Provincial Power Play

BREAKING AWAY FROM FEDERAL INACTION ON CLIMATE CHANGE

David Suzuki Foundation

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SOLUTIONS ARE IN OUR NATURE

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Breaking Away from Federal Inaction on Climate Change

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Introduction

A remarkable shift in global climate change politics and policy has occurred in Canada over the past two years. When the David Suzuki Foundation first assessed provincial and territorial action on global warming in October 2005, the results were not uplifting. Only a smattering of policies in a few provinces addressed the issue. Most provinces and territories did not have an active climate change plan. Some good policies had been proposed, and even implemented, but none were found in all provinces and no individual province had shown much leadership.

When Quebec unveiled its climate change plan in June 2006, the slow shift toward a more determined commitment to tackling global warming began. Quebec's plan was not perfect but it was good. It tackled the sector producing the most greenhouse gas (GHG) emissions and most responsible for the growth in emissions: transportation. Up until then, Canada had almost exclusively relied on voluntary initiatives and incentive programs, which may have been more palatable to the public but were ineffective as policies. Quebec did not shy away from strong but controversial policies. It embraced both regulations and taxes: regulations for vehicles and buildings and the first widespread carbon tax in North America. Though small, the tax broke new ground, introducing the necessary approach of making carbon polluters pay. Not surprisingly, detractors described it as punishment.

A lot has changed since then. British Columbia has joined Quebec as a national leader on global warming. B.C.'s carbon tax, implemented within months of its announcement, starts at a level five times greater than Quebec's and quickly ramps up even higher. B.C. also plans to implement a regulated cap-and-trade system that mandates emission reductions from heavy industry. (Quebec recently matched that by announcing its own cap-and-trade system.) B.C. also introduced mandatory targets for reducing pollution that causes global warming. Strong standards for vehicles, similar to those proposed by California, and a more energy-efficient building code were also announced. And finally, the B.C. government committed to being carbon neutral by 2012 and is encouraging B.C. municipalities to do the same, with 123 on board already.

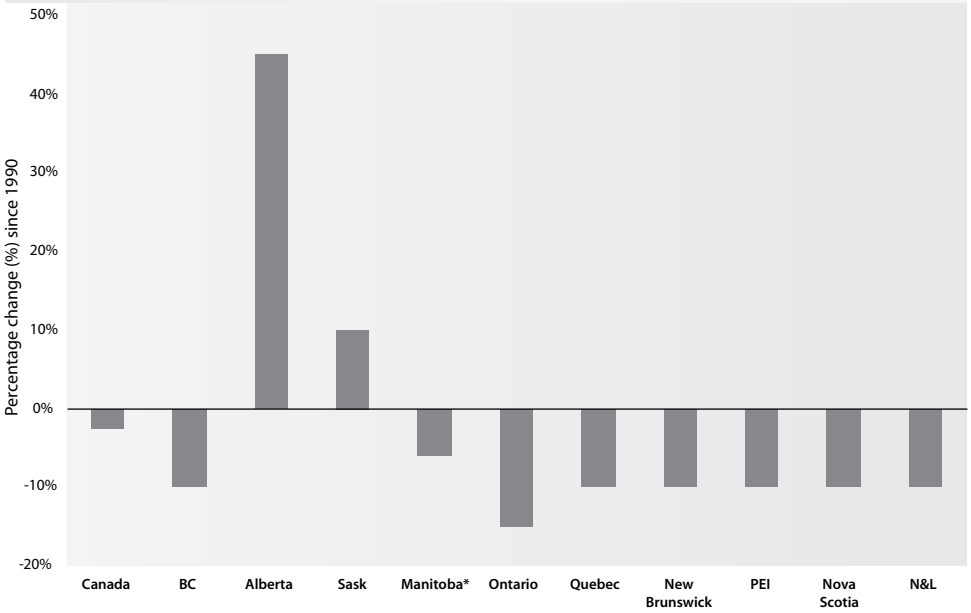
Other provinces are also moving forward. Manitoba adopted the legislated targets from B.C. and complemented them with an updated climate change plan that, in comparison to its 2002 plan, better addresses its most polluting sectors. Ontario, previously taking a piecemeal approach to its GHG emissions, acted resolutely in 2007 and developed a

more comprehensive climate plan. More recently, it filled in one of the bigger holes in its original plan by announcing a cap-and-trade system for heavy industry.

