

# 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







ABOUT THE ORGANIZATION

# EVIDENCE FOR DEMOCRACY

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Evidence for Democracy (ED) is a national non-profit that promotes evidence-based decision-making. ED engages in research, education, and issue campaigns to engage and empower the scientific community, as well as cultivate public and political demand for evidence-based decision-making. ED consists of a team of staff members, Board of Directors, and Advisory Board. Our work is guided by engagement from our multidisciplinary Network of Experts as well as our community of volunteers and supporters. ED is funded by a mix of foundation grants and private donations.

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OVER 2500 SCIENTISTS MARCHED ON PARLIAMENT HILL  
IN SUMMER OF 2012, PROTESTING CUTBACKS AND  
RESTRICTIONS AFFECTING PUBLIC-SECTOR SCIENCE.

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# On the Role of Canada's Scientists

## in Transitioning to a Low-carbon Future

For governments to make evidence-based decisions and policies, it is necessary to have robust support for science in the public interest. Furthermore, these decisions need to be transparently justified. The transition to a low-carbon economy in Canada will require both of these elements: scientific leadership to develop and implement sustainable alternatives, and political leadership to recognize and act on the well-substantiated threat of climate change. Sustainable Canada Dialogues' *Acting on Climate Change: Solutions from Canadian Scholars* report identifies 10 key policy orientations for transitioning Canada to a low-carbon economy. Integrity of science and evidence have an important role to play in not only facilitating this transition, but also providing the forecasting and monitoring skills necessary for adaptive management throughout the process.

Evidence for Democracy requested contributions from members of our Network of Experts, which consists of over 350 professionals nationwide. We bring the perspectives of four individuals from diverse disciplines, who highlight the imperative of such a transition and tackle practical considerations. In light of their responses, Evidence for Democracy's

key recommendations for Canada's transition to a low-carbon future include:

- Federal government leadership on climate and emissions policies, with recognition of scientific evidence for both emissions scenarios projections and low-carbon alternatives;
- Increased funding support for federal scientific and monitoring institutions, particularly those engaged in data collection for air quality, water quality, and demographic information;
- Sufficient funding to academic researchers engaged in non-commercial science, such as basic science, environmental research, and health research;
- Climate and emissions policies and regulations that are transparent and informed by the best available evidence.

Our experts paint an optimistic picture: the transition to low-carbon economy is both imperative and possible. Below, they explore the necessity of this change, and how Canada can take leadership in this transition.



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**W.R. PELTIER**, Professor of Physics, University of Toronto; Intergovernmental Panel on Climate Change (IPCC) author.

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As I write these words, an entirely unprecedented flooding event has engulfed Texas<sup>1</sup>, an extraordinary concentration of forest fires is once more threatening the towns of northern Alberta<sup>2</sup>, and India is experiencing a heat wave that has driven temperatures close to 50°C<sup>3</sup>. Although we are unable to assert that any one of these events is a consequence of global warming, the response to this process is unfolding as expected on the basis of the best scientific evidence available. This evidence, produced by an international community of scholars that has been active in analyzing the present and projecting the future impacts for more than three decades, continues to accumulate. Observations and model projections agree that the severity of such extreme events and their frequency will only increase. Given the evidence, an appropriate policy response would appear to be required, both nationally and internationally.

In Canada, because the federal government has abrogated its responsibility to contribute to the required international response, individual provinces have taken the lead on a sub-national basis. The recently agreed-upon commitment by Ontario to join an existing "cap-and-trade" regime, which has united Quebec with the U.S. state of California, will bring approximately half of the Canadian population under an umbrella that is intended to markedly reduce greenhouse gas (GHG) emissions. In what could be an even more effective move towards this goal, British Columbia has implemented an explicitly revenue neutral carbon tax. The new govern-

ment of Alberta is committed to equivalent sub-national action. Our national response would be much more coherent if the federal government were to provide the leadership that the country is insisting upon at a sub-national level.

In support of Canada's democracy we need policy that is firmly based upon the best evidence available, in all areas, not only those concerning the environment. It is in the area of the environment, however, that the stakes are continuing to rise at a rate that is a matter of grave concern. What we need, now, is strong leadership at the national level.

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**JOHN STONE**, retired government science manager; IPCC author; adjunct Professor, Carleton University.

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The science behind the threat of climate change is not new; it can be traced back to the work of scientists such as Arrhenius almost 150 years ago<sup>4</sup>. Neither is the issue of climate change a new addition to the public policy agenda; in Canada we can look back to the Changing Atmosphere conference held in Toronto in 1988. Likewise the solutions for tackling climate change are not new; there have been numerous policy papers discussing technologies for greater energy efficiency and for the transformation to more renewable energy sources<sup>5</sup>, as well as policy papers discussing economic instruments such as putting a price on our emissions<sup>6,7</sup>.

