out an immediate and ambitious governance agenda to aggressively and rapidly begin the transformation of our economy toward a more sustainable low-carbon path. The measures outlined here are meant to attract support of the large majority of Canadians and political parties that believe Canada must do more to address climate change. The package is also

designed to complement emerging carbon pricing approaches with more aggressive policy, regulatory and legislative tools.

As noted above, going beyond carbon pricing is key to the economic transformation opportunity available to Canada. Here the public sector has a critical role to play. Targeted incentives and investments outlined in the Green Bank and Tax Code Retrofit proposals would open opportunities to export solutions, and drive stronger economic growth over the long term. Government's role must be to set the overarching vision for the transition, and to facilitate the conditions that create a low-carbon competitive edge for Canada.

Regulation must also play a role, and this is especially important in an Accelerated Coal Phase-Out and a Green Building Compact. In such cases, regulation must address market failures that have imposed significant pollution costs on society.

We must reverse the rapid rise in emissions from buildings and transportation sectors, as outlined in the Green Building Compact, as well as the 'Lead by Example' Mandate, and Clean Transportation Strategy.

Finally, through a Bio Strategy, we must create new opportunities in sectors like agriculture and forestry to maximize the potential of the rapidly emerging bio-economy for Canada.

This report contains many recommendations. In all cases, there are design details to be resolved both within and between the seven policy areas. The brevity of this report means that much work needs to be done before we reach the implementation stage. However, in the lead up to the Paris meetings, we hope this report can serve as a vehicle for establishing a governing agenda to more systematically address climate change. It is a conversation that has been largely dormant in Ottawa, and we look forward to the new federal government engaging with Canadians to explore the new opportunities that are available to us.

This report lays the foundation for an exciting conversation that needs to happen immediately with the new federal government. We cannot afford to waste any more time in addressing the climate change challenge and opportunity in Canada.

The Broadbent Institute and the Mowat Centre

EXECUTIVE SUMMARY

Over the last few years, Canadian governments of different levels have taken first steps in the fight against climate change. With a new federal government in power and COP21 in Paris now on the horizon, Canada must calibrate its climate policies with a view to the long term. In addition to carbon pricing — a core policy idea that is gaining ground at the provincial and, increasingly, federal level — seven preliminary policy ideas can also help the federal government steer Canada toward a low-carbon economy:

LAYING THE ECONOMIC FOUNDATION

1. GREEN BANK OF CANADA

A state-sponsored financial entity that promotes greater private-sector investment in the low-carbon economy through a variety of mechanisms, such as credit enhancements, guarantees, project aggregation and securitization.

2. TAX CODE RETROFIT

A suite of changes to the tax code in favour of energy efficiency, renewable energy, and other sustainable technologies, supported by a phase-out of remaining fossil fuel subsidies.

PROMOTING LOW-CARBON SOLUTIONS

3. ACCELERATED COAL PHASE-OUT

Amendment to the *Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations*, to accelerate the phase-out of remaining coal-fired power plants.

4. GREEN BUILDING COMPACT

A packaged suite of federal energy efficiency and renewables policies, including a revamp of codes and standards, a National Deep Retrofit Program, and a renewable heating program.

5. 'LEAD BY EXAMPLE' MANDATE

A suite of ambitious initiatives for federal facilities and institutions, including on heat and power, transportation, and institutional investing.

6. CLEAN TRANSPORTATION STRATEGY

A packaged suite of policies pertaining to transportation, including a progressive Vehicle Emissions Tax, a Zero Emission Vehicle mandate, and a revamp of infrastructure spending and transfer criteria to include GHG goals.

7. BIO STRATEGY

A suite of policies promoting best practices in the agricultural and forestry sectors, from cross-compliance with existing funding programs to voluntary initiatives in farming practices.

Considerable work is still required to refine these ideas and bring them to fruition, from costing to consultation. At this stage, this document offers a blueprint for policymakers in their search for the next step changes in federal climate action.

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CONTEXT: STEPPING UP FEDERAL LEADERSHIP

TAKING THE NEXT STEPS

The election of a new government offers the possibility of renewed interest in reducing Canada's carbon emissions. With increasing global pressure and leadership, Canadians are looking for the new government to step up and make its mark.

A price on carbon is a necessary first step, but it can't do the job alone. Beyond carbon pricing, the federal government has access to a wide range of tools to help drive GHG emission reductions, from the electricity sector to the tax code.

With this document, we offer preliminary policy ideas that the federal government can implement in a relatively short time frame, with the goal of paving the way to a low-carbon economy in Canada. Considerable work is still required to refine these ideas and bring them to fruition. At this stage, this document offers a blueprint for policymakers, in support of their search for the next steps in federal climate and economic action.

METHODOLOGY

To complete this work, a two-pronged approach was taken:

1. Literature review: a literature review of existing and potential policies was conducted, with a focus on applicability in the Canadian context;
2. Select interviews: for select sectors, we interviewed thought leaders to gather their latest policy proposals, beyond what is available in the literature.

Using this method, a short list of policy ideas was produced, and seven were retained for inclusion in this report. A preliminary discussion accompanies each policy idea, along with examples from other jurisdictions. A deeper analysis is recommended to develop these ideas into political proposals.

STRUCTURE OF REPORT

The report is structured as follows:

SECTION 2 — OVERVIEW

This section presents an overview of the preliminary policy ideas, a brief discussion on carbon pricing, and a presentation of the framework used in the fact sheets.

SECTION 3 — FACT SHEETS

This section presents seven fact sheets on preliminary policy ideas that the federal government can implement to contribute to GHG emission reductions.

SECTION 4 — ADDITIONAL CONSIDERATIONS

This section presents a preliminary discussion on co-benefits and potential impacts of the policy ideas, as a starting point for further analysis.

Select references are available at the end of the document.

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POLICY IDEAS: OVERVIEW

OVERVIEW OF POLICY IDEAS

In addition to carbon pricing, seven additional policy ideas can also help the new federal government steer Canada toward a low-carbon economy:

LAYING THE ECONOMIC FOUNDATION

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A suite of policies promoting best practices in the agricultural and forestry sectors, from cross-compliance with existing funding programs to voluntary initiatives in farming practices.

A COMPLEMENT TO CARBON PRICING

Carbon pricing is a core pillar of climate action, and has been gaining ground in Canada in recent years. At the provincial level, a patchwork of approaches has taken root: a revenue-neutral carbon tax in British Columbia; a cap-and-trade system between Quebec, California, and now Ontario; and a carbon intensity-based levy in Alberta, which is due to ramp up in 2016-17.

An economy-wide and increasing carbon price is a key climate policy for any federal government — but it is only one tool in the federal toolkit. In this document, we seek to present federal policy ideas that lay the economic foundation for a low-carbon economy, and that promote low-carbon solutions, in addition to carbon pricing. Given the more targeted nature of these policy ideas, many of them can be packaged, announced, and implemented relatively quickly, with considerable potential for emission reductions and positive economic development down the road.

