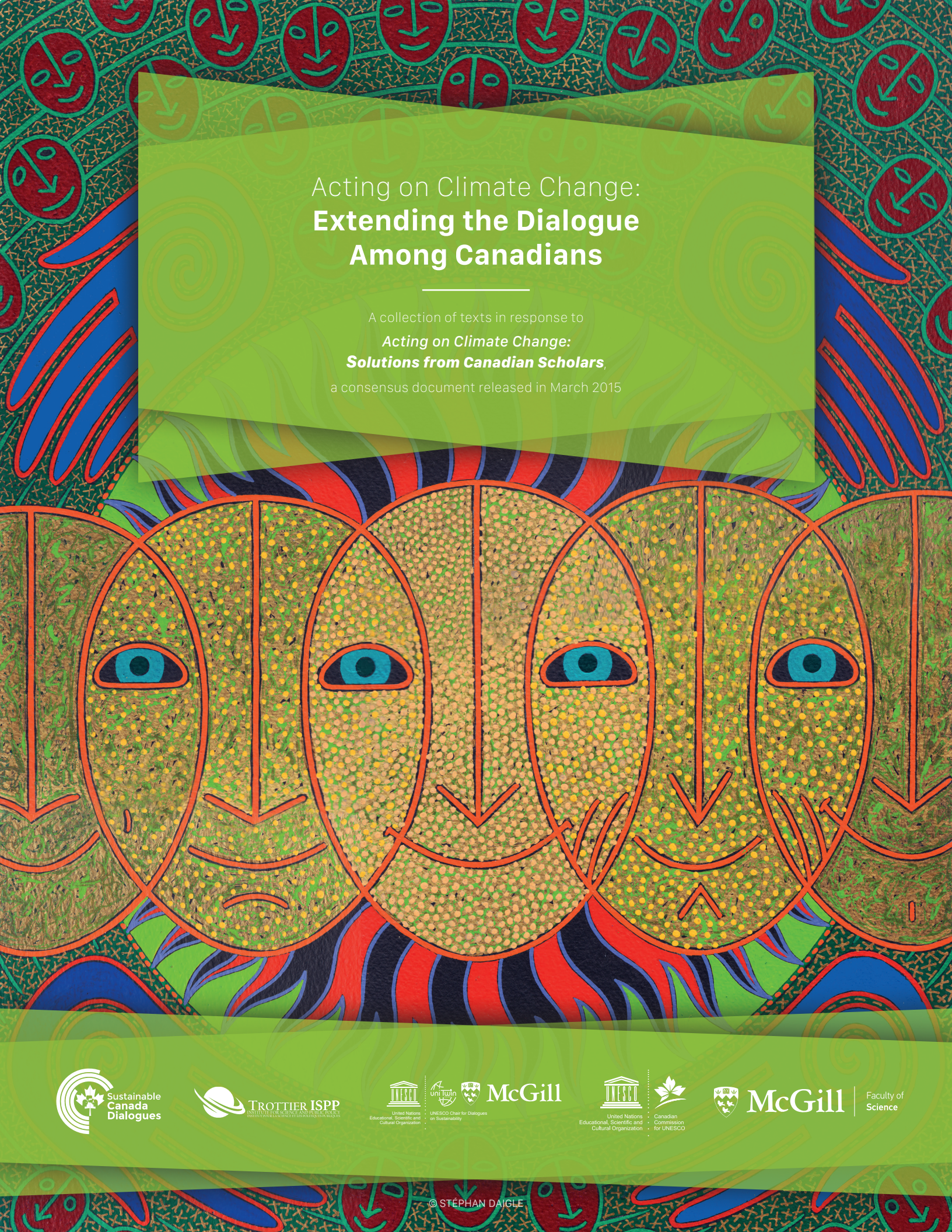

# Acting on Climate Change:
# **Extending the Dialogue Among Canadians**

A collection of texts in response to

***Acting on Climate Change:***
***Solutions from Canadian Scholars***,

a consensus document released in March 2015

Sustainable Canada Dialogues

TROTTIER ISPP
INSTITUTE FOR SCIENCE AND PUBLIC POLICY

United Nations Educational, Scientific and Cultural Organization · UNESCO Chair for Dialogues on Sustainability · McGill