Even provinces that had been indifferent or hostile to the idea of fighting global warming came on board. Saskatchewan's former NDP government, ranked last on previous David Suzuki Foundation assessments of climate change plans, introduced its first plan in 2007 with an ambitious target for GHG reductions. (On winning the November 2007 election, the Saskatchewan Party kept the target but scrapped major elements of the plan.) New Brunswick similarly introduced an inaugural plan with an ambitious target. Most provinces and territories now have targets to reduce emissions below 1990 levels by 2020 (Figure 1).

Four provinces – Quebec, B.C., Ontario, and Manitoba – have committed to a cap-and-trade system with hard caps, a clear denunciation of the intensity-based approach of the federal government. This means that three quarters of the Canadian population contributing half of Canada's greenhouse gas emissions now live in provinces with stronger regimes for emissions from heavy industry than that of the federal government.

FIGURE 1 2020 Target for GHG Emissions



*Manitoba's GHG reduction target is for 2012. It does not yet have a 2020 target.

Weak Federal Programs

These are important developments in the face of a weak federal approach to global warming. The federal government's tactic was first to axe a suite of funding programs and then bring them back with less money. Stephen Harper's Conservative government rightly criticized the previous Liberal government for having a poor record on climate

change, largely because it emphasized exactly the type of incentive programs that have now been reinstated.

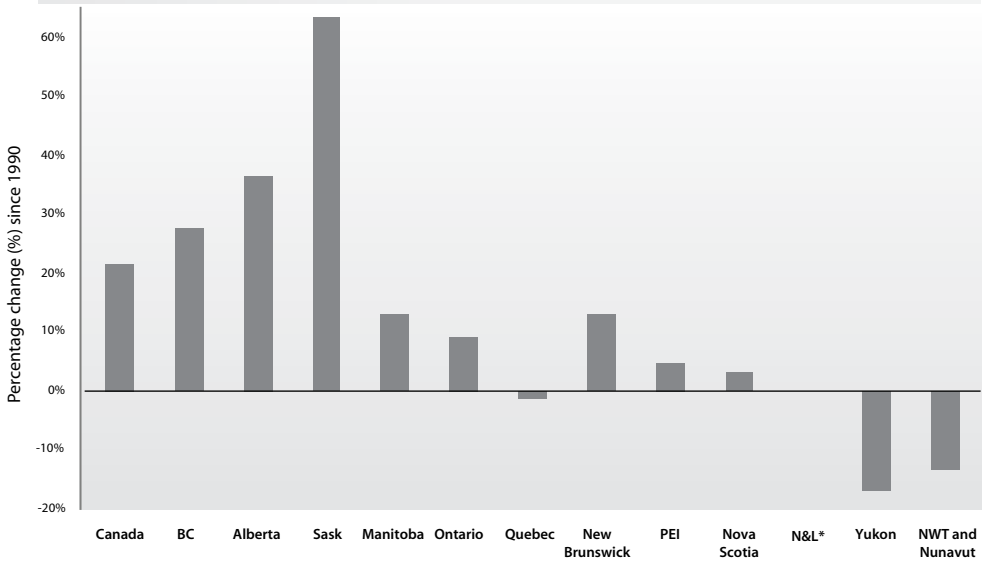
The present government's recently released "plan" mandated by the *Kyoto Protocol Implementation Act* – an Act passed by opposition parties and opposed by the governing Conservatives – shows the ineffectiveness of this approach. The plan, released only to comply with the law, showed that many of the expected emission reductions for these programs had to be revised downward from last year's projections.

The federal approach to making polluters pay for carbon emissions will take four years to develop and will be a weak and already discredited intensity-based system. So far, only governments that clearly oppose action on climate change have used intensity targets (GHG emission reductions per unit of economic activity, like a barrel of oil produced), and their emissions have continued to rise. Indeed, four independent analyses (Deutsche Bank, the C.D. Howe Institute, the National Roundtable on the Environment and the Economy, and the Pembina Institute) found that the government will not even meet its weak target for 2020. The C.D. Howe Institute predicted that emissions will likely continue to rise.[1]

More Progress Needed

Most provinces have stronger targets than the Canadian government and stronger policies to achieve them. But all is not perfect at the sub-national level. Close to two decades of inaction have left most provinces, and the country as a whole, with much higher greenhouse gas emissions than they had in 1990 (Figure 2).

FIGURE 2 Increase in GHG Emissions, 1990 to 2006



*Newfoundland and Labrador's GHG emissions are the same for 1990 and 2006.
Source: Environment Canada (2008).