FRAMEWORK FOR POLICY IDEAS

For each policy idea, we produced a fact sheet, according to the following format:

POLICY STATEMENT

A short description of the policy idea, along with the identification of associated co-benefits.

CONTEXT

A short description of the context around this policy area, including the issue at hand, as well as historical and existing policies, where relevant.

POLICY OBJECTIVES

A brief listing of the objectives that the policy should help meet, beyond emission reductions.

POLICY FEATURES

A more detailed description of the policy idea.

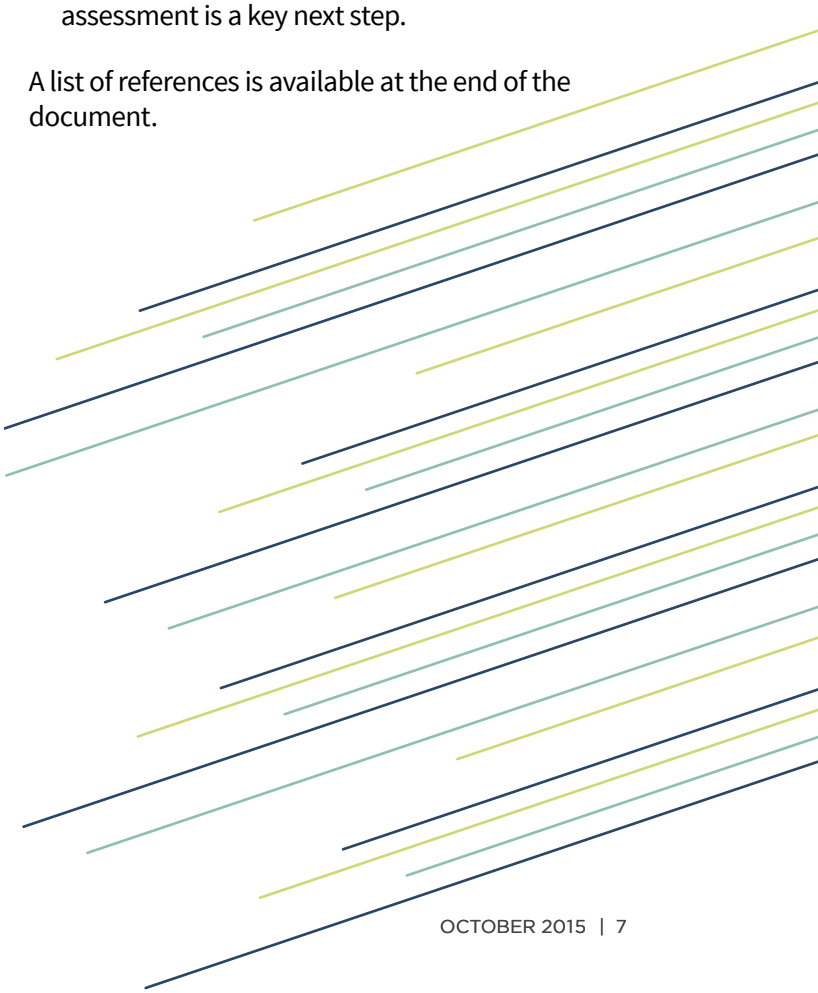
EXAMPLES IN OTHER JURISDICTIONS

A sample listing of similar policies enacted in other jurisdictions, to offer both inspiration and a precedent.

In addition to these fact sheets, we produced the following elements:

- Co-benefit map: a preliminary table illustrating the potential co-benefits that the proposed policy ideas could have on issues other than the environment.
- Preliminary impact discussion: a brief discussion of potential impacts of the proposed policy ideas. Note that quantifying emission reductions and policy cost/benefit falls beyond the scope of this project; a detailed impact assessment is a key next step.

A list of references is available at the end of the document.



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POLICY IDEAS: FACT SHEETS

LAYING THE ECONOMIC FOUNDATION

[1] GREEN BANK OF CANADA

POLICY STATEMENT

The federal government can establish the Green Bank of Canada, a state-sponsored financial institution tasked with working in partnership with the private sector to increase investments in clean energy markets through project aggregation, credit enhancements, guarantees, data collection, and other activities. Successful green banks in the U.S. can be used as models.

CO-BENEFITS

Job Creation
Clean technology and service sectors

Economic stimulus
Support for economic activity across the country

CONTEXT

THE FINANCING GAP

Canada's transition to a low-carbon economy will require investments in countless small- and large-scale clean energy projects over the coming decades — and financing remains difficult to attract.

Clean energy and efficiency projects face unique challenges: a highly capital-intensive and asset-based nature, long technology and cost curves, competition from well-established capital-intensive sources that have not yet internalized their full societal costs, and, importantly, a lack of familiarity with — and confidence in — clean energy projects within the financial industry. In short, low-carbon projects face high capital needs and a lack of reasonably priced capital — and the private sector cannot do it all.

LEVERAGING PRIVATE FINANCE IN CANADA

In 2014, Canadian investments in clean energy reached $6.5 billion: a 45% increase from 2012 levels (Clean Energy Canada, 2014), and a fraction of the level of investment needed to drive deep emission reductions across the country. While offering tax incentives and subsidies is a critical strategy to help spur clean technology deployment, the magnitude available for these subsidies remains limited. There is currently no centralized financial institution in Canada that: 1) leverages and backstops private investment for commercial clean energy projects; 2) centralizes and securitizes clean energy and energy efficiency

investments; and 3) promotes financial vehicles for clean energy investing. Meanwhile, U.S. states — notably Connecticut and New York — have set up successful low-carbon financing institutions.

In Canada, support institutions like Export Development Canada and the Business Development Bank have not demonstrated a sufficient track record in spurring low-carbon investments for Canada. A dedicated mechanism would be beneficial.

POLICY OBJECTIVES

By establishing the Green Bank of Canada, the federal government can achieve a number of objectives, notably:

1. Accelerate the deployment of commercial clean energy and efficiency solutions: by leveraging private sector investment and providing valuable financial services such as credit enhancements, guarantees, and securitization.
2. Promote the development of financial vehicles for clean energy: by building a track record of successful low-carbon investments, building best practices, and promoting select standards (e.g. Property Assessed Clean Energy in the case of energy efficiency).
3. Foster private sector competition in clean energy projects and financing: by contributing to the development of robust clean energy markets and attractive investment opportunities, accelerating private investment and returning value to taxpayers.

POLICY FEATURES

This policy could take the following form:

1. CREATE THE GREEN BANK OF CANADA AS A CROWN CORPORATION

The Green Bank of Canada can operate as an arms-length crown corporation, with its own budget, a board of directors and staff with expertise in clean energy and efficiency financing, as well as special enabling legislation to allow the issuance of obligations (e.g. bonds) and the use of tools such as direct lending (offering from senior to subordinated debt facilities), private-public partnership loans and/or equity stakes, credit enhancements, and securitization (i.e. the Green Bank working as a portfolio lender). Capitalization — at least $1 billion, to be in line with U.S. counterparts — may come from a bond issue, government funds, or revenue from a carbon price.

