



Canadian Solutions:

Practical and Affordable Steps to Fight Climate Change

Canadians are concerned about climate change, and we should be.

This evolving environmental crisis has the potential to seriously degrade our health, harm our environment and damage our economy. Canada is the second largest per capita producer of greenhouse gases, largely because of the inefficient way we consume fossil fuels such as oil, coal and gas. Fortunately, there are ways to increase energy efficiency and address climate change that have many environmental, health and economic benefits. *Canadian Solutions* explains how this can be done – practically, affordably and effectively.

Canadian Solutions explains how this crisis can be addressed – practically, affordably, and with many environmental, social and economic benefits.

Some of the measures needed to address climate change will spur growth in new industries, and provide a wide array of other benefits. These measures include:

- Improving the fuel economy of new vehicles and providing expanded transit alternatives;
- Encouraging more efficient use of fuels by phasing-in increased fuel taxes, with the revenue used to reduce other taxes; and by promoting alternative fuels;
- Switching from coal to natural gas and, more importantly, to renewable sources of energy such as solar and wind;
- Developing an emissions trading system for industry that limits emissions;
- Providing incentives, regulations and support to improve energy conservation in homes and commercial buildings.

Canada and Climate Change

The scientific community agrees that human activity is changing our climate. Increased concentrations of “heat-trapping” gases such as carbon dioxide in the atmosphere are raising temperatures and shifting weather patterns. Historical temperature trends indicate that the average global temperature has increased by 1°C in the past 135 years. Even more disturbing are regional temperature increases. For example, in the Canadian Arctic, average 1998 temperatures were 5°C above normal, and spring is now occurring a week earlier than it did just a decade ago.

On the surface, these changes may appeal to some Canadians who are used to long, cold winters. However, scientists say climate change is expected to have unwelcome and unhealthy consequences for the entire planet. Traditional weather

patterns are changing, making some areas warmer and wetter, others cooler or drier. These altered patterns will lead to an increase in the frequency and severity of extreme weather events, such as droughts, floods, and storms. Other anticipated effects of climate change include rising sea levels potentially displacing hundreds of millions of families worldwide, increased air pollution and health care costs, decreased fish stocks, and reduced crop yields.

To help reduce the potentially devastating consequences of climate change, Canada agreed at a 1997 United Nations conference in Kyoto, Japan, to cut greenhouse gas emissions to six per cent below 1990 levels in the period 2008-2012. This is far less than the 60-80 per cent reductions scientists argue are necessary, but it is an important first step. Unfortunately, while some countries have started to reduce emissions, Canada has failed to act and our emissions are still increasing by 1.5 per cent annually. Canada is currently the second highest per capita producer of greenhouse gases and the highest per capita consumer of energy in the world.

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Benefits of action

Since the majority of greenhouse gases are emitted when oil, coal, gasoline, and natural gas are burned, the only way to significantly reduce emissions is to burn less of these fuels. Fortunately, this would have many benefits. For example, investments in energy efficiency create four times as many jobs as equivalent investments in energy production. Increased efficiency also reduces production costs, making Canadian industries more competitive. Further, cutting fossil fuel use will reduce air pollution that currently accounts for up to 16,000 premature deaths each year, along with billions of dollars in health care costs. Moreover, the longer we delay, the more difficult and expensive it will be to meet our international obligations. Immediate action will give Canada time to ensure a gradual and economically smooth transition to cleaner energy sources and higher levels of resource and energy efficiency.

Responsibility for reducing emissions must be allocated so that no region or sector is unreasonably burdened. Instead, all of society must share in this task,

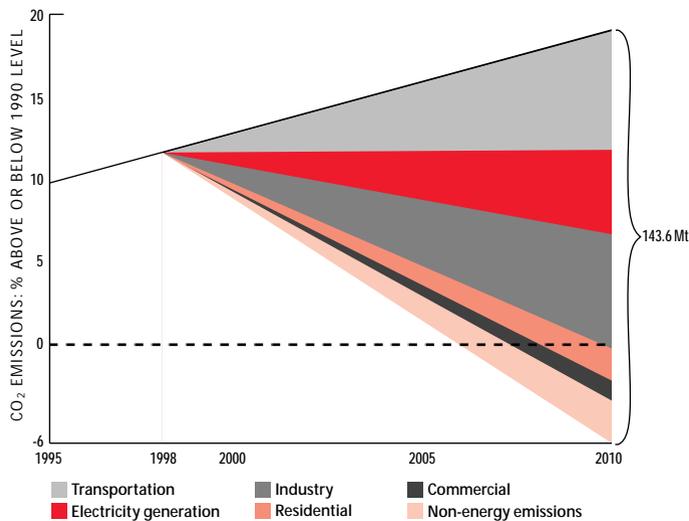


FIGURE 1. FILLING CANADA'S EMISSIONS GAP

SOURCE: *Canadian Solutions*

Investments
in energy
efficiency create
four times as
many jobs as
equivalent
investments
in energy
production.

from governments to industries to communities and individuals. Federal and provincial government leadership is essential to create the opportunities for emission reductions in every dimension of the Canadian economy. Table 1 lists the recommended policies that meet these objectives and reduce emissions. Some of the initiatives are described in more detail below.