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4 Arrhenius, S. (1896). On the influence of carbonic acid in the air upon the temperature of the ground. *Philosophical Magazine and Journal of Science*, 41(5): 237-276.

5 Government of Canada (2000). Government of Canada Action Plan 2000 on Climate Change, <http://publications.gc.ca/collections/Collection/M22-135-2000E.pdf>

6 Stern, N.M. (2006). Stern Review on the Economics of Climate Change. Office of Climate Change, Government of the United Kingdom, [http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview\\_report\\_complete.pdf](http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf)

7 Hansen, J.E. (2009). Carbon Tax & 100% Dividend vs. Tax & Trade. Testimony to Committee on Ways and Means, United States House of Representatives, [http://www.columbia.edu/~jeh1/2009/WaysAndMeans\\_20090225.pdf](http://www.columbia.edu/~jeh1/2009/WaysAndMeans_20090225.pdf)

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1 <http://time.com/3895947/texas-houston-floods/>

2 <http://calgaryherald.com/news/local-news/southern-alberta-spared-as-forest-fires-burn-up-north>

3 <http://www.bbc.com/news/world-asia-india-32880180>



What has been missing is inspired leadership from the government, business and university communities. This contribution from a group of Canadian university scientists illustrates what is possible.

Time is running out. We can no longer deny the scientific evidence: the tested hypotheses, careful observations and validated models that have been accumulating over the past few decades. We cannot ignore the impacts that we are already seeing. Tackling climate change is going to require a determined and collaborative effort. It will require imagination; imagination to envisage a world where our lifestyles are different from today's but equally fulfilling, and where we nurture our planet for the benefit of all in the future. It will require that the scientific communities in universities, governments and the private sector work together in an open and transparent manner, sharing expertise, ideas and results.

The good news is that we are beginning to see change. Economic realities are driving renewable power developments; governments are beginning to put a price on emissions; and greater numbers of people are demanding a change to a more sustainable future. We are on the verge of a much-needed and well-informed national debate in this country on how to achieve a transition to a society and economy where our use of fossil fuels does not overwhelm the natural equilibrium of the planet. This document provides a good starting point.

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**TIM TAKARO**, Professor of Health Sciences, Simon Fraser University; Clinical Professor of Environmental Health Sciences, University of Washington; Visiting Professor, University of British Columbia.

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As a physician-scientist with a research program in the health effects of climate

change and occupational and environmental respiratory disease, I often approach problems with a clinical eye. In this matter, we can approach fossil fuels as a substance abuse issue.

We know this addiction is harming us and, more importantly, future generations, but we cannot stop ourselves. We have energy companies feeding us 'the cheap stuff' while funding junk-science to confuse the public about the risks of GHGs and the unstable future climate linked to our habit. We have a federal government with deep investments in the oil and gas industry that has drastically reduced Canada's preeminent public science capacity. The government scientists that have retained their jobs have had their communications limited by administrators.

Our children will witness accelerated trends of which we've already had glimpses: massive culling of sick and elderly from heat waves; increased superstorm activity; history-making forest fires; and disappearing arctic sea ice and subsistence culture, among other startling changes. As fossil fuel addicts, it is hard for us to accommodate these truths.

The economic value of protecting our health and ecosystems with appropriate tax for polluting the world 'commons' is clearly laid out by Marc Lee<sup>8,9</sup>, in a series of publications from the Canadian Centre for Policy Alternatives, and by others<sup>10</sup>. Part of these economics includes significant cardio-respiratory co-benefits of reducing air pollution, or using

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8 Lee, M. (2012). BC's natural gas strategy is bad for economics and bad for climate. Canadian Centre for Policy Alternatives, <https://www.policyalternatives.ca/publications/commentary/bc%E2%80%99s-natural-gas-strategy-bad-economics-and-bad-climate>

9 Lee, M. (2012). Clean Electricity, Conservation and Climate justice in BC. Canadian Centre for Policy Alternatives,, <https://www.policyalternatives.ca/electricity-justice>

10 Griffiths, M. and Kikul, J. (2013). The tragedy of the commons. Ivey Business Journal, <http://iveybusinessjournal.com/publication/the-tragedy-of-the-commons/>



person-powered transport, or growing local, organic healthy food<sup>11</sup>. A recent analysis from Boston University's School of Public Health found that the 51 dirtiest U.S. coal-fired power plants caused 2 700 to 5 700 premature deaths from fine particulate emissions in 2011 alone. If you need to monetize this tragedy, it is equivalent to \$23-47 billion using the Environmental Protection Agency's valuation on human life<sup>12</sup> – a dollar figure that exceeds the market value of the electricity generated. The late Paul Epstein from Harvard School of Public Health calculated that the life-cycle effects of coal power and the industry's waste stream, including the burden of illness from heart and lung diseases and cancer caused by coal-plant particulate, cost U.S. taxpayers up to half a trillion dollars a year<sup>13</sup>. U.S. coal burning is decreasing rapidly in the face of these realities.