2. CONSOLIDATE CLEAN ENERGY FUNDING ACTIVITIES

The government of Canada operates several small funds and financing mechanisms related to clean energy, many of which could benefit from being integrated within the Green Bank. Accordingly, organizations such as Sustainable Development Technology Canada and select departmental divisions may be integrated within the Green Bank to streamline processes.

EXAMPLES IN OTHER JURISDICTIONS

Green banks have been growing successfully in other jurisdictions:

Connecticut Green Bank

Connecticut was the first U.S. state to set up a green bank, which now offers a range of products, including solar insurance products, loan loss reserves, subordinated debt, and a commercial Property Assessed Clean Energy (C-PACE) program, a successful energy efficiency financing mechanism (Connecticut Green Bank, 2015).

Since the establishment of the Green Bank in 2011, Connecticut has recorded a tenfold increase in renewable energy deployment, as well as growing investment in energy efficiency. For instance, in 2013, the green bank managed to leverage $180 million of private capital following investments of $40 million of public capital (half of this amount in loans and leases). Meanwhile, the C-PACE program generated $20 million in energy efficiency deals, which were then packaged and sold to private investors to recapitalize the bank (Green Bank Academy, 2014).

New York Green Bank

The New York Green Bank, created in 2014 as a division of the New York State Energy Research and Development Authority (NYSERDA), is the latest green bank to be created in the U.S. The bank provides wholesale financial products and energy efficiency loan securitization, and seeks to leverage private investment toward clean energy markets. Before the creation of the Green Bank to manage its financing activities, NYSERDA managed to achieve AAA rating for its green bonds. The NY Green Bank estimates that its $1 billion capitalization could generate up to $8 billion in additional private sector investment over the next 10 years (NY Green Bank, 2015).

Other Jurisdictions

Several other jurisdictions have set up — or are planning to set up — a green bank or equivalent institution, including Rhode Island (RI Infrastructure Bank), Australia (Clean Energy Finance Corporation), the U.K. (Green Investment Bank), and, to an extent, Germany (Kreditanstalt für Wiederaufbau, "KfW"). A recent report by the People's Bank of China also explores the creation of a green bank (People's Bank of China, 2015).

[2] TAX CODE RETROFIT

POLICY STATEMENT

The federal government can undertake a retrofit of the federal tax code in favour of low-carbon products and services, most notably by broadening Class 43.1/43.2 capital cost allowance provisions, expanding the list of GST/HST exempt products and services, phasing out fossil fuel subsidies, and packaging a suite of generous tax incentives for efficiency and clean technology investments.

CO-BENEFITS

Job creation
Clean technology and service sectors

Health care
Clean and efficient homes and buildings are healthier

CONTEXT

Technology Deployment and Market Barriers

A price on carbon can help level the playing field by raising the cost of carbon-intensive technologies relative to low-carbon substitutes. However, in the presence of a weak price signal (as possibly is the case in the early years of a carbon price), the development and commercialization of emerging technologies (e.g. energy storage), as well as the deployment of high upfront-cost solutions (e.g. energy efficiency retrofits), can still face considerable market barriers. In this context, direct tax incentives can help alleviate the financial burdens and overcome these barriers. As it did with the aerospace and oil sands industries, the federal government can play a role in helping the clean technology industry in its infancy.

Limited Federal Support

A limited number of federal tax incentives currently exist for sustainable technologies, most notably the accelerated capital cost allowance (CCA) for a set of renewable energy and energy efficient (RE/EE) equipment (defined as Class 43.1/43.2 equipment), which allows the deduction of capital costs by up to 50% per year on a declining-balance basis. Projects making use of Class 43.1/43.2 equipment are also eligible for the Canadian Renewable and Conservation Expenses (CRCE) deduction for project development costs. Other broad tax incentives also apply indirectly to clean technology expenses — most notably the Scientific Research and Experimental Development (SR&ED) deduction and investment tax credits for R&D activities — as well as direct grants (e.g. Sustainable Development Technology Canada funds). Meanwhile, the federal ecoENERGY programs have expired for the most part.

Fossil Fuel Subsidies

Along with G20 countries, in 2009 Canada pledged to phase out 'inefficient' fossil fuel subsidies, and followed up by phasing out the accelerated capital cost allowance for tangible capital assets in oil and gas, and reduced the deduction rates for select assets in oil sands projects. However, some

subsidies remain, including for coal mining via the accelerated depreciation for physical assets, but also for oil and gas through the Canadian Development Expense (CDE) and the Canadian Exploration Expense (CEE).

POLICY OBJECTIVES

By leveraging the tax code, the federal government can achieve a number of objectives, notably to:

1. Accelerate the early adoption and deployment of sustainable technologies: tax incentives can have considerable effects on the deployment of clean technologies and energy efficiency. Phasing out fossil fuel subsidies can also level the playing field and free up funds.
2. Help overcome market barriers: alleviating upfront costs is a critical success factor for the adoption and deployment of energy efficiency and clean energy projects.

POLICY FEATURES

A tax code retrofit could be structured as follows:

1. EXPANSION OF CLASS 43.1/43.2 CAPITAL COST ALLOWANCE PROVISIONS

The definition of Class 43.1/43.2 equipment can be expanded to include energy storage technologies, without the requirement that the energy stored come from select renewable sources, since the efficiency of all generation sources can benefit from storage technologies. Increasing the rate of depreciation up to 100%, from its current 50%, may also be considered.

2. ADDENDUM TO THE LIST OF GST/HST EXEMPT PRODUCTS AND SERVICES

The list of GST/HST exempt products can be expanded to include: 1) clean energy materials and equipment, in line with B.C. PST exemptions (these include clean energy equipment such as solar PV but also thermal insulation and other ancillary equipment); 2) "Most Efficient" ENERGY STAR furnaces, boilers, and heat pumps; and 3) specific energy services, most notably energy audits.

3. PHASE OUT OF REMAINING FOSSIL FUEL SUBSIDIES

The federal government can phase out remaining fossil fuel subsidies, including the accelerated depreciation for physical assets for coal mining, as well as the Canadian Development Expense (CDE). Similarly, the government can reduce the scope of the Canadian Exploration Expense (CEE) to only apply to unsuccessful exploration expenses. The magnitude of these subsidies was last estimated in 2008 at $711 million (Pembina, 2014).

