

July 2016

One Million Climate Jobs: A Plan for a Sustainable and Equitable Economy



ABOUT GREEN ECONOMY NETWORK

We have come together as members of labour unions, environmental and social justice organizations, working together with Indigenous peoples, to form a united front of civil society groups for the building of a green economy in Canada. In so doing, we realize we are living in one of those critical moments in history wherein urgent decisions and actions must be taken. The Green Economy Network (GEN) is encouraged that governments around the world – with little exception – are more aware than ever before of the imperative, as well as the benefits of taking decisive action to make the transition to a green economy and creating meaningful employment in the associated economic sectors.

The steering committee and all GEN member groups¹ appreciate the opportunity to provide recommendations to the Working Group on Clean Technology, Innovation and Jobs, in pursuit of a pan-Canadian approach to climate change.

EXECUTIVE SUMMARY

We maintain that, if the plan of action outlined below were to be fully enacted during the coming five years, Canada would be well on the way to creating one million new person job years, while simultaneously reducing this country’s annual greenhouse gas (GHG) emissions by over a third from current levels. It is our calculation that the plan put forward here will reduce our total national greenhouse gas emissions by 175 Mtⁱ per year after five years, putting us on track to reduce our annual emissions by up to 261 Mt after ten years. Emission reductions of this scale would be sufficient to meet, and possibly exceed, Canada’s Intended Nationally Determined Contribution (INDC) of 30 per cent below 2005 levels by 2030.ⁱⁱ Moreover, these initiatives would generate opportunities for the transition toward a more equitable and sustainable economy by creating over one million new jobs for Canadians.

What are Climate Jobs?

The term “climate jobs” refers to two types of employment:

- 1) Jobs that directly or indirectly contribute to the reduction of GHG emissions; and
- 2) Jobs that help people and their communities cope with, or adapt to, the impacts of climate change.

¹ GEN Member Organizations

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|-------------------------------------|--|---|---|
| •Amalgamated Transit Union | •Columbia Institute | •IAMAW - International Association of | •Public Service Alliance of Canada |
| •Canadian Federation of Students | •Council of Canadians | •Machinists & Aerospace Workers | •SEIU - Service Employees International Union |
| •Canadian Labour Congress | •David Suzuki Foundation | •National Union of Public and General Employees | •Sierra Club of Canada |
| •Canadian Union of Postal Workers | •Greenpeace | •Ontario Federation of Labour | •Toronto & York Region Labour Council |
| •Canadian Union of Public Employees | •Green Communities Canada | •Pembina Institute | •United Steel Workers |
| •Climate Action Network | •Kairos: Canadian Ecumenical Justice Initiatives | •Polaris Institute | •UNIFOR |
| •Canadian Youth Climate Coalition | | | |

This submission advances four recommendations for the federal government's consideration. GEN's recommendations relate to the federal government's commitment to a clean environment and a strong economy. GEN believes that its recommendations provide a plan to create meaningful employment for one million Canadians while also meeting our international climate change commitments under the Paris Agreement.

We make the following recommendations to complement the initiatives already being developed by the federal government:

Recommendation #1: Establish a national Green Homes and Green Buildings Strategy - which will save Canadians money on their utility bills, reduce poverty, lower GHG emissions by up to 126 Mt, and create 438,000 climate jobs over five years;

Recommendation #2: Collaborate with provincial governments to form a National Public Transportation Strategy - which will guarantee predictable long-term funding, improve health, reduce inequality, lower GHG emissions by up to 25 Mt, create 101,600 climate jobs over five years, and make cities stronger;

Recommendation #3: Work with provincial and territorial governments to develop a Renewable Energy Development Strategy - which will foster ingenuity and innovation, result in cleaner air and water, reduce GHG emissions by up to 110 Mt and create 290,000 climate jobs over five years; and

Recommendation #4: Establish a Carbon Pricing Mechanism - to acquire the additional new capital needed to finance the transition to a climate resilient and low-carbon economy.

INTRODUCTION

Canada is facing a triple-E challenge relating to our environment, our economy, and diversification of energy sources. We are already experiencing the ramifications of climate change; underemployment and unemployment in precarious jobs remain high; and renewable energy technologies are becoming increasingly competitive, despite a collapse in world oil prices. Concurrently, our economy and society are further plagued by an equity crisis marked by increasing inequalities and divisions amongst gender, race, and class. The "One Million Climate Jobs" plan has the potential to take on all of these challenges while providing a concrete strategy for Canada to transition to a low-carbon economy.