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McGill | Faculty of Science

David Suzuki Foundation

ABOUT THE ORGANIZATION

# DAVID SUZUKI FOUNDATION

IAN BRUCE AND RYAN KADOWAKI

The David Suzuki Foundation is a non-profit, charitable organization. We collaborate with Canadians from all walks of life, including government and business, to conserve our environment and find solutions that will create a sustainable Canada through science-based research, education and policy work. Our mission is to protect the diversity of nature and our quality of life, now and for the future. Our vision is that within a generation, Canadians act on the understanding that we are all interconnected and interdependent with nature.

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**ROOFTOP SOLAR PANEL INSTALLATION**

Contributed by

**DAVID SUZUKI FOUNDATION**

# Building On the Best:

## Keeping Canada's Climate Promise

Read the full report[1] at *www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/*

In 2009, at the United Nations climate conference in Copenhagen, Canada made an international promise to reduce carbon pollution by 17% by 2020, a step that mirrored the United States' commitment. However, unlike the U.S., Canada is not on track to meet this target[2]. While countries like China and the U.S. are working together to address climate change[3], a national guiding policy in Canada has been lacking. In the lead up to the 2015 UN climate conference in Paris, it is important for our country to learn from past mistakes and develop a strong, unified strategy to cut emissions and do our part to keep global temperature rise below the 2°C threshold deemed critical to avoid climate change's worst impacts.

Fortunately, this goal is not completely out of reach. While federal policy-makers have been slow to act on climate change, their provincial counterparts have spent the past decade developing innovative and effective emissions reduction strategies. A recent report[4] by Navius Research, a private consulting firm working in the field of energy and climate change, and led by the David Suzuki Foundation, has demonstrated that if Canada had adopted its existing "best-in-country" provincial policies at a national level in 2008, we would already be on track to meet our 2020 target. These results were revealed using a comprehensive, quantitative (mathematical) model of Canada's energy system and economy. If federal policy used these existing ideas — already backed by years of data supporting their efficacy — to reduce emissions across the board, we would make significant progress in closing the gap between where we are and where we need to be.

1 Special thanks to Jotham Peters and Michael Wolinetz of Navius Research. This research has been made possible with funding from Bullfrog Power, Bullitt Foundation, Claudine and Stephen Bronfman Family Foundation, Gencon Foundation, and the Sitka Foundation.

2 http://www.theglobeandmail.com/news/politics/canada-wont-meet-2020-greenhouse-gas-emission-targets-report/article21998423/

3 The White House: Office of the Press Secretary (2014). FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation, https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

4 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/

## Canada's climate action opportunities

There's no shortage of innovative and potent policy opportunities competing for the label of "best-in-country." Within the global market context, where the price of solar panels has fallen by 83% since 2008 and the cost of wind turbines declined by 70% between 1990 and the early 2000s, renewable energy is an obvious area of interest[5,6]. There are, however, significant gains that can also be made through transportation and land use, energy efficiency, biofuels and carbon pricing policies. This section presents emissions reductions strategies already at work in Canada and the amount of carbon emissions they will cut by 2020.

### Cutting coal

Canada is fortunate to have access to multiple sources of electricity generation, from renewable wind, solar and hydro power to fossil fuels like coal and natural gas. Coal is by far the dirtiest option for generating power, accounting for roughly 10% of Canada's current emissions[7]. Coal power generation significantly degrades air quality in the areas where it's produced. This is a serious health concern in Canadian cities accounting for an estimated $4 billion in lost worker productivity and health care costs in Ontario alone[8]. Reducing emissions from coal power plants through initiatives like Ontario's coal phase-out and Nova Scotia's cap on coal emissions will eliminate 25 million tonnes of carbon pollution annually by 2020[9].