4. PACKAGED SUITE OF TAX CREDITS/ DEDUCTIONS

A number of tax credits and deductions can be phased in, including:

- **Landlord Energy Allowance:** an investment tax credit (ITC) of up to $1,500 per rented property, claimed for the purchase and installation of energy-saving equipment, as is done in the U.K. This would encourage landlords to make investments in energy efficiency, even if the energy saving benefits are reaped by the tenant — a current market barrier.
- **Homebuilder Energy Allowance:** a tax credit of up to $2,000 for builders of energy efficient homes, in line with an accepted standard (e.g. ENERGY STAR for New Homes).
- **Business Energy Allowance: a** tax credit of up to 30% applicable to commercial, industrial, utility, and agricultural sectors purchasing and installing energy efficient and renewable technologies (solar heating and PV, wind, biomass, cogeneration, and others).
- **Homeowner Energy Allowance:** a tax credit (up to 30%, in line with the U.S. equivalent) for the purchase and installation of renewable energy technologies in the residential sector.
- **A Clean-Tech Flow-Through Tax Credit:** similar to the tax credit provided to mining companies, making this mechanism available to clean-tech firms would open up early-stage investments that would seed next-stage technology.

EXAMPLES IN OTHER JURISDICTIONS

Other jurisdictions have moved forward with ambitious tax code changes, notably:

Provinces

Select provinces — B.C., P.E.I. and Saskatchewan — offer sales tax exemptions for energy efficient or renewable energy (EE/RE) equipment, while Manitoba uses tax credits for similar goals.

Abroad

In the U.S., the federal Business Energy ITC (up to 30%), Residential Renewable Energy ITC (up to 30%), Energy Efficient New Homes Tax Credit, and various corporate tax deductions form the backbone of a suite of tax incentives for EE/RE technologies. At the state level, sales tax exemptions for RE/EE equipment are common. In Europe, similar tax breaks are also commonplace, notably the U.K.'s Landlord Energy Savings Allowance and 100% CCA.

PROMOTING LOW-CARBON SOLUTIONS

[3] ACCELERATED COAL PHASE-OUT

POLICY STATEMENT

The federal government can amend the *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*, notably to considerably shorten the definition of 'useful life.'

CO–BENEFITS

Health care
Fewer cases of respiratory diseases

Job creation
Clean energy and gas-fired electricity industries

CONTEXT

Beyond GHG Emissions

In 2000, electricity generation accounted for 18% of GHG emissions in Canada. By 2013, near the end of the seven-year phase-out of coal-fired power initiated in 2007 in Ontario, this proportion had fallen to 12% (Environment Canada, 2014). Today, with Ontario now coal-free, GHG emissions from the electricity sector are largely the product of remaining coal-fired power plants in Alberta, Saskatchewan, and Atlantic Canada, and, to a lesser extent, from natural gas power plants.

Beyond sizable GHG emissions, coal-fired electricity generation also accounts for considerable air pollutant emissions, most notably particulate matter and nitrous oxides (precursors to smog and associated respiratory illnesses), as well as sulphur dioxide (a precursor to acid rain). Natural gas-fired power plants, a common fossil alternative to coal, do not emit sulphur dioxide nor particulate matter.

Insufficient Federal Action

In 2012, the federal government introduced the *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations* (SOR/2012/167), which contribute to a slow phase-out of coal-fired electricity generation in Canada, by: 1) mandating any new coal-fired unit to meet a stringent CO_2 emission intensity standard (420 tonnes CO_2/GWh), which can only be technically achieved with carbon capture and storage (CCS) or biofuel combustion; and 2) outlining a schedule for existing coal-fired units to meet this standard at the end of their "useful life". The definition of useful life is generous (up to 50 years), such that several units are grandfathered and may continue to operate for decades to come.

POLICY OBJECTIVES

By taking a more active leadership role in the energy sector, the federal government can:

1. Achieve deep GHG emission reductions: transitioning to low- or no-emission electricity sources can achieve considerable GHG emission reductions (coal was responsible for about 7% of GHG emissions in 2012), along with reductions in air pollutants and associated health care costs.
2. Accelerate the uptake of alternative energy sources: the gap left by phased-out coal

and a more level subsidy playing field can contribute to the accelerated uptake of renewables (solar, biofuels) and natural gas, along with the creation of jobs associated with these industries.

POLICY FEATURES

This policy idea could be structured as follows:

1. AMENDMENT OF THE 'USEFUL LIFE' DEFINITION

The current regulations grandfather existing coal-fired units for up to 50 years, depending on the commissioning date. It is proposed that the end of 'useful life' for units commissioned after 1974 but before 1986 (currently set at 2029 at the latest) be brought forward by 10 years, and that the useful life for units commissioned in 1986 and later be reduced by 20 to 35 years. This would effectively phase out coal-fired power plants.

2. CONVERSION CAPITAL INCENTIVE PROGRAM

For more recent coal-fired units [e.g. Keephills 3 (commissioned in 2011), Genesee 3 (commissioned in 2005)], which risk becoming stranded assets in light of an accelerated phase-out, a complete shut-down may not be a financially viable option — conversion to natural gas (or potentially biofuels, as was done at Thunder Bay) is likely. To support the conversion of coal-fired units to lower-carbon fuels, the federal government can set up a Conversion Capital Incentive Program, which offers loan guarantees, financing, and other financial mechanisms. Funding may be obtained from the recycling of fossil fuel subsidies or the revenue from a carbon price.

Given the current provincial electricity mix, this policy would chiefly affect Alberta, Saskatchewan, and Atlantic Canada. An add-on to this policy could see the phase-out broadened to oil-fired power plants, which are still operated in Atlantic Canada. The federal government also has an important role to play in facilitating and directly supporting inter-provincial trade in electricity, which can facilitate clean energy exports from one part of the country to another.

EXAMPLES IN OTHER JURISDICTIONS

Other jurisdictions have moved forward with ambitious policies in the energy industry, notably:

Provinces

Ontario first announced the phase-out of coal-fired power plants in 2007, and became coal-free in 2014. The phase-out required shutting down the continent's then-largest coal-fired facility (Nanticoke), and converting the Thunder Bay facility to biofuels.

Other provinces have also targeted coal in their climate action plans, including Manitoba (which relegated its lone coal-fired unit Brandon to back-up status and banned coal heating), Saskatchewan (which invested heavily in CCS at its Boundary Dam unit), and Nova Scotia (which is encouraging new renewable development, using biomass, and improving energy efficiency to meet demand). Finally, Alberta's coal-fired electricity generation industry is currently under review by the province's Climate Advisory Panel.

United States

In 2014, the U.S. Environmental Protection Agency (EPA) rolled out its Clean Power Plan, under the authority of Section 111 of the Clean Air Act. This rule put in place a flexible framework which requires each state to set a sector-wide CO_2 emission intensity target, by 30% below 2005 levels by 2030. This ambitious goal is expected to lead to considerable coal phase-outs across the country.

[4] GREEN BUILDING COMPACT

POLICY STATEMENT

The federal government can establish the Green Building Compact, a suite of policies that promote a sustainable building and housing stock in Canada, most notably via an ambitious push on energy efficiency codes and standards, a national deep retrofit program, and a renewable heating program.

CO –BENEFITS

Job creation
Clean technology and service sectors

Health care
Increased comfort and fewer illnesses

Poverty reduction
Lower/energy bills

CONTEXT

A Double Benefit

In 2013, buildings accounted for 12% of GHG emissions in Canada, equal with the electricity sector, which supplies these buildings with its power needs, with its own 12% contribution (Environment Canada, 2014). Efforts to green the building and housing stock can not only provide energy and cost savings, but also curtail electricity demand and associated GHG emissions — a double benefit.