TRANSPORTATION

- **Improving fuel economy:** The current voluntary “corporate average fuel consumption” standard for new vehicles hasn’t changed since 1985. In fact, because of the increasing number of trucks, vans and sport utility vehicles on the road, the actual average fuel efficiency of the 1998 vehicle fleet has worsened and is now the same as it was in 1980. Using today’s technology, vehicles could meet a five litre per 100 kms driven (5L/100km) standard, which would cut greenhouse gas emissions from the average passenger vehicle on the road today by more than half. The federal government should adopt tough, new mandatory fuel economy standards to address climate change and to substantially reduce local air pollution now at critical levels in many cities.
- **Changing gasoline and diesel taxes:** North Americans currently pay less than half what Europeans pay for gasoline. Not surprisingly, our per capita fuel consumption is about three times higher. Higher fuel taxes in Canada should be phased in over time to help reduce our consumption, and the revenue to governments should be offset by reductions in other areas such as income taxes, sales taxes or payroll taxes. Existing fuel taxes should be used to fund effective public transportation alternatives, such as buses, light rail transit and bicycle routes. Currently, the federal government provides no funding for public transit.
- **Using renewable transportation fuels:** Gasoline is not the only transportation fuel. We can also power our vehicles with ethanol made from biomass sources like agricultural crops and wastes, and forest fibres. It is already possible to purchase ethanol-blended gasoline in Canada. By mandating all transportation fuel have a minimum renewable energy content, the federal government could substantially reduce greenhouse gas emissions.

ELECTRICAL GENERATION

- **Reducing our use of coal:** About 20 per cent of Canada’s electricity is currently generated by burning fossil fuels, and 80 per cent of that occurs in Ontario and Alberta. Many of these power stations still rely on coal as their source of fuel. By removing unfair competitive advantages for coal in the marketplace, provincial governments could encourage the use of more efficient and less polluting energy sources like natural gas.
- **Encouraging renewable energy sources:** Although renewable energy sources, including wind, solar, geothermal and small-scale hydro projects have

Canadian Solutions shows how creative policies can help us to use energy more wisely.



TABLE 1. ESTIMATES FOR GREENHOUSE GAS EMISSIONS REDUCTIONS FROM THE ACTIONS PROPOSED IN CANADIAN SOLUTIONS

Policy	GHG Emission Reduction (Mt)	% of Reduction*
TRANSPORTATION		
1 Improved and mandatory fuel economy standards for vehicles	25.8	18.0
2 Phased increases in gasoline and diesel taxes	7.5	5.0
3 Actions to increase the use of alternative modes of transportation	4.7	3.0
4 Mandatory 5% renewable energy content in gasoline	3.1	2.0
5 Reduced speed limits which are strictly enforced	2.2	1.5
Sub-total	43.3	29.5%
ELECTRICITY GENERATION		
6 Net metering to enable utility customers producing surplus renewable energy to run their meters backwards	1.1	0.7
7 Eliminating market distortions so low-carbon energy competes on a level playing field	19.2	13.0
8 Producing electricity from waste solution gas, normally flared during fossil fuel extraction	0.9	0.6
9 Mandating electrical utilities to produce at least 10% of energy from renewable sources	7.8	5.0
Sub-total	29.0	19.3%
INDUSTRY		
10 Capping domestic emissions and permitting regulated trading of allowances between companies that are making or seeking reductions	26.0	18.0
11 Using the Kyoto Protocol's international flexibility mechanisms to achieve tangible emission reductions, e.g. well-enforced international emissions trading	14.0	10.0
Sub-total	40.0	28.0%
RESIDENTIAL		
12 Adopting already-developed R-2000 building codes for new homes	3.7	3.0
13 Cost-effective energy efficient retrofit of Canadian homes	7.2	5.0
Sub-total	10.9	8.0%
COMMERCIAL		
14 Cost-effective energy efficient retrofit of commercial buildings	4.4	3.0
15 Supporting district energy systems that provide energy to a group of buildings in one immediate area	2.0	1.0
Sub-total	6.4	4.0%
NON-ENERGY EMISSIONS		
16 Mandating the capture of landfill methane gas	11.0	8.0
17 Reducing methane emissions from livestock manure management	3.0	2.0
Sub-total	14.0	10.0%
Total	143.6	

* does not total 100% due to rounding

tremendous potential in Canada, they currently account for just one per cent of our electrical supply. Provincial governments should change that by requiring all electricity suppliers to provide 10 per cent of their electricity from renewable sources. This would have only a small impact on the electric bill of the average Canadian.