### Prioritizing renewable energy

The renewable energy industry represents a clear means to reduce carbon pollution and a huge economic opportunity for Canada. As the cost of producing wind and solar energy has fallen dramatically in recent years, the clean technology industry, including clean energy and other environmental technologies, has grown rapidly and now contributes nearly $12 billion annually to the Canadian economy, employing 50 000 people[10]. British Columbia requires that 93% of electricity generation come from renewable resources and Ontario has incentivized industry growth by guaranteeing a price for wind- and solar-produced electricity. These renewable energy policies will reduce Canada's emissions by 21 million tonnes annually by 2020[11].

### Storing carbon

While carbon capture and storage holds some promise to cut emissions from the oil and gas and power sectors, the technology will never reach the threshold of scalability necessary to form the basis of a national climate strategy without mandatory regulations or a strong price on carbon. While the future of provincial and federal investment in this technology is uncertain, if present policies were continued

5 National Renewable Energy Laboratory (2012). IEA wind task 26: the past and future cost of wind energy.

6 Clean Energy Canada (2014). Tracking the Energy Revolution, http://cleanenergycanada.org/wp-content/uploads/2014/09/Tracking-The-Energy-Revolution-Global-2014.pdf

7 Environment Canada (2014). National Inventory Report 1990–2012: Greenhouse Gas Sources and Sinks in Canada.

8 Canadian Medical Association (2008). No breathing room: National illness costs of air pollution, http://www.healthyenvironmentforkids.ca/sites/healthyenvi- ronmentforkids.ca/files/No_Breathing_Room.pdf

9 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/ and Navius Research (2014). Progress on Canadian Climate Policy, http://www.davidsuzuki.org/publications/downloads/ProgressonCanadianClimatePolicy-TechnicalReport.pdf

10 Analytica Advisors (2015). 2015 Canadian Clean Technology Industry Report Summary, http://www.analytica-advisors.com/assets/file/2015%20Report%20Synopsis%20Final_wcovers.pdf

11 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/ and Navius Research (2014). Progress on Canadian Climate Policy. http://www.davidsuzuki.org/publications/downloads/ProgressonCanadianClimatePolicy-TechnicalReport.pdf

to 2020 they would keep 3.8 million tonnes of emissions out of the atmosphere annually[12].

## Clean transportation

Transportation contributes 28% of Canada's greenhouse gas (GHG) emissions, excluding pipelines[13]. Providing cleaner, more efficient systems to move people and goods is key to cutting carbon pollution and getting us back on track to meet future targets. The federal government, with leadership from British Columbia, Quebec and California, has already passed regulations to improve passenger and freight vehicle efficiency. By 2020, these regulations will mean that each new vehicle sold will be 44% more efficient than the passenger fleet of 2011 and will prevent 13 million tonnes of emissions[14] per year by 2020. Providing better access to public transportation, as well as walking and cycling routes in cities, will also help address the 200 000 kt of $CO_2$ produced by Canada's transportation sector each year[15].

## Biofuels

Emissions reductions achieved through improved transportation can be enhanced by accelerating the use of biofuels (fuel derived from plants or other organic sources). Biofuels do not add any net carbon to the atmosphere because the carbon they contain was pulled from the atmosphere during photosynthesis. As fuel efficiency standards become stricter for passenger and freight vehicles, biofuels can help address any continued demand for liquid fuel. In addition to federal requirements for biofuels in gasoline, Manitoba has created financial incentives to promote biofuel production. These incentives and standards will reduce emissions by two million tonnes annually by 2020[16]. Renewable and low-carbon fuel standards (RLCFS) also show great potential. A recent analysis of B.C.'s RLCFS predicts the policy will reduce the province's emissions by up to 3.5 million tonnes annually by 2020[17].

## Reducing energy consumption

Programs across Canada, including ecoENERGY and ENERGY STAR, are already at work cutting emissions by reducing the demand for electricity. By improving the efficiency of consumer products from washing machines to furnaces, these programs take pressure off the grid and help reduce utility peak energy requirements. These initiatives are, therefore, good for both the environment and the economy. By 2020, policies that encourage energy efficiency will reduce emissions by 15 million tonnes annually[18].