A Patchwork of Approaches

In Canada, energy efficiency is addressed by a patchwork of policies. At the federal level, the *Energy Efficiency Regulations* prescribe minimum efficiency standards for select equipment crossing international or inter-provincial borders, from room air conditioners to industrial chillers; at the same time, a number of provinces have similar but often diverging regulations. Similarly, whereas the federal government manages the National Energy Code for Buildings, which applies stringent standards to new constructions, provincial governments are responsible for the adoption and implementation of local building codes, which may not follow the federal standards. Meanwhile, federal ecoENERGY programs, which offered incentives for energy efficiency retrofits, have expired for the most part.

Investing in a Low Interest Rate Environment

Building and housing retrofits represent highly capital-intensive investments, which benefit from the low interest environment currently in place. In the current context of sluggish (and "jobless") economic recovery and low interest rates, retrofit programs are often cited as a means to stimulate the economy, increase employment, and achieve emission reductions, all while generating savings over the medium to long term (IEA, 2014).

POLICY OBJECTIVES

By pushing a number of Green Building policies, the federal government can achieve a number of objectives, beyond emission reductions, notably:

1. Lower energy bills and energy poverty: better performing buildings and housing lead to lower energy bills and associated energy poverty, along with increased comfort.
2. Stimulate the economy: considering the scale of the housing and building stock in Canada, energy efficiency efforts can jolt the economy, notably in the construction sector and associated industries, and create jobs across various professional and trade levels.

POLICY FEATURES

A Green Building Compact could be structured as follows:

1. OVERHAUL OF CODES & STANDARDS

The federal government can 1) streamline the process to amend the *Energy Efficiency Regulations* (SOR/94-651), via direct reference to U.S. rules for most products, an accelerated regulatory amendment schedule, and more stringent efficiency requirements for Canada-specific products (e.g. cold climate heat pumps); 2) incorporate ambitious efficiency standards for new constructions in the National Energy Code for Buildings (NECB) — in line with advanced LEED or net zero practices instead of the more basic ASHRAE 90.1 — and offer incentives for provinces to adopt this updated code, as is done in the U.S.

2. NATIONAL DEEP RETROFIT PROGRAM

The federal government can undertake a large-scale National Deep Retrofit Program, including by 1) setting up a Great Canadian Energy Audit program, which finances energy audits across the residential and commercial sectors; 2) creating a generous Youth Energy Employment Tax Credit, modelled after the Co-operative Education Tax Credit, to support employers in hiring youth for energy efficiency retrofit (not audit) work; and 3) offering targeted financing and tax incentive mechanisms to high-energy home and business owners as a result of the national audit (see Tax Code Retrofit, pg. 10).

3. RENEWABLE HEATING PROGRAM

The federal government can establish a renewable heat program, notably for the commercial and industrial sectors, whereby 1) financial incentives are provided for the replacement of fossil-fired heating systems in favour of renewable heat sources (geothermal, biofuels, solar); and 2) renewable heating standards are phased in for new building constructions in the context of the National Energy Code for Buildings.

EXAMPLES IN OTHER JURISDICTIONS

Other jurisdictions have moved forward with ambitious energy efficiency efforts, notably:

Provinces

A number of provinces — notably British Columbia and lately Ontario — are moving ahead of the federal government with equipment energy efficiency standards. Similarly, both Quebec and Nova Scotia have set up renewable heating incentive programs.

United States

The United States Department of Energy has moved forward with an ambitious schedule for equipment energy efficiency standards, well ahead of Canada. Tax incentives for energy efficiency retrofits (see Tax Code Retrofit, pg. 10) are also considerable. Some states, notably Maine, have set up sizable incentives for renewable heating systems.

European Union

With its 2012 Energy Efficiency Directive, the European Union has set a binding target of 20% energy efficiency improvement by 2020, to be met by member countries through national plans. The Directive includes requirements in public sector building procurement; mandatory energy audits in the business sector; increased access to data; and a mandatory efficiency target of 1.5% annual energy savings for energy distributors and retail energy sales companies (European Commission, 2012).

[5] 'LEAD BY EXAMPLE' MANDATE

POLICY STATMENT

The federal government can put forward a considerably more ambitious 'Lead by Example' mandate, with much more stringent targets in its Federal Sustainable Development Strategy — notably for vehicles, building performance, and green procurement — as well as a review of the Canada Pension Plan's practices and a potential update to RRSP/TFSA eligibility criteria.

CO-BENEFITS

Job creation
Clean technology and service sectors

Trust
Government that leads by example

CONTEXT

A Large Footprint

The federal government is the largest employer in Canada, with 257,138 employees in the core public administration and separate agencies in 2014, excluding the RCMP and Canadian Forces. Accordingly, the footprint of the organization is significant, including 20,271 owned or leased properties, 30,562 buildings, 24,402,319 square meters of floor space, and more than 16,000 on-road vehicles (Treasury Board, 2015). In the case of departments subject to the *Federal Sustainable Development Act*, 95% of emissions

come from buildings and vehicle fleets — a figure which totalled 1.322 Mt CO_2e in 2005 (the current baseline year) for the 15 departments subject to GHG targets (Environment Canada, 2013).

The Federal Sustainable Development Act and Other Actions

Canada has taken considerable steps in greening government operations, most notably with the enacting of the *Federal Sustainable Development Act of 2008*, and the ensuing triennial Federal Sustainable Development Strategy (FSDS) and its associated Policy on Green Procurement. The latest FSDS mandates a select number of departments to achieve 17% GHG emission reductions below 2005 levels by 2020 (in line with the federal target at the time), along with a few climate-related requirements, including requirements that new buildings and retrofits meet "high environmental standards in line with an industry-recognized benchmark" (e.g. LEED Gold); that select building with a floor space exceeding 1000 m^2 must undertake an environmental performance assessment; and that limited green procurement criteria be integrated on a per-department basis. Other initiatives, such as Natural Resources Canada's voluntary Federal Building Initiative or Canada Post's integration of all-electric vehicles in its fleet, are also steps in the right direction.

Institutional and Personal Investing

The federal government also has control over considerable financial levers via the Canada Pension Plan Investment Board ($264.6 billion in net assets (CPPIB, 2015)) and personal saving vehicles such as RRSP and TFSA. While the CPPIB is a founding signatory of the UN Principles for Responsible Investment (PRI) and a member of the Carbon Disclosure Project (CDP), its single mandate — to achieve a maximum return without undue risk of loss — does not explicitly integrate carbon considerations.

POLICY OBJECTIVES

By presenting a more ambitious 'Lead by Example' mandate, the federal government can: 1) reduce its own GHG emissions and generate best practices for large organizations; 2) shift the investing landscape away from carbon-intensive ventures, and accelerate the adoption of low-carbon financial standards.