It is morally repugnant when industries push harmful products on consumers, and tobacco companies are beginning to pay the price in North America and Europe with multi-billion dollar penalties. Yes, the world needs energy sources. Energy in the developing world relieves considerable suffering. But companies and governments that insist fossil fuels are the only future are deceitful, obfuscate the science, and rely increasingly on emerging markets for their products as more wealthy societies (e.g. Scandinavia, Germany) have curbed their habit. We can too.

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**ALANA WESTWOOD**, Research Coordinator,  
Evidence for Democracy

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As my colleagues have stated, Canada's transition to a low-carbon economy requires an acknowledgement of scientific consensus by federal leadership, and subsequent policy action. A successful and speedy transition will also require robust research and monitoring from federal and academic bodies, both of which have received significant cutbacks in recent years. In 2012 and 2013, almost 1 900 federal government scientists were laid off<sup>14</sup>, and at least 157 federal scientific institutions have received staff cuts, funding reductions, or have been completely eliminated<sup>15</sup>. Nearly every federal scientific and monitoring institution has been affected. This has been followed by closures of dozens of federal libraries, their materials destroyed. Academic research has been cut back as well<sup>16</sup> – funding was re-oriented with an explicit shift towards short-term commerce-driven innovation, and industry partnership, and away from basic science<sup>17</sup>.

There is a necessary role for federal science and monitoring in the transition to a low-carbon economy. It is important to continue to collect good baseline data, build effective forecasting models, and monitor effects on human and environmental health and welfare throughout the transition. There is also an essential role of federal and university researchers in developing solutions to climate change, both technological and by evaluating the impacts of policy options. Climate change is a cross-jurisdictional issue, and necessa-

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11 Thurston, G.D. (2013). Mitigation policy: Health co-benefits. *Nature Climate Change*, 3: 863-864.

12 Levy, J.I., Baxter, L.K. and Schwartz, J. (2009). Uncertainty and variability in health-related damages from coal-fired power plants in the United States. *Risk Analysis*, 29(7): 1000-1014.

13 Epstein, P.R., Buonocore, J.J., Eckerle, K. et al. (2011). Full cost accounting for the life cycle of coal. *Annals of the New York Academy of Science*, 1219: 73-98.

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14 <http://www.macleans.ca/news/canada/when-science-goes-silent/>

15 <http://www.cbc.ca/fifth/blog/federal-programs-and-research-facilities-that-have-been-shut-down-or-had-th>

16 <http://www.cbc.ca/news/technology/federal-government-reducing-science-and-tech-spending-1.1398479>

17 <http://www.theglobeandmail.com/news/national/federal-budget-ignites-debate-over-what-science-is-for/article10274702/>



rily needs to be addressed as such. Many of the institutions that were positioned to tackle climate change (e.g. The National Round Table on Environment and Economy, the Polar Environment Arctic Research Laboratory) have been eliminated or have lost a great deal of their capacity.

There are rare cases where provinces and communities have attempted to fill the void left by federal cutbacks (e.g. the transfer of the Experimental Lakes Area to provincial/ NGO management). This is a similar situation to emissions policy, where provinces and communities seem left to fend for themselves. However, for the most part, provinces, municipalities, universities and individuals simply do not have the capacity to adopt large-scale, long-term monitoring and research projects.

More importantly, it is not efficient or effective for cross-jurisdictional problems like climate change to be addressed at lower levels of government only. Unified policies and regulations will not only ensure consistency and quality, but also save costs. Federal leadership on climate change is a must, and it needs to go hand in hand with federal support for scientific research and monitoring. Canada's university researchers will need assured financial support to both provide good data and train the talented personnel who can provide advice and leadership through the transition. This financial support should not be confined to short-term, innovation-driven projects. Instead, it needs to be used to collect the data necessary to guide Canada through the transition to a low-carbon economy, allowing adaptive management in response to evidence.







ABOUT THE INITIATIVE

# SUSTAINABLE CANADA DIALOGUES

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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](https://sustainablecanadadialogues.ca/en/scd/acting-on-climate-change)