Business as usual is no longer a viable option for the environment or for the economy. If we are to avoid climactic disaster, revitalize our economy, and create good jobs for Canadians, we must take decisive action through targeted investments in energy efficiency and building retrofits, public transportation including higher speed rail, and renewable energy. In order for the benefits from these targeted investments to be fully realized, a national harmonized carbon pricing mechanism should be implemented, which will provide a clear price signal for businesses, organizations, and consumers, as well as providing a portion of the financing for the transition to a low-carbon economy. GEN's "One Million Climate Jobs" plan offers a viable strategy that will create over a million new jobs, save Canadians money, improve the wellness and health of Canadians, reduce pollution, and significantly decrease Canada's annual GHG emissions.

POLICY RECOMMENDATIONS

Canada's First Ministers recently committed to building on the momentum of the Paris Agreement and developing a pan-Canadian framework for clean growth and climate change. The Vancouver Declaration on Clean Growth and Climate Change emphasised the importance of investing in energy efficiency, public transit infrastructure, and renewable energy.ⁱⁱⁱ The federal government must establish a national direction and provide targeted and predictable funding to signal the transition to a green economy. Below, we provide details and specific recommendations for targeted investments in energy efficiency and building retrofits; public transportation, including higher speed rail; and renewable energy development. Through the implementation of the recommendations for these three priority areas, complemented by a carbon pricing mechanism, the federal government can spur economic innovation and growth, create over a million climate jobs for Canadians, and catalyze the transition to a low-carbon economy.

1. GREEN HOMES AND GREEN BUILDINGS STRATEGY

GEN is calling for the establishment of a national Green Homes and Green Buildings Strategy, which will save Canadians money on their utility bills, reduce poverty, lower annual GHG emissions by up to 126 Mt, and create 438,000 climate jobs over five years.

Energy efficiency and conservation are our cleanest, cheapest and most productive methods for reducing GHGs, yet the vast majority of Canadian buildings (92 per cent) have not been retrofitted. Energy efficiency is a smart investment that can be started immediately, using existing skills and technologies, to create jobs and save money. Investing in energy efficiency and conservation boosts productivity, reduces costs, cleans our air and water, and creates jobs everywhere. For example, building retrofits are an opportunity for Atlantic Canadians suffering from rapidly rising unemployment resulting from the downturn in extractive industries to finish apprenticeships, gain skills, and improve housing stock. An energy efficient economy is a strong, competitive economy and an economy where electricity bills can be lower in response to energy savings. Energy efficiency is unique in that it pays for itself through savings in a relatively short time.

Canada needs a Green Homes and Green Buildings Strategy to transform this country's housing and building stock. To develop and implement this Green Homes and Green Buildings Strategy, the federal government has a vital role to play in reaching an agreement on national energy efficiency standards and in ensuring that financial institutions guarantee loans to municipal governments for property tax system financing for retrofits.

Low-income residents can benefit from this Strategy through grants for retrofits and the resulting decrease in their energy bills. For the Strategy to be the most effective and generate the highest potential for employment, maintenance and expansion of national efficiency support services and more stringent federal efficiency regulations will be required.

Over the next five years, the Green Homes and Green Buildings Strategy will achieve the following objectives:

- Retrofit 40 per cent of Canadian homes to an average level of 30 per cent increased energy efficiency savings per home;
- Upgrade 150,000 low-income homes and reduce energy bills by an average of 30 per cent;
- Increase the energy efficiency of new homes by 2 per cent per year towards 2025 when all homes built after that date will produce as much energy as they consume (net zero);
- Improve the efficiency (technical and operational) of all buildings (industrial, commercial, business and public) across Canada by 50 per cent; and
- Require all new buildings to be net zero by 2025.

To achieve the objectives of the Green Homes and Green Buildings Strategy, GEN makes the following recommendations:

- ❖ Revise national building codes by 2020 for residential, institutional, commercial and industrial facilities, as promised in Budget 2016;^{iv}
- ❖ Require all new buildings to be net zero by 2025 and support this transition through training, R&D, and fiscal incentives such as tax credits tied to domestic procurement;
- ❖ Establish mandatory energy audits^v and efficiency labelling for homes and buildings at time of sale or with a new rental agreement;
- ❖ Facilitate and fund innovative financing arrangements to ensure that financial institutions and utilities guarantee loans to municipal governments for property tax-based and utility-based on-bill financing for retrofits; and
- ❖ Use EI to assist and fund the use of retrofits as an opportunity for laid-off workers to finish apprenticeships, gain skills, and improve the housing stock in areas suffering rapidly rising unemployment.