POLICY FEATURES

An ambitious 'Lead by Example' mandate could be structured as follows:

1. AMBITIOUS TARGETS FOR THE FEDERAL SUSTAINABLE DEVELOPMENT STRATEGY

In the context of the Federal Sustainable Development Strategy (FSDS) and associated policies, the federal government can: 1) match the U.S. federal target of GHG emission reductions from federal operations of 28% below 2008 levels by 2020; 2) set a target of 100% total energy procurement (electric and thermal) from clean sources by 2050; 3) amend the Directive on Fleet Management to mandate the purchase of zero-emission executive and light duty vehicles only, and plan for charging stations; 4) require new buildings to be zero-emitting; 5) expand the application of FSDS climate requirements to all departments, beyond the current 15; and 6) modify the Build in Canada Program to support clean technology innovation.

2. AMENDMENT OF THE CANADA PENSION PLAN INVESTMENT BOARD MANDATE

The federal government can conduct a review of the CPPIB's mandate and practices to more closely integrate carbon goals, with the ultimate objective of increasing carbon disclosure, integrating climate risks, and eventually divesting carbon-intensive investments.

3. GREEN INVESTMENT VEHICLE

The government can review the eligibility criteria for RRSP and TFSA contributions, or a fraction thereof, either by imposing environmental criteria on a growing fraction of RRSP and TFSA contribution space, or creating a tax-free savings vehicle for low-carbon investments.

While a price on carbon would help shift investments away from high-carbon projects, its price signal is likely to remain weak in early years. These complementary policies can accelerate the trend.

EXAMPLES IN OTHER JURISDICTIONS

Other jurisdictions have moved forward with ambitious public sector mandates, notably:

Provinces

Pursuant to the *Carbon Neutral Government Regulation* of 2008, British Columbia's public sector reportedly became carbon neutral in 2010, through deep reductions and the purchase of offsets, although a recent Auditor General report raised concerns on the effectiveness of select offsets.

United States

In 2015, in addition to a GHG emission reduction mandate of 28% below 2008 levels by 2020, President Obama issued an Executive Order directing federal agencies to 1) acquire 25% of their total energy (electric and thermal) from clean sources by 2025; 2) reduce building energy use by 2.5% per year from 2015-2025; and 3) reduce per-mile GHG emissions from vehicle fleets by 30% below 2014 levels by 2025, while increasing the fraction of zero-emission and hybrid vehicles (White House, 2015). Several states also have similar 'Lead by Example' mandates. New regulations to promote the use of small businesses, many of which are clean technology companies, in federal contracting may provide for low-carbon innovation.

France

As part of its renewable procurement strategy, France considers a life-cycle assessment of GHG emissions. This regulation uses an internalized price of carbon, and accounts for the carbon impact of shipping from international markets.

Private Sector

Governments are not the only large organizations committing to deep decarbonisation—private-sector corporations are also making bold advances. Examples include IBM's goal of reducing energy-related GHG emissions by 35% below 2005 levels by 2020 and use 20% renewable electricity by 2020; GE's target to reduce its GHG emissions by 20% below 2011 levels by 2020, following a staggering 34% reduction between 2004 and 2013; and many more (White House, 2015).

[6] CLEAN TRANSPORTATION STRATEGY

POLICY STATEMENT

The federal government can roll out a Clean Transportation Strategy, most notably with a Zero Emission Vehicle mandate, a progressive Vehicle Emissions Tax, and an ambitious revamp of infrastructure spending and transfer criteria to include GHG goals.

CO-BENEFITS

Job creation
Clean technology and service sectors

Health care
Fewer respiratory illnesses, more active transport

CONTEXT

A Shared Challenge

In 2013, the transportation sector accounted for about 23% of GHG emissions in Canada, slightly less than the oil and gas sector, to which it is tied through gasoline and diesel demand. Achieving emission reductions in the transportation sector requires not only improvements in the efficiency and fuel source of the vehicle fleet on our roads, but also a reduction in the need for vehicle use (often expressed in "vehicle kilometres traveled"), through infrastructure and land use choices. Accordingly, emission reductions in this sector are tied to all three levels of government in terms of fuel economy standards, alternative vehicle deployment, transit and infrastructure spending, and urban development policies.

Improved Federal Leadership

In this context, the federal government still plays a pivotal role in transportation. In recent years, the federal government has followed the lead of the U.S. federal government — which, itself, followed

the lead of California and Quebec — in ambitiously ramping up its vehicle emission standards up to 2017-2025 model dates. Similarly, the Canadian federal government has mandated fuel producers and importers to include an average renewable content of 5% in the fuel that they produce or import.

Pressure From the Bottom Up

Meanwhile, increased federal transfers to provinces and cities for infrastructure and transit is a key policy ask in recent years, and may be a policy of the new government

POLICY OBJECTIVES

By making a strong effort on the transportation sector, the federal government can:

1. Shift the vehicle fleet in the country: to move away from high-emission vehicles and foster the deployment of a low- and zero-emission vehicle fleet.
2. Transition away from carbon-intensive infrastructure: federal policy can be leveraged to ensure that new infrastructure spending focuses on projects that promote a low-emission lifestyle, including as it relates to transportation.
3. Limit demand for oil: bold transportation policies can also impact domestic demand for oil products, and limit associated emissions.

POLICY FEATURES

A Clean Transportation Strategy could be structured as follows:

1. GHG CRITERIA FOR INFRASTRUCTURE SPENDING AND TRANSFERS

The federal government can tie its infrastructure spending and transfer criteria to GHG goals, with clear hurdles pertaining to associated vehicle-kilometres travelled and long-term GHG emission targets. This would not only apply to federal Public Works projects (e.g. Building Canada, Infrastructure Canada, Gas Tax Fund), but also transfers to provinces and municipalities.

2. ZERO EMISSION MANDATE

The federal government can build on California's Zero Emission Vehicle program and publish *Zero Emission Vehicle Regulations*, mandating that at least 10% of vehicles for sale in Canada be zero-emission vehicles (e.g. electric or bio-fuelled vehicles) by 2025.

3. PROGRESSIVE VEHICLE EMISSIONS TAX

The federal government can implement a progressive Vehicle Emissions Tax, not unlike equivalent rules in the U.K., whereby vehicle distributors (new or used) are charged a per-vehicle fee based on the CO_2 emissions (expressed in g/km) of the vehicles it sells (e.g. up to $500 per vehicle).

EXAMPLES IN OTHER JURISDICTIONS

Other jurisdictions have moved forward with ambitious transportation policies, notably:

United States

Beyond the stringent CAFE standards adopted by the U.S. and mirrored in Canada, the U.S. has moved forward with additional requirements, including California's Low Carbon Fuel Standard (10% reduction in CO_2 emissions per MJ fuel by 2020), the U.S. EPA's Renewable Fuel Standard (close to 10% of renewable content, relative to Canada's 5% under the Renewable Fuels Regulations), the "Gas Guzzler Tax" (which applies to the sale of passenger vehicles that do not meet a certain efficiency standard, but not SUVs), and several state requirements.