## Carbon pricing

Once the most feared and misunderstood emissions cutting strategy in the country,

12 Ibid.

13 This figure is based on the 1990-2011 National Inventory Report (NIR). Emissions in transport include: domestic aviation; road transportation; railways; domestic marine transportation; and other transportation (e.g., off-road), http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=A07ADAA2-E349-481A-860F-9E2064F34822. In the 1990-2013 NIR, transport accounted for 27% of Canada's total emissions, http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=5B59470C-1.

14 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/ and Navius Research (2014). Progress on Canadian Climate Policy. http://www.davidsuzuki.org/publications/downloads/ProgressonCanadianClimatePolicy-TechnicalReport.pdf

15 http://www.statcan.gc.ca/pub/16-001-m/2010012/part-partie1-eng.htm

16 Ibid.

17 Navius Research (2014). The Renewable and Low Carbon Fuel Requirement Regulation, http://www.naviusresearch.com/data/pages/cleanfuel.php

18 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/ and Navius Research. (2014). Progress on Canadian Climate Policy, http://www.davidsuzuki.org/publications/downloads/ProgressonCanadianClimatePolicy-TechnicalReport.pdf

carbon pricing has become an accepted norm of responsible climate policy. In 2007, Alberta led North America by introducing its Specified Gas Emitters Regulation, charging $15 per tonne on carbon pollution above set levels. In 2008, British Columbia introduced a more broadly applied tax that rose in increments to $30 per tonne in 2012. Quebec and Ontario have since agreed to a cap-and-trade carbon pricing system that will cap and ratchet down emissions from industrial and transportation sectors. Carbon pricing in these regions has not adversely affected their economies. In fact, both B.C. and Alberta have outpaced the Canadian average for economic growth since introducing carbon pricing. These measures will reduce emissions by 15 million tonnes annually by 2020[19].

## Best-in-country policies

While many provinces have played a part in reducing Canada's carbon emissions, a few have demonstrated national, and even global leadership on specific policies. This section outlines the three policies that stand out as best-in-country and presents the projected outcomes of adopting these policies nationally. These ideas have received extensive support from Sustainable Canada Dialogues in their *Acting on Climate Change: Solutions from Canadian Scholars* report.

### Eliminating coal-fired power

In 2008, Ontario began phasing out coal power entirely, completing this goal in 2014[20]. The 15 plants that were eventually closed represented 20% of the province's installed electricity capacity in 2007. This initiative represents the single largest climate action undertaken in North America and was equivalent to taking seven million cars off the road[21].

Over this period, Ontario was able to eliminate coal power at an annual rate of 2.4% of 2020 expected electricity capacity. The analysis below reflects the outcome of all other provinces reducing coal emissions at the same capacity rate, either through closing or retrofitting existing coal power plants.

### Prioritizing renewable energy

In order to replace the electricity generating capacity of coal plants in Ontario, the provincial government increased investment in renewable energy through the Green Energy and Economy Act. Few policies have been as effective at quickly developing clean, renewable energy in North America. By 2020, it is expected that 25% of the province's electricity capacity will come from renewable solar and wind power (excludes hydro power), up from 2% in 2007[22]. The Ontario government estimates this effort has already created more than 20 000 jobs[23].

The key lesson is that Ontario has supported renewable energy in a region not as richly endowed with renewable resources as other provinces. If Ontario can make this kind of progress and overcome more significant technical challenges, there is no excuse for other provinces with higher quality clean energy resources not to accelerate renewable energy.

The analysis below reflects the outcome of the rest of Canada increasing renewable energy capacity by the same rate as Ontario (23% share increase by 2020).