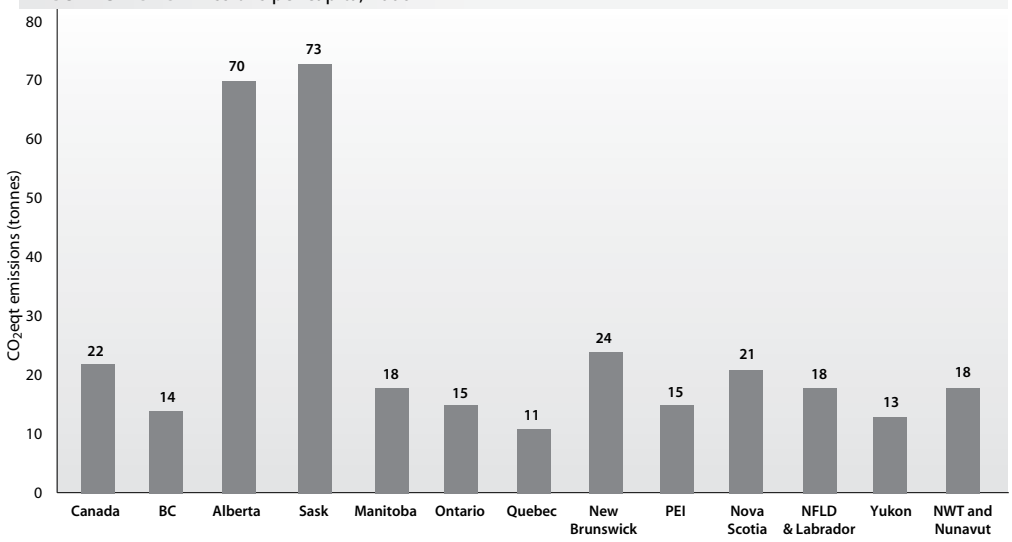
Releasing a climate change plan does not in and of itself reduce global warming. So, although more and better plans have come out over the past two years, provinces need to be judged on their performance in tackling the problem, not just on the theoretical merits of their plans and policy proposals. The only measure that matters is emissions, specifically whether they are going down or not.

Fortunately, in some cases, emission reductions have begun. Several provinces have recorded GHG emission reductions in the last year of available data (2006). Some have decreased emissions over the past three years, indicating that some climate change policies are starting to show benefits. When Ontario, for example, shuts down one of its coal-fired power plants and increases renewable energy, conservation, and nuclear capacity, it is not surprising that emissions go down. (Note that many experts and most members of the environmental community, including the David Suzuki Foundation, believe that the province can reduce emissions more quickly and more substantially by putting money into safer, cleaner, and more cost-effective technologies – namely renewable energy and energy efficiency – rather than funding nuclear options.)

All the emission reductions need to be put into perspective, however. Yes, climate policies are starting to make a difference. But the latest inventory of Canada's GHG emissions also shows that some emission reductions happened for reasons other than good public policy. The shutdown of an energy-intensive and polluting mine in the Yukon led to a seemingly impressive reduction in GHG emissions for that territory, but that was an economic decision. Warmer winters in many parts of the country have meant less energy was required to heat homes and buildings, the result being fewer emissions. And Nova Scotia and New Brunswick experienced a lot of precipitation in 2006, so hydroelectricity production was high and polluting power plants could be kept silent for longer periods of time.

The policy fundamentals that would result in systematic and sustained pollution reductions for the country as a whole are not present…yet. The most important and disturbing reason for this is that provinces with some of the highest levels of emissions are doing little to reduce them (Figure 3).

FIGURE 3 GHG Emissions per capita, 2006



Source: Environment Canada (2008).

Canada's per capita carbon emissions are among the highest in the world. The average Australian or American produces higher levels of GHGs than a Canadian, but just barely.[2] Other countries with comparable economic and geographic conditions have much lower emissions per person, in many cases a small fraction of ours. The twin antennae sticking out in the above Figure – per capita emissions for Saskatchewan and Alberta that are three times the national average – represent visual justification for concern.

Fair Share on Climate Change

A 2020 GHG target range of 25 to 40 per cent reductions below 1990 levels is one being considered for industrialized countries at the United Nations Kyoto negotiations. The best science indicates that this level is necessary to avoid dangerous climate change. For Canada to take its full responsibility in avoiding dangerous climate change, the country would therefore have to reduce emissions to at least 25 per cent below 1990 levels by 2020.[3] By 2050, Canadian reductions of at least 80 per cent below 1990 levels are required.