European Union

European countries levy considerable taxes on fuel and passenger vehicles, notably the U.K.'s Vehicle Emission Tax (up to £500 per vehicle), and impose stringent emission standards for passenger and light duty vehicles (95 and 147 gCO_2 /km, respectively, by 2020). Other

requirements include the *Renewable Energy Directive* (10% renewable content in fuels by 2020), along with ambitious urban planning requirements at the local level.

[7] BIO STRATEGY

POLICY STATEMENT

The federal government can implement a Bio Strategy, which focuses on voluntary initiatives in the agricultural sector and the introduction of cross-compliance within existing funding mechanisms.

CO-BENEFITS

Job creation
Environment services in agriculture sector and beyond

Poverty reduction
Modernized practices can bring financial gains

CONTEXT

A Different Sector

The agriculture, land use, land-use change and forestry (LULUCF) sectors, along with other bio-based sectors, all play a role in emitting but also capturing greenhouse gases, through the carbon life cycle and the concept of carbon neutrality. In this context, these sectors stand somewhat apart from other carbon-intensive sectors in Canada, where emissions are largely the result of fossil fuel combustion.

In the agriculture sector, which accounted for about 10% of national GHG emissions in 2013, emissions are largely the result of soil management practices (e.g. fertilizer application, tillage), which result in N_2O emissions (a GHG almost 300 times more potent than CO_2); from livestock enteric fermentation, which produces considerable amounts of CH_4 (a GHG almost 25 times more potent than CO_2); and from manure management, which can lead to both N_2O and CH_4 emissions. Meanwhile, LULUCF sectors offer carbon sink opportunities (or lack thereof, in the case of deforestation for instance) and represent a key piece of Canada's carbon budget. Farming and land use practices are thus critical to our emission levels.

A Limited Policy Approach

Federal, provincial and territorial governments have been active in jointly supporting the agriculture sectors, most notably through the five-year Growing Forward 2 policy framework and associated support programs (e.g. AgriInvest). While GHG emission reductions are a by-product of improved practices, they do not represent mandated criteria for funding and financial support.

In addition, the federal government has invested significant funds in research — notably through the Sustainable Agriculture Environmental Systems initiative, as well as the Agricultural Greenhouse Gases Program — to help develop best practices in the sector. Similarly, the government has injected funds in commercial programs, notably its Pulp and Paper Green Transformation initiative, which invested almost $1 billion in energy efficiency and biomass-based renewable energy, as well as its Forest and Industry Transformation Program, which supports the commercialization of wood-based products. Lastly, the *Renewable Fuels Regulations* requires gasoline and diesel to contain 5% and 2% of 'renewable content', respectively, which ranges from conventional to advanced biofuels and biodiesel.

POLICY OBJECTIVES

With this policy approach, the federal government can:

1. Contribute to job creation — and even deeper expertise — in rural areas and beyond: improvements in agricultural, forestry, and land use practices can not only reduce GHG emissions, but also support the creation of jobs and exportable expertise.

POLICY FEATURES

The federal government can undertake the following initiatives:

1) CROSS-COMPLIANCE WITHIN GROWING FORWARD AND OTHER PROGRAMS

In line with the European Commission, the federal government can introduce a cross-compliance mechanism within its landmark incentive programs, such as Growing Forward initiatives, whereby financial support is tied to the implementation of best practices in terms of GHG emission reductions.

2) VOLUNTARY PROGRAMS SUITE

The federal government can introduce a suite of voluntary initiatives to support best practices in the agriculture and forestry sectors using existing levers, such as: 1) financially supporting the deployment of biogas capture, anaerobic digesters and lagoon covers; 2) supporting improved management of soils and grazing livestock; 3) promoting conservation tillage and land restoration practices; and 4) increasing protected forest areas on public lands. Voluntary mechanisms can include direct funding programs; training programs; and offset protocol development and promotion.

EXAMPLES IN OTHER JURISDICTIONS

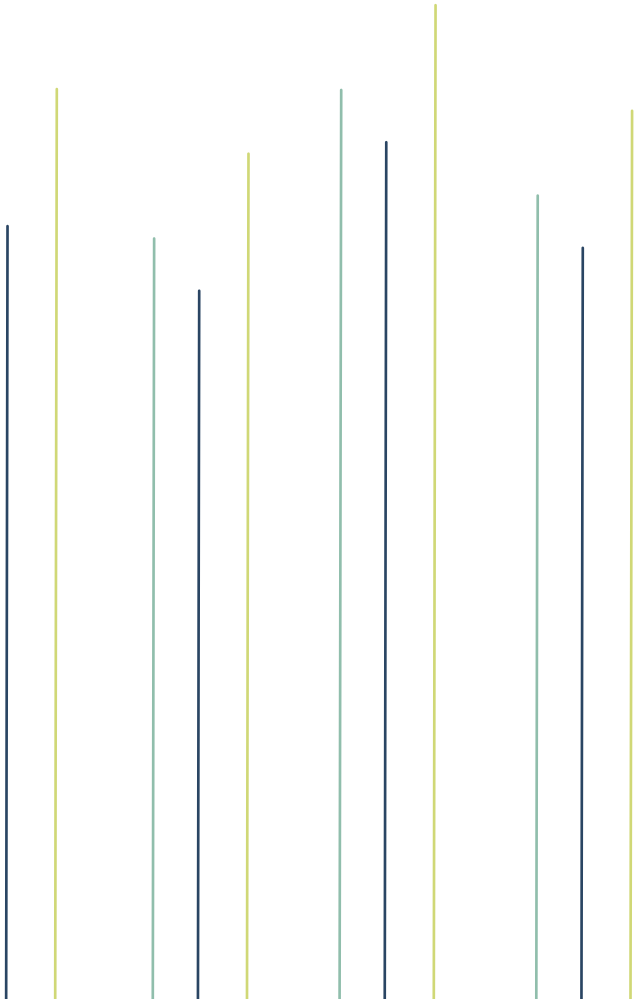
Other jurisdictions have moved forward with ambitious policies in the sector:

United States

The U.S. has moved forward with a number of policies to support the development of a bio-economy, and GHG emission reductions from agriculture and forestry sectors. Notably, in April 2015, the Department of Agriculture announced a wide-ranging plan to considerably reduce GHG emissions from the agriculture sector. The plan, which makes use of voluntary measures, will focus on promoting soil health and improved nutrient management; on conserving forest resources on private and public lands; on improving energy efficiency and the development of renewable bio-fuels. The USDA expects GHG emission reductions of about 120 Mt CO_2e (2% of national emissions) by 2025. In addition, the US EPA mandates renewable fuel standards: by 2016, the total renewable fuel content will reach close to 10% relative to non-renewable gasoline and Diesel.