19 Ibid.

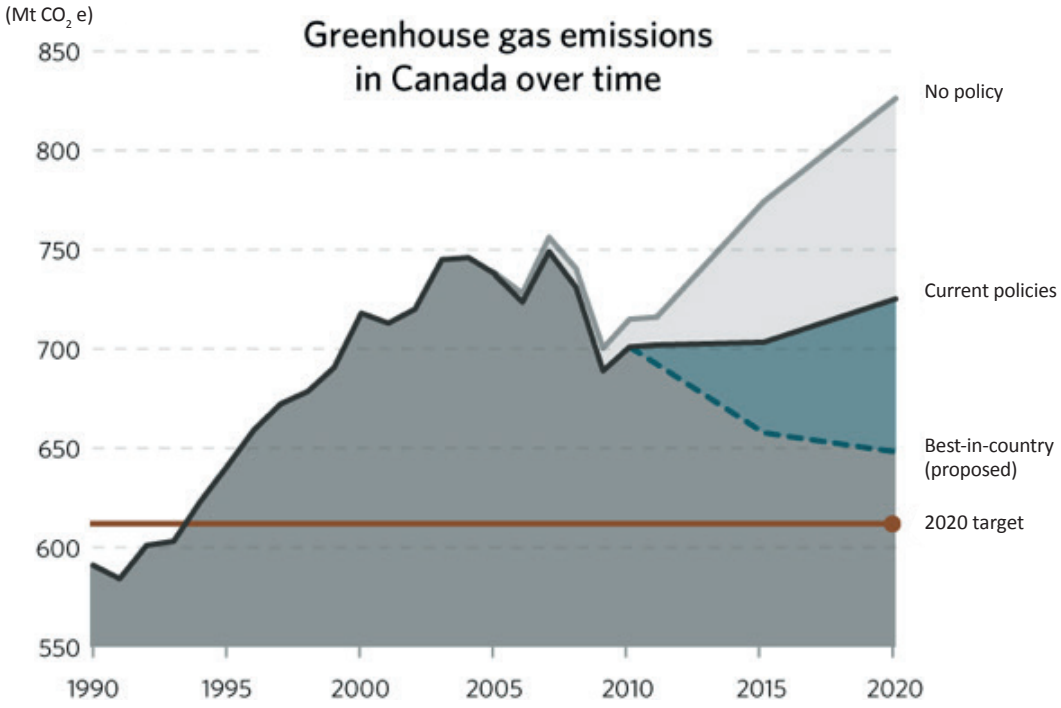
20 http://news.ontario.ca/mei/en/2014/04/creating-cleaner-air-in-ontario-1.html

21 http://www.cleanairalliance.org/support-a-clean-energy-future/ontarios-coal-phase-out/

22 http://www.energy.gov.on.ca/en/ltep/

23 http://news.ontario.ca/mei/en/2011/07/green-energy-act-creates-20000-jobs.html

**Figure 1. Canada's greenhouse gas emissions to 2020[24]**




## Driving cleaner energy by pricing carbon

British Columbia has established the strongest carbon price in the country. The tax was introduced in 2008 at $10 per tonne of carbon emissions and rose in $5 per tonne increments to reach $30 per tonne in 2012 where the tax was capped. This freeze was put in place due to provincial government concerns regarding competitiveness with other regions who had not yet adopted a similar policy. Initial public wariness of carbon pricing has given way to acceptance. Sustainable Canada Dialogues recognizes this approach as its key enabling condition for climate action.

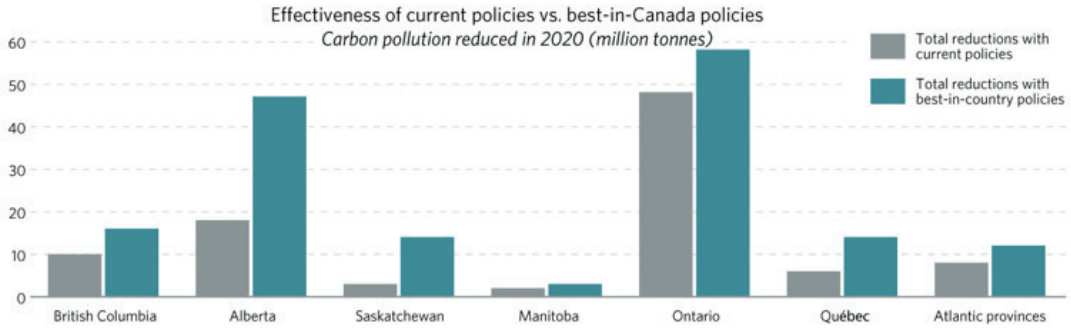
For the best-in-country analysis, the effect of all other provinces adopting the same tax at $10 per tonne in 2008 is considered. It is assumed that given the alleviation of competitiveness concerns, the tax would continue to rise to $70 per tonne by 2020.