- **Promoting on-site electricity generation:** “Net” metering would provide electricity consumers with an incentive to generate their own electricity on-site through small scale renewable or co-generation technologies. It would allow homeowners, small businesses and institutions to produce electricity and feed any excess power they produce into the electricity grid. Power could be drawn from the electrical utility when required. The total electric bill would be based on power consumed minus electricity returned to the system. Provincial governments should require utilities to allow “net” metering.

INDUSTRY

- **Establishing a cap and allowance emissions trading system:** Canadian industries produce about 32 per cent of Canada’s total greenhouse gas emissions, and about 65 per cent of that comes from 200 large companies. The federal government should establish an emissions trading system that caps total emissions from these companies, and provides individual companies with allowances to emit a limited amount of greenhouse gases under the cap. At the end of each year, all companies would have to hold allowances equal to their actual emission levels. Companies that reduce emissions below their individual limit could sell their surplus allowances to other companies. Stiff penalties would be assigned to companies whose emissions exceed their allowances at the end of the year.
- **Flexibility mechanisms:** Under the Kyoto Protocol, countries can meet part of their domestic emissions commitments by paying for emission reductions achieved in other developed or developing nations. Currently, these “flexibility mechanisms” are poorly defined. There is the threat that Canada will follow the U.S. lead in pushing for virtually unlimited international trading, including emissions reductions that appear on paper but not in reality. Instead, Canada must work to ensure that these mechanisms will be environmentally effective. Even then, it will be crucial for Canada to meet the vast majority of its climate protection obligations through emission reductions at home. Doing so will ensure Canadians experience the benefits of reduced air pollution and health care costs, more efficient and competitive industries, and enhanced job creation. It would also send a clear signal to developing countries that Canada is willing to do its share to protect the climate.

RESIDENTIAL AND COMMERCIAL BUILDINGS

- **More efficient homes and workplaces:** Most Canadian homes and buildings could cost-effectively utilize steps to cut energy use by 20 to 30 per cent with



no reduction in the quality of energy services. Unfortunately, a variety of barriers stand in the way of capturing this vast energy efficiency potential. Overcoming these barriers will require a mix of policies, at both federal and provincial levels, including: enhanced education and training for builders, strengthened building codes for new construction and renovations, low-interest loans for investments in energy retrofits, and tax incentives for building and homeowners that demonstrate reductions in energy use.

OTHER MEASURES

- **Recovering methane:** Decomposing organic material in landfills is a major source of methane, contributing as much to Canada's greenhouse gas emissions each year as 5 million automobiles. One way to reduce these emissions is by capturing and combusting the methane for use as an energy source, and provincial governments should mandate this at all large landfills. It is estimated that all the methane released from Canada's landfills would produce enough energy to heat a half-million homes. Methane is also emitted in many manure management systems in agriculture, and governments should also take steps to encourage the capture and combustion of this methane to provide energy for agricultural operations.

Conclusion

Canada has done a poor job of responding to climate change, with no commitment to a comprehensive plan of action until the end of the century. Unfortunately, Canada's governments have been paralyzed by a short-sighted view of the issue. They have dwelt on the costs of action, but largely ignored the severe, long-term burden of continuing on our present path. Their vision has been dominated by current patterns of energy production and use, and has failed to include the many alternative policies that have already been proven to be successful.

Canadian Solutions shows how creative policies can help us use energy more wisely. The steps outlined here will give new vitality to the economy by encouraging the energy efficiency and alternative energy sectors. They would not only begin to address global warming, they would also bring an array of other environmental benefits, not the least of which would be a reduction in the 16,000 annual deaths in Canada attributed to air pollution from burning fossil fuels.

There is no time for delay. And there is no need for delay. A practical, affordable and effective path is available. It must be taken.

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The David Suzuki Foundation is committed to researching the root causes of environmental crises, identifying solutions and then working to bring about fundamental change.

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The Pembina Institute is an independent citizen-based organization with a mandate to research, develop and promote policies and programs that lead to environmental protection, resource conservation, and environmentally sound and sustainable resource management.

For copies of the full report and other climate change publications, please contact either organization.