Conserving the energy used to run homes and buildings should be a top priority. The investments in energy efficiency included in the 2016 Federal Budget formed the foundation for creating a national Green Homes and Green Buildings Strategy. An annual investment of \$3.0 billion (1.1 per cent of the federal budget)^{vi} in a Green Homes and Green Buildings Strategy over five years^{vii} will boost productivity, reduce energy costs, lower annual GHG emissions by up to 126 Mt, and create 438,000 climate jobs.

2. NATIONAL PUBLIC TRANSPORTATION STRATEGY

We recommend that the federal government collaborate with provincial governments to form a National Public Transportation Strategy, which will guarantee predictable long-term funding, improve health, reduce inequality, lower annual GHG emissions by up to 25 Mt, create 101,600 climate jobs over five years, and make cities stronger.

The transportation sector was responsible for 28 per cent of Canada's GHG emissions in 2014.^{viii} Just over half of the energy used in the transportation sector is specifically dedicated to transporting people. If Canada is to make the shift to a green economy, significant investments will be needed to enhance our

public transit and intercity rail capacity to transport people and thereby reduce the dependency on conventional private automobiles as the primary means of transportation.

Developing a National Public Transportation Strategy will create jobs, reduce pollution, lower emissions and pollutants, and boost the economy. Coordinated investments in public transit and sustainable transportation improvements will yield billions of dollars in savings through improved health, decreased traffic congestion, and increased productivity.^{ix}

Canada needs a national transportation plan designed to encourage Canadians to reduce their dependency on private automobiles as their primary mode of transport. We propose a National Public Transportation Strategy that involves a two-pronged approach:

- 1) Public Transit Systems:** the development and expansion of public transit systems within urban centres and smaller communities across the country; and
- 2) Intercity Rail Systems:** the development of high-speed rail systems (HSR) in urban corridors (i.e. Québec City - Montréal - Toronto - Windsor; Edmonton - Calgary; Vancouver - Seattle).

For this public transportation strategy to be effective, it must be accessible, affordable, and accountable.

The current level of funding from federal and provincial governments is insufficient to meet the needs for municipal transit systems, let alone intercity rail.

Canada is both the only G8 country without existing HSR infrastructure and the only G20 country without official plans to construct an HSR line in the coming decades.^x Aside from paying for repeated studies demonstrating the feasibility and practicality of implementing HSR lines in major corridors, \$0 have thus far been spent by the provinces and the federal government for this important initiative.

We propose that a public investment plan be put in place by governments to address the current needs of public transit systems across the country and also begin to enable the development of efficient low-impact rail travel between the nation's most populous urban areas and along its busiest routes. More specifically, this plan should include:

- ❖ Coordination with other orders of government to establish a National Public Transportation Strategy and lay the groundwork for higher speed rail between cities and urban corridors;
- ❖ Providing predictable long-term funding to local and regional transit systems;
- ❖ Implementing policies that encourage growth in Canada's transit manufacturing industries as well as associated research and development industries;^{xi}
- ❖ Investment of \$1.76 billion annually (0.6 per cent of the federal budget)^{iv} for the development and expansion of public transit systems within urban centres across the country over five years;^{xii} and
- ❖ Investment of \$1.0 billion annually (0.4 per cent of the annual federal budget)^{iv} to lay the groundwork for higher speed rail between cities in urban corridors, commencing with the highest-density and most industrialized corridor, Québec City – Windsor.^{xiii}

To be effective, such investments also need to coincide with a scaling down of provincial government investments in highway construction and should focus on the electrification of public transportation from renewable energy sources.

In the medium term, additional public investments in urban public transit and intercity rail will be required to ensure that the future transportation needs of Canada's growing population are adequately met in a sustainable manner.