These 2020 and 2050 targets are in a federal bill that has passed three readings in Parliament and is now being considered by the Senate. Provinces are also establishing their own 2020 targets. Most have chosen targets that are either 10 or 15 per cent below 1990 levels by 2020 (see Figure 1 above). These fall short of the science-based targets but go well beyond the ambition of the governing federal Conservatives.

But without Alberta doing anything substantive on global warming, it will be impossible for Canada as a whole to do its fair share internationally. Alberta's disregard for the magnitude of the challenge means that every other province could have zero emissions and Canada would still be far from the necessary 2050 target. Nothing calls out for concerted federal government action on climate change more than Alberta's callous indifference to its impacts on the planet.

However, given that the federal government is following a similarly irresponsible stance on global climate change, the next best option is for every province to move forward in cooperation with other jurisdictions (including regional initiatives with U.S. states) that understand the threat. The evidence is clear that serious action on climate change carries a much lower economic cost than the cost of doing nothing other than trying to adapt to profound climate changes.[4] And the longer a province, territory, or country waits before acting, the more the costs rise. Thus, it makes sense for provinces to lead and seize the promising economic opportunities associated with a clean-energy economy. Alberta and the federal government will undoubtedly have to follow.

A Comprehensive Plan

So what would a comprehensive climate change plan entail? It is quite simply a matter of looking at all the sources of greenhouse gas emissions and systematically implementing the policies that have been shown to be most effective in curtailing those emissions.

An important place to start is heavy industry, broadly including electricity, the oil and gas sector, and manufacturing. These sectors are responsible for nearly half of Canada's global-warming pollution. They can no longer be allowed to freely dump carbon dioxide and other greenhouse gases into the atmosphere. Two key strategies are available to place a cost on that pollution and provide incentives for reducing it:

- A cap-and-trade system that regulates emission reductions while also allowing firms that have reduced emissions beyond their target to sell permits to other firms that have not. The level of reductions is set and known, but the market will determine the cost of the freely traded permits.
- A carbon tax on all greenhouse gas emissions. Though the cost of the pollution would be known for polluters, the exact amount of GHG reductions will be unknown, though it would provide clear incentives to reduce them.

B.C. and Quebec already have a broad carbon tax, and four provinces (Ontario, Manitoba, B.C., and Quebec) will join U.S. states to implement cap-and-trade systems. One smart way forward is to use the B.C. model: implement a carbon tax, which can be done quickly, while developing and implementing the rules for a cap-and-trade system.

In addition, we need strong policies to ensure that municipalities and provinces can move quickly away from reliance on fossil fuels and use renewable energy sources to their full potential. This transition is not only essential to reduce emissions but also to create a new industrial manufacturing base to provide new jobs for Canadians. Germany and Spain are leading on this front and have created strong domestic renewable-energy industries by implementing policies that provide access to the grid and fair compensation for renewable-energy developers. So far, only Ontario has implemented feed-in tariffs, as they are broadly known, though other provinces are investigating the option and are charting the success of the Ontario initiative.

Transportation policies are also needed, since this sector contributes about one quarter of Canada's emissions. One widespread trend across Canada since 1990 has been a shift from cars to gas-guzzling SUVs, vans, and pickups, thus increasing emissions. That trend is starting to reverse as gas prices rise (because of economic factors and carbon taxes), but regulated standards, such as those in California, are also needed to make vehicles of all sizes and classes more fuel-efficient. B.C., Manitoba, Quebec, Nova Scotia, and New Brunswick have all committed to California standards.

Regulations to curb urban sprawl and new initiatives to increase investment in alternatives like public transit will also help reduce emissions. A strategy to curb the growth in distances travelled and GHG emissions from transport trucks is also necessary.

The building code is one area where provinces have exclusive jurisdiction, yet few have exercised it to implement strong building codes. That is starting to change, although no provinces have integrated green heat options such as solar hot-water heaters and geothermal energy. New codes are expected from Quebec, B.C., Ontario, Manitoba, New Brunswick, Nova Scotia, and Nunavut. Another good policy is to complement the federal building retrofit program by providing subsidies for energy audits or supplementing federal grants to improve energy efficiency.