## Replicating Canada's best policies is key to progress

Figure 1 shows three trajectories for Canada's GHG emissions based on modelling by Navius Research[24]: a no-policy scenario, the scenario reflecting current policies and what would have happened had Canada adopted the best-in-country policies at a national level in 2008. Without the policies already in place, Canada's emissions would have continued to rise to a level of 830 million tonnes (Mt $CO_2$ e) of carbon dioxide by 2020. Given the actions taken by provincial governments across the country, a significant proportion (100 Mt $CO_2$ e) of these emissions will be eliminated. However, this figure is still 100 Mt $CO_2$ e (19%) greater than Canada's 2020 target. If Canada,

24 David Suzuki Foundation (2014). Building on the best: keeping Canada's climate promise, http://www.davidsuzuki.org/publications/reports/2014/building-on-the-best-keeping-canadas-climate-promise/ and Navius Research (2014). CIMS model; Environment Canada (2014). Canada's sixth national report on climate change.

**Figure 2. Potential emissions reductions by province**




starting in 2008, had adopted the best-in-country policies as they were introduced, we would be within striking distance (within 5.6%) of meeting our 2020 emissions target.

The lesson to be learned is that the policies needed to meet the targets necessary to avoid climate change's worst impacts are not radical, new ideas. They are solutions that are already working to reduce emissions in Canada. The groundwork is already in place and history has shown that these effective environmental policies also stimulate and diversify economies while promoting public health.

Another key finding of this research is that every region in Canada has the potential to further reduce its emissions simply by adopting the policies already in place elsewhere in the country. Provinces that are already global leaders, namely B.C. and Ontario, would each see their emissions fall by 4%. Regions that have been slower to act hold even greater potential. Saskatchewan, for example, will reduce its emissions by 4% through current policies, but under a national policy including the best-in-country policies would see its emissions drop by 18% more. Alberta, too, would more than double the emissions reductions it is expected to achieve, cutting carbon pollution by 9% on top of the 6% cut under current policies. Figure 2 summarizes the potential reductions that could be achieved by adopting best-in-country practices in each province.

As nations prepare for the UN climate summit in Paris this December, many will be forced to invest significant resources into establishing emissions reductions targets and plans outlining how to achieve them. In Canada, national policy-makers are fortunate to have several examples of world-leading action within their own country. They will not need to start from scratch in developing a strategy to achieve success. Canadian leaders will need work to develop additional methods to reduce carbon pollution across the country, but implementing the best-in-country strategies outlined above will substantially contribute to regaining our reputation as an environmental leader.


ABOUT THE INITIATIVE

# SUSTAINABLE CANADA DIALOGUES

This contribution is part of a collection of texts, *Acting on Climate Change: Extending the Dialogue Among Canadians*, stemming from interactions between Sustainable Canada Dialogues, an initiative of the UNESCO-McGill Chair for Dialogues on Sustainability, and business associations, First Nations, non-governmental organizations, labour groups, institutions, organizations and private citizens.

Sustainable Canada Dialogues is a voluntary initiative that mobilizes over 60 researchers from every province in Canada, representing disciplines across engineering, sciences and social sciences. We are motivated by a shared view that putting options on the table will stimulate action and is long overdue in Canada.

Together, the contributions enrich the scope of possible solutions and show that Canada is brimming with ideas, possibilities and the will to act. The views expressed in *Acting on Climate Change: Extending the Dialogue Among Canadians* are those of the contributors, and are not necessarily endorsed by Sustainable Canada Dialogues.

We thank all contributors for engaging in this dialogue with us to help reach a collective vision of desired pathways to our futures.

FOR MORE INFORMATION, VISIT OUR WEBSITE

**sustainablecanadadialogues.ca/en/scd/acting-on-climate-change**