A National Public Transportation Strategy, with a total investment of \$17.6 billion for public transit and \$10 billion toward initiating the development of high-speed rail corridors, will reduce congestion, increase economic activity, decrease air pollution, and create 324,600 climate jobs in five years. During that time, the direct GHG emission reductions achieved through diversion from private vehicles will be between 12 and 25 Mt per year. Indirect GHG emission reductions from increased urban density and the avoidance of future increases in GHG emissions from a business as usual approach will eventually result in annual reductions of up to 100 Mt in the long term.^{xiv}

3. RENEWABLE ENERGY DEVELOPMENT STRATEGY

GEN is asking for the federal government to work with provincial and territorial governments to develop a Renewable Energy Development Strategy, which will foster ingenuity and innovation, result in cleaner air and water, reduce annual GHG emissions by up to 110, Mt and create 290,000 climate jobs over five years.

The transition to a low-carbon economy will require an increase in electrification. This electricity must be derived from renewable sources to reach the level of decarbonization required for Canada to meet its obligation under the Paris Agreement to limit the increase in global average temperature to well below 2 degrees Celsius above pre-industrial levels.^{xv} Canada has enormous unrealized potential for electricity generated from solar, wind, and geothermal energy sources. The price for wind and solar is increasingly competitive, falling 65 per cent and 90 per cent respectively since 1983.^{xvi} Recent analysis from Bloomberg New Energy Finance (BNEF) and International Renewable Energy Association (IRENA) show that the dramatic reduction in cost for wind and solar will continue well into the future.^{xvii}

The federal government, in collaboration with the provinces and territories, as well as municipal governments, Indigenous peoples, and communities, must take the lead in generating this transition. While investments in renewable energy were included in the 2016 Federal Budget, the scale of these investments was not sufficient to achieve the level of transformative change that is required to meet Canada's 2030 target. To facilitate the development of renewable energy sources to meet future energy demand, lower GHG emissions by up to 110 Mt, and create 290,000 climate jobs over five years, the federal government should:

- ❖ Separate renewable energy from “clean technology” and “clean energy” (which include oil extraction) and create significant targeted investments over the next five years for renewable energy development and infrastructure, including job creation and GHG reduction targets;

- ❖ Allocate specifically targeted funding to Natural Resources Canada to facilitate regional dialogues and studies that identify the most promising renewable energy infrastructure projects and maintain and improve renewable energy policy capacity;
- ❖ Work with Indigenous, rural, and remote communities to increase access to renewable energy and facilitate renewable energy project development^{xviii} on the microgrid scale to reduce dependency on diesel, as recommended by the Premiers;^{xix} and
- ❖ Work with the provinces and territories to address regulatory barriers related to distributed electricity generation, including facilitating permissions, approvals, and access to the grid, as promised in the 2016 Federal Budget.^{xx}

It is essential that the federal government provide leadership in advancing the Renewable Energy Development Strategy. Although the implementation of such an initiative resides with provincial-territorial and municipal governments, the federal government has a critical role to play in initiating, facilitating, and financing the strategic shift to a renewable energy future across Canada.

This scale of investment in renewable energy is critical to meet growing energy demands, including the increase in electrification that is required for the transition to a low-carbon economy. An annual investment of \$2.33 billion (0.8 per cent of the federal budget) in a Renewable Energy Development Strategy over five years^{xxi} will benefit all Canadians. Investments in microgrid renewable energy for off-grid communities will free up money in community budgets for education, health, and business development; enable water system upgrades; create skilled jobs; and make heat and power more affordable. In addition to reducing reliance on diesel in off-grid communities, the Renewable Energy Development Strategy will also reduce fossil fuel dependence across Canada, which will lower annual GHG emissions by up to 110 Mt, decrease photochemical smog and acid rain, and create 290,000 climate jobs over five years.

CARBON PRICING MECHANISM

We recommend that the federal government, in consultation with the provinces and territories, establish a Carbon Pricing Mechanism to acquire the additional new capital needed to finance the transition to a climate resilient and low-carbon economy.

The First Ministers^{xxii} have identified carbon pricing as a key element to transition Canada to a more resilient economy while reducing emissions. Putting a price on carbon emissions will enable governments to acquire the additional new capital needed to finance the transition to a low-carbon and climate resilient economy. Carbon pricing mechanisms also provide a clear price signal for business, organizations and consumers.