Waste is also an important source of greenhouse gas emissions. As garbage or wood waste decomposes in landfills, it releases methane into the atmosphere. Adding to the impact is the fact that methane is 23 times more potent as a greenhouse gas than carbon dioxide. However, it is quite straightforward to cap landfills, capture most of the methane, and use it as an energy source. B.C., Quebec and Ontario have announced regulations along these lines. Other provinces should require landfills to capture their methane emissions and provide financial resources for smaller landfills to do so as well. Even more importantly, provinces should ensure much better waste-management policies and programs, such as municipal composting, to reduce the amount of waste created in the first place. Since several municipalities across Canada have gained valuable experience in diverting greater amounts of their waste, new initiatives should be developed to share expertise and ideas on program design.

Provinces need to protect natural carbon stores in forests and peatlands. We know that the best approach to addressing the carbon stored in natural forests and wetlands is to leave it where it is. So far, no province has done this adequately, but it should be an important part of any climate change strategy.

The above recommendations have all been about reducing greenhouse gas emissions in order to limit global warming as much as possible. This is absolutely crucial, since the science is clear that the difference between a little global warming and a lot is greater devastation, especially for those in Canada and abroad who are most vulnerable to changes. We still have the choice to determine how much more warming we will allow.

However, regardless of the choices we make, the impacts of the climate changes that Canada is already facing will get worse in the short term. Therefore, it is vital for provinces to put significant resources into researching what changes will occur and what impact they will have on human and natural systems, and then developing strategies to adapt as much as possible to those changes. So far, many provinces have addressed adaptation in their plans but few have fully developed strategies.

Finally, provinces need to include accountability and governance measures that will ensure the success of their climate change strategies. A real test of resolve and commitment to tackling climate change is whether structural governance evolves to make climate change an issue that is addressed across all of government. Several provinces have done this by creating climate change secretariats that report directly to the premier or cabinet or by establishing cabinet committees on climate change that include environment departments, as well as economic and finance ministries. A strong message needs to come from the top that these new structures have a mandate to create real action and change, not just revisit historically entrenched positions. B.C., Quebec, Ontario, and Nova Scotia have established strong governance structures with far-reaching mandates.

Also, progress on climate change action plans and programs – and whether they are delivering emission reductions – needs to be regularly assessed in a transparent manner by independent bodies. Governments can learn much from these and modify their approach based on successes and shortcomings. Some mistakes are inevitable when transforming whole economies in such a fundamental way, so a flexible approach makes sense. With few exceptions, most provinces have a mechanism for reviewing and reporting on progress.

Conclusion

Something important is happening in Canada. Momentum is building among provinces, propelled by a growing public realization that tackling climate change immediately and with conviction is in our long-term interest. The federal leadership vacuum is being filled with provincial leaders and governments that are being rewarded for action with increased public support.

Strong action must be celebrated and augmented. Those provinces that have good plans need to continue to implement them. Others on the cusp of action and leadership have an opportunity to join the leaders, but also to move forward on their own. Eventually, those who refuse to act on global warming, and instead provide only rhetoric on the importance of doing so, will have to resolve their inconsistencies.

Leadership on this issue will be rewarded, since clear signals indicate that momentum is building elsewhere as well. Federal opposition parties are acting together to pass important pieces of legislation that will eventually, and inevitably, compel global-warming action in Canada. The U.S. dynamic is similar to ours: A national failure in leadership has compelled states to move forward and fill the void, with momentum eventually overwhelming intransigence at the top. International leaders, and there are many, are discussing more concerted global action. Those who join this movement will be able to seize important opportunities – business, economic, and governance – and be at the leading edge. Increasingly it looks like Canadian provinces are coming to this realization.

TABLE 1

Ranking of Provincial/Territorial Government Climate Change Policies

Best	British Columbia	**Poor**	Newfoundland
Very Good	Quebec		Yukon
Good	Manitoba		Northwest Territories
	Ontario		Saskatchewan
Fair	New Brunswick	**Worst**	Alberta
	Nova Scotia		
	Prince Edward Island		
	Nunavut		