Europe

The European Union has also moved forward with proposals to support GHG emission reductions in agriculture, notably through its 2003 reform to the Common Agriculture Policy (CAP), which now ties funding to performance against environmental standards through 'cross-compliance', and also supports energy efficiency, biogas production, and training. Environmental legislation also play a role, including the EU's Nitrates Directive, which establishes codes of environmental best practices, among others. The optimal way of addressing GHG emissions from the agricultural and forestry sectors — and from other sectors not covered by the EU Emissions Trading Scheme — remains the subject of debate.



4

ADDITIONAL CONSIDERATIONS

CO-BENEFITS

In addition to helping reduce GHG emissions, these preliminary policy ideas also generate co-benefits, illustrated in the table below:

POLICY IDEA	CO-BENEFITS			
	Health Benefits	**Job Creation**	**Poverty Reduction**	**Accountability & Trust**
1. Green Bank of Canada		■	■	
2. Tax Code Retrofit	■	■		
3. Accelerated Coal Phase-Out	■	■		
4. Green Building Compact	■	■	■	
5. Lead by Example Mandate		■		■
6. Clean Transportation Strategy	■	■		■
7. Bio Strategy		■	■	

Note that a number of co-benefits are not clearly identified in this table, such as increased national competitiveness, energy security, non-climate environmental benefits (air and water quality), increased quality of life (e.g. thermal comfort), and others.

POTENTIAL IMPACTS

Measuring the potential impact of the preliminary policy ideas—cost, GHG emission reductions — requires a full analysis beyond the scope of this document. However, a few elements may be noted:

» **Paving the way:** a number of policy ideas, such as the Green Bank of Canada, are critical in that they lay the economic foundation for emission reductions across a variety of sector. Estimating — and attributing — GHG impacts remains a difficult task.

» **Policy ambitions:** a number of policy ideas, such as the Tax Code Retrofit and Green Building Compact, will require considerable analysis to determine the optimal incentive levels. The GHG and cost impacts will be commensurate with the level of incentive selected, and remain difficult to estimate at this stage of the policy development process.

- **A few figures:** beyond these caveats, a few figures stand out, notably:
  - **Green Bank of Canada**: a capitalization of $1 billion would put the institution at the same level as the New York Green Bank, and put it on a self-sustaining path.
  - **Fossil Fuel Subsidy Phase-Out:** the CDE and CEE were last estimated in 2008 to represent $711 million. This amount can be recycled for tax incentives or other programs (e.g. accelerated coal phase-out, green building compact).
  - **Accelerated Coal Phase-Out:** completely phasing out coal, and considering a rebound in emissions from growth in natural gas-fired power, could about halve emissions from coal electricity (which contributes about ¾ of GHG emissions from electricity). This policy could thus shave off at least 2-3% of national emissions, if not more.
  - **Green Building Compact:** investing in energy efficiency has a net positive impact on economic output and job creation. A recent study by the Acadia Center, commissioned by Natural Resources Canada, expects that Canadian investments in efficiency can increase GDP by at least $5 for each dollar of program spending, and that at least 30 job-years (one job for a period of one year) can be generated for each $1M invested in programs (Acadia Center, 2014).
  - **Lead by Example:** federal facilities were responsible for less than 2 Mt CO_2 in 2013. The benefits from this policy lie in building demand, track records, and best practices.

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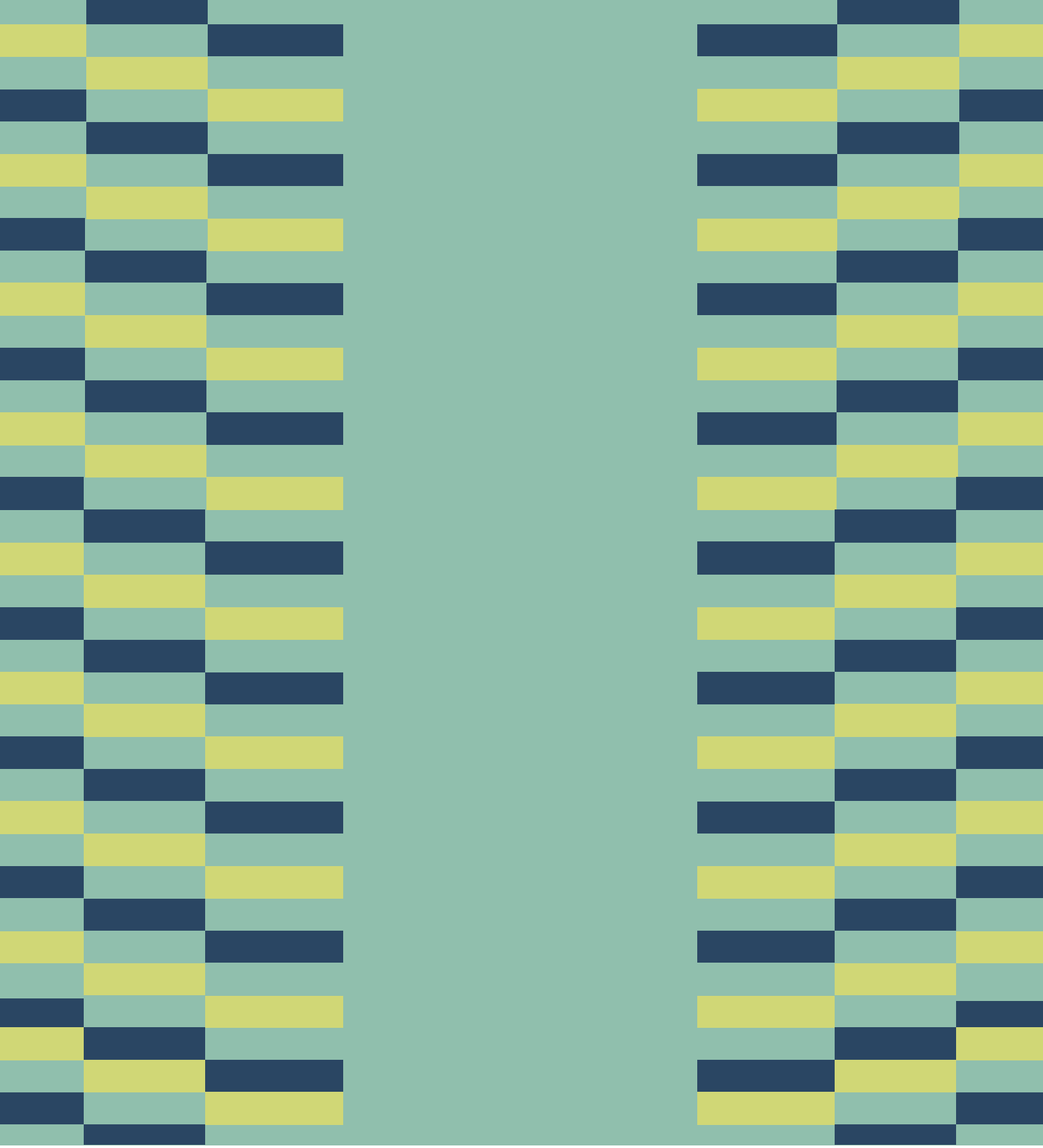

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