The federal government has initiated the Working Group on Carbon Pricing Mechanisms to build on the progress already undertaken by the provinces. To finance the three priority areas of the “One Million Climate Jobs” strategy, and drive innovation and ingenuity, we recommend:

- ❖ A harmonized national carbon price of a minimum of \$30 per tonne of CO₂, increasing to \$200^{xxiii} per tonne, coupled with a tax rebate (structured like the GST rebate) so that low-income citizens are not unfairly burdened;
- ❖ The carbon pricing mechanism includes incremental and predictable annual increases;
- ❖ The revenues from the carbon pricing mechanism be allocated to infrastructure projects that contribute to the reduction of GHG emissions; and
- ❖ That the \$3.6 billion in annual fossil fuel subsidies^{xxiv} be reallocated to the transition to a green economy, fulfilling Canada’s G20 commitment to phase our subsidies to the fossil fuel industry, as promised in the Liberal Government’s election platform.^{xxv}

The “One Million Climate Jobs” plan prioritizes public investment in renewable energy; energy efficiency and building retrofits; and public transportation, including higher speed rail. In 2014, the Energy Sector, which includes transportation and stationary combustion, was responsible for 81 per cent of annual GHG emissions in Canada.^{xxvi} Through the targeted investment of \$80.9 billion over five years, the Government can transform the three sectors identified in the “One Million Climate Jobs” plan, which will achieve the significant GHG reductions required to meet our international commitments, and create over a million climate jobs.

A summary of the calculations for the investments, new jobs created, and GHG emissions reduced can be seen in Table 1. Over five years, the annual expenditure is just over \$16 billion (less than 6 per cent of the annual federal budget).^{xxvii} This is an ambitious but viable financial commitment, given the magnitude of the challenges that we face. This amount could be split 50/40/10 between federal, provincial-territorial, and municipal governments, for an annual federal contribution of just over \$8 billion (less than 3 per cent of the annual federal budget). Many of the revenue streams to fund this transition already exist and can be reallocated toward these three priority areas. Several of the proposed financing measures, including a carbon pricing mechanism and Green Bonds, have been identified as priorities by the Liberal Government.^{xxviii}

Table 1. Summary of “One Million Climate Jobs” Plan

	\$Billions Invested Over 5-Year Period	Total Person Job Years Created	GHG Emission Reductions (Mt CO ₂ eq)
Renewable Energy (solar, wind, geothermal power)	\$23.3	290,000	44 – 110
Energy Efficiency (i.e. building retrofits)	\$30.0	438,000	32 -126
Public Transit (i.e. improvements and expansion)	\$17.6	223,000	11 - 20
Higher Speed Rail (between cities in urban corridors)	\$10.0	101,600	1 – 5
5-Year TOTALS	\$80.9 billion	1,052,600 Jobs	88 →175→261 Mt annually

BENEFITS FOR CANADA AND ALL CANADIANS

Canadians need jobs now and our current economic model is insufficient to meet this demand. Including indirect jobs, more than 110,000 people across Canada have lost their jobs as a result of the downturn in the oil and natural gas sector.^{xxxix} Employment in the natural resources sector as a whole is down 10.4 per cent from last year, resulting in the loss of 37,100 direct jobs in the last year alone.^{xxx} Concurrently, unemployment in Atlantic Canada continues to hover around 10 per cent.^{xxxii} We need a new economic model if we are going to get Canadians back to work. The “One Million Climate Jobs” plan provides the employment opportunities that Canadians need. For example, in Newfoundland and Labrador alone, almost 14,000 jobs could be created over the next five years.

Compared to business as usual, the “One Million Climate Jobs” plan will create new opportunities for economic growth, improve the health and overall welfare of Canadians, increase biodiversity, result in cleaner air and water, and avoid the future economic costs associated with anthropogenic climate change.

According to the United Nations Environment Programme (UNEP), there are significant benefits to investing in the transition to a green economy:

- Over time, targeted investments in the transition to a green economy enhance long-term economic performance and generate wealth, while reducing environmental risks, and contributing to the capacity to promote future prosperity;
- The progression toward a green economy generates an increase in ecosystem resilience as well as producing a higher degree of economic and social development than business as usual; and
- The new jobs that are created in the transition to a green economy exceed the job losses resulting from the transition.^{xxxii} However, this economic shift must be accompanied by investments and policies directed toward a Just Transition to protect workers and marginalized groups.