TABLE 2

2008 Assessment of Provincial/Territorial Government's Climate Change Policies

CLIMATE CHANGE ACTION PLAN AND POLICIES – MITIGATION	BC	ALBERTA	SASKATCHEWAN	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	PEI	NOVA SCOTIA	NEWFOUNDLAND & LABRADOR	YUKON	NWT	NUNAVUT
Has a current climate change action plan?	Y	Y	N	Y	Y	Y	Y	N	A	Y	A	Y	A
Set emission reduction targets comparable to Kyoto?	N	N	N	Y	N	Y	N	N	N	N	N	N	N
Has set 2 degrees Celsius above pre-industrial temperatures as the upper limit for average global warming?	N	N	N	N	N	Y	N	N	N	N	N	N	N
Addressed emissions from sector with highest emissions?	Y	N	N	Y	N	Y	N	N	N	N	N	N	N
Addressed emissions from sector with fastest-growing emissions?	Y	N	N	Y	N	Y	N	N	N	N	N	N	N
Has a broad-based carbon pricing policy (carbon tax or cap-and-trade)?	Y	N	N	A	A	Y	N	N	N	N	N	N	N
Has meaningful energy efficiency, conservation and renewable energy policies?	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	A
Has strong building code for energy efficiency?	A	N	N	A	A	A	A	N	A	N	N	N	A
Has meaningful transportation policies?	Y	N	N	N	N	Y	A	N	Y	N	N	N	N
Has policies that address urban sprawl?	Y	N	N	N	Y	N	N	N	N	N	N	NA	NA
Has meaningful policies to address emissions from industry?	Y	N	N	A	A	Y	N	N	N	N	N	N	N
Has a program to address emissions from government?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	A	Y	Y
Has a policy or program to protect natural carbon stores in forests and peatland?	N	N	N	N	N	N	N	N	N	N	N	N	N
Uses the full suite of policy instruments, including regulations and disincentives?	Y	N	N	N	Y	Y	N	N	N	N	N	N	N
GHG EMISSIONS TRENDS													
Has reduced emissions since 1990?	N	N	N	N	N	Y	N	N	N	N	Y	Y	Y
Has reduced emissions 2003-2006?	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reduced emissions in 2006?	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y
CLIMATE CHANGE ADAPTATION													
Has a meaningful plan to adapt to climate change impacts?	N	N	N	N	N	Y	A	N	N	N	N	A	A
Has a science advisory body that advises government on adaptation to climate change?	Y	N	N	N	Y	N	N	N	N	N	N	N	A
GOVERNANCE AND ACCOUNTABILITY													
Has established a cross-governmental climate change secretariat?	Y	N	N	N	Y	Y	N	N	Y	N	A	N	N
Reports on actions and outcomes from climate action plan?	Y	Y	N	Y	Y	Y	Y	N	Y	Y	A	Y	N

Y=Yes N=No A=Announced but not yet implemented. NA=Not applicable

British Columbia

British Columbia has become a leader on climate change through the implementation of strong policies like a carbon tax and California vehicle standards.

STRENGTHS:

- Legislated reasonably ambitious GHG targets for 2020.
- Introduced the first significant carbon tax in North America.
- Committed to establishing a cap-and-trade system for heavy industry.
- Committed to California standards for vehicles.
- Created a climate change secretariat within premier's office.
- Has budgeted $1 billion over four years to action on climate change.
- Introduced an array of legislative initiatives promoting energy efficiency, clean energy, and local-government action on climate change; discouraging coal-based power generation; and requiring capture of GHGs from landfills and natural-gas wells.

WEAKNESSES:

- Continued push of contradictory policies related to oil and gas development:
  - Committed over $1 billion in subsidies to oil and gas companies over five years.
  - Committed to lifting the moratorium on offshore oil and gas development.
- Remains committed to building more highways, including twinning the Port Mann Bridge and expanding Highway 1 within the Metro Vancouver area.

MISSED OPPORTUNITY:

- Has not put into place sufficient environmental safeguards on new energy-generation developments (e.g., small hydro), including adequate land-use planning, regulations, and enforcement provisions.

Greenhouse Gas Emissions

GHG emissions in British Columbia have increased by 27 per cent since 1990, although they have grown a more modest two per cent in the past three years.[5] Despite this, B.C.

still has the second lowest GHG emissions per capita of any Canadian province, behind Quebec.[6] The sector contributing most to global warming is road transportation (25 per cent of provincial GHG emissions), followed closely by the oil and gas sector (23 per cent) including fugitive emissions, and industry (13 per cent).[7]

The oil and gas sector is responsible for the biggest increase in GHG emissions since 1990, due to significant increases in natural-gas production.[8] As in many other provinces, emissions from road transportation have also increased and for the same reasons: a shift to large personal vehicles such as SUVs and pickups, a shift from rail cars to transport trucks for the shipment of goods, and a lack of green transportation infrastructure such as transit and walking and biking infrastructure.

Climate Change Plans and Policies

British Columbia has taken a unique approach to tackling climate change. While some provinces have focused on