The transition to a low-carbon economy will also save Canadians money in the long term. Research conducted by the National Round Table on the Environment and the Economy (NRTEE) shows that the economic cost of climate change for Canada could exceed \$90 billion annually by 2050.^{xxxiii} By implementing the “One Million Climate Jobs” strategy, the Government of Canada could avoid losing billions of dollars from climate change impacts including damages to infrastructure, increased healthcare costs, reduced performance of Canadian industry, and lost labour hours.

In addition to providing a solution to the employment gap, the “One Million Climate Jobs” plan will also close the GHG emissions gap between now and 2030. Canada is not currently on track to meet its INDC of a 30 per cent reduction below 2005 levels of annual GHG emissions. According to Environment and Climate Change Canada’s most recent National Inventory Report (NIR), Canada will have to reduce its annual GHG emissions by over 200 Mt compared to 2014 emissions in order to meet this target.^{xxxiv} In Canada’s second biennial submission to the United Nations Framework Convention on Climate Change (UNFCCC), Canada’s annual GHG emissions for 2030 were projected to be 815 Mt,^{xxxv} almost 300 Mt over the INDC target. While a number of new climate change policies have been announced that were

not included in the biennial projections, a recent analysis from the Canadian Deep Decarbonization Pathways Project Team indicates that even when the new policies are accounted for, Canada will still be 185 Mt away from the 2030 target.^{xxxvi} Figure 1. shows how the emissions reductions from the “One Million Climate Jobs” plan compare to the projections under the UNFCCC submission.

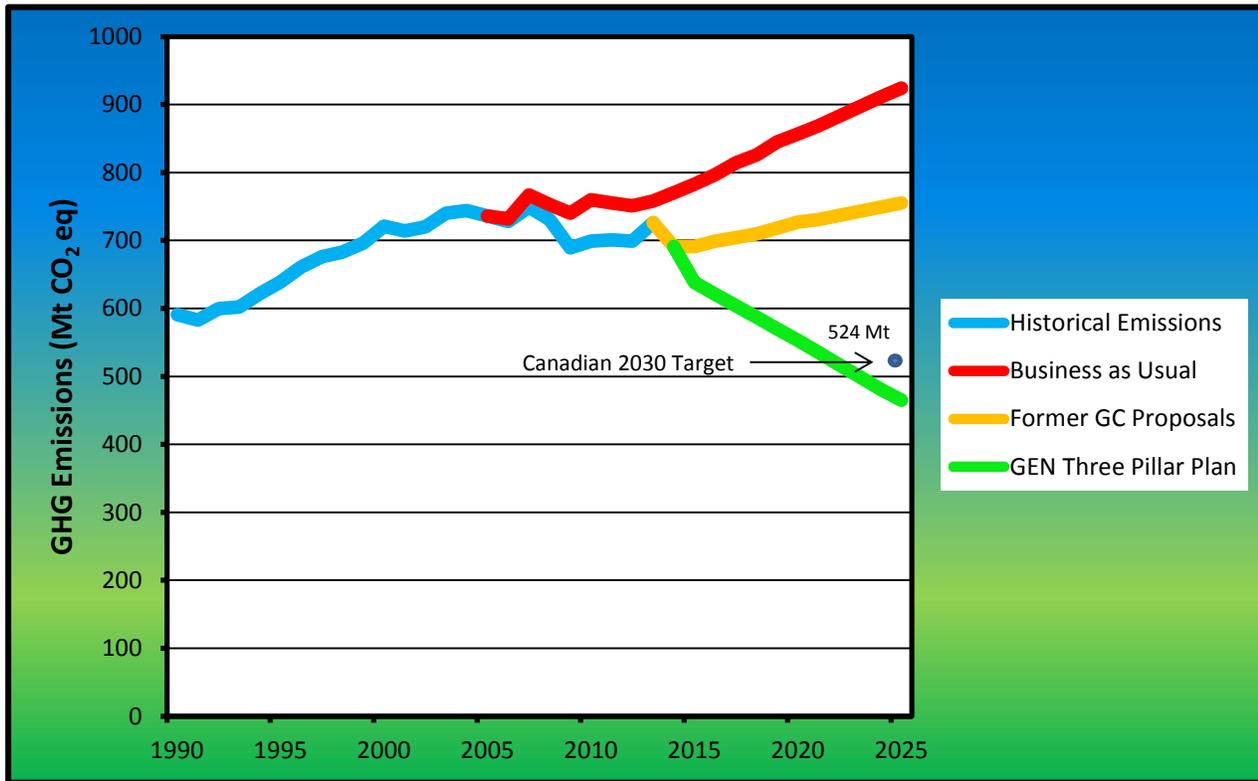


Figure 1. Canada’s Historical Greenhouse Gas Emissions and Projections to 2025 (Mt CO₂ eq)

Canada needs a new economic model that fosters innovation and growth in low-carbon industries, transforms our economy’s modes of production and consumption, ensures affordable clean energy for all Canadians, and provides equitable opportunities for decent-paying climate jobs in order to eliminate persistent poverty and inequalities. If we are to meet our 2030 GHG reduction target, we must overcome the concurrent crises of our environment, economy, and energy diversification. We can achieve this while creating over a million climate jobs for Canadians and ensuring that the transition to a low-carbon economy is equitable, sustainable, and participatory.

The transition to a low-carbon economy will require the transformation of energy-intensive industries, extractive industries, and road transportation industries. Investments and policies designed to spur growth and create jobs in the low-carbon economy must be paired with a Just Transition Strategy that is supported by workers, employers, and governments. Just Transition ensures that workers in carbon-intensive industries are protected and able to support their families while their jobs are being transformed or eliminated. The Strategy must embody social support, income bridging and

unemployment benefits, re-employment and compensation measures, advanced skills training programs, investment in apprenticeships, and be devised with the participation of workers and their representatives. This Strategy must improve the participation of under-represented groups, including Indigenous peoples, persons with disabilities, and older workers so that they can access and benefit from the labour market opportunities created through the “One Million Climate Jobs” plan. A Just Transition Strategy must also include greater involvement and collaboration with Indigenous peoples, who have been disproportionately affected by climate change.

CONCLUDING REMARKS

We have a plan of action, which if fully implemented during the coming five years, will put Canada well on its way to creating one million climate jobs. It is our calculation that the plan presented here will reduce Canada’s annual GHG emissions by 175 Mt per year, putting us on track to reduce our annual emissions by one-third (up to 261 Mt) in ten years, in accordance with Prime Minister Trudeau’s commitment under the Paris Climate Agreement. Our plan will get Canadians the jobs that they need, boost our economy, and deliver the future that our children deserve.

ENDNOTES

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- i Mt CO₂ eq is megatonnes of carbon dioxide equivalent, the standard international unit of measurement for reporting greenhouse gas (GHG) emissions. One megatonne (Mt) is equal to one million tonnes. Canada's GHG emissions were 732 Mt CO₂ eq in 2014.
- ii Government of Canada (2015). *Canada's INDC Submission to the UNFCCC* <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Canada/1/INDC%20-%20Canada%20-%20English.pdf>
- iii Canadian Intergovernmental Conference Secretariat (2016). *Vancouver Declaration on Clean Growth and Climate Change* <http://www.scics.gc.ca/english/Conferences.asp?a=viewdocument&id=2401>
- iv Department of Finance (2016). *Budget 2016: Growing the Middle Class* <http://www.budget.gc.ca/2016/docs/plan/budget2016-en.pdf>
- v Paid for by the government, as exemplified in Ontario's *Climate Change Action Plan* (2016)
- vi Based on federal expenditures from the 2014-2015 fiscal year of \$280.4 billion, <http://www.fin.gc.ca/afr-rfa/2015/report-rapport-eng.asp#toc1>
- vii based on a federal, provincial/territorial, municipal funding formula of 50-40-10 per cent each, for a total of \$30.0 billion in public funding over five years
- viii Environment and Climate Change Canada (2016). *National Inventory Report 1990-2014: Greenhouse Gas Sources and Sinks in Canada - Executive Summary ES.2* <https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=662F9C56-1>
- ix N. Irwin and A. Bevan (Toronto City Summit Alliance, July 2010). *Time to Get Serious: Reliable Funding for GTHA Transit/Transportation Infrastructure* www.sustainableprosperity.ca/article170; and D. Thompson (Sustainable Prosperity, University of Ottawa, January 2011). *Putting Transportation on Track in the GTHA: Comparing Road and Rail Emissions* www.sustainableprosperity.ca/article699
- x For more details, see Ryan Katz-Rosene, 'Moving Towards Canada's Green Economy: Investments in Public Transit and Intercity Rail,' a background paper prepared for the Canadian Labour Congress and the Green Economy Network, September 2010.
- xi Canadian Urban Transit Association (2015). *Moving Forward: Maximizing the Benefits of Transit Investment Federal Pre-budget Submission 2015* http://cutaactu.ca/sites/default/files/cuta_2015_pre_budget_final.pdf
- xii based on a federal, provincial/territorial, municipal funding formula of 50-40-10 per cent each, for a total of \$17.6 billion in public funding over five years
- xiii based on a federal, provincial/territorial, municipal funding formula of 50-40-10 per cent each, for a total of \$10.0 billion in public funding over five years
- xiv Gallivan, F., Rose, E., Ewing, R., Hamidi, S., & Brown, T. (2015). *Quantifying Transit's Impact on GHG Emissions and Energy Use—The Land Use Component* (No. Project H-46). http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_176.pdf
- xv United Nations Framework Convention on Climate Change, *Adoption Of The Paris Agreement*, FCCC/CP/2015/L.9/Rev.1, December 12, 2015. <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>
- xvi Pembina Institute (2016). *Wind and solar in Alberta* <http://www.pembina.org/pub/wind-solar-alberta>
- xvii BNEF (2016). *New Energy Outlook: Long-Term Projections of the Global Energy Sector* <http://www.bloomberg.com/company/new-energy-outlook/>; and IRENA (2016). *The Power to Change: Solar and Wind Cost Reduction Potential to 2025* http://www.irena.org/DocumentDownloads/Publications/IRENA_Power_to_Change_2016.pdf
- xviii in addition to the \$10.7 million over two years promised in the 2016 Federal Budget to Indigenous and Northern Affairs Canada Department of Finance (2016). *Budget 2016: Growing the Middle Class* <http://www.budget.gc.ca/2016/docs/plan/budget2016-en.pdf>
- xix The Council of the Federation (2015). *Canadian Energy Strategy*

- http://www.canadaspremiers.ca/phocadownload/publications/canadian_energy_strategy_eng_fnl.pdf
- xx Department of Finance (2016). *Budget 2016: Growing the Middle Class*
<http://www.budget.gc.ca/2016/docs/plan/budget2016-en.pdf>
- xxi based on a federal, provincial/territorial, municipal funding formula of 50-40-10 per cent each, for a total of \$23.3 billion in public funding over five years
- xxii Canadian Intergovernmental Conference Secretariat (2016). *Vancouver Declaration on Clean Growth and Climate Change* <http://www.scics.gc.ca/english/Conferences.asp?a=viewdocument&id=2401>; and Council of the Federation (2015). *Canadian Energy Strategy*
http://www.canadaspremiers.ca/phocadownload/publications/canadian_energy_strategy_eng_fnl.pdf
- xxiii Pembina Institute and the David Suzuki Foundation, *Climate Leadership, Economic Prosperity: Final Report on the Economic Study of Greenhouse Gas Targets and Policies for Canada*, 2009. See also the accompanying technical report by MK Jaccard and Associates Inc., *Final Report: Exploration of Two Greenhouse Gas Emission Targets*
- xxiv \$2.14 billion in annual federal subsidies and \$1.46 billion in annual provincial subsidies
Touchette, Y. (London: Overseas Development Institute, November 2015). *G20 subsidies to oil, gas and coal production: Canada* <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9988.pdf>
- xxv Liberal Party (2015). *Real Change: A New Plan for a Strong Middle Class*
<https://www.liberal.ca/files/2015/10/New-plan-for-a-strong-middle-class.pdf>
- xxvi Environment and Climate Change Canada (2016). *National Inventory Report 1990-2014: Greenhouse Gas Sources and Sinks in Canada - Executive Summary ES.3* <https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=662F9C56-1>
- xxvii Based on federal expenditures from the 2014-2015 fiscal year of \$280.4 billion
Department of Finance (2015). *Annual Financial Report of the Government of Canada Fiscal Year 2014-2015*
<http://www.fin.gc.ca/afr-rfa/2015/report-rapport-eng.asp#toc1>
- xxviii Liberal Party (2015). *Real Change: A New Plan for a Strong Middle Class*
<https://www.liberal.ca/files/2015/10/New-plan-for-a-strong-middle-class.pdf>
- xxix 40,000 direct jobs and 70,000 indirect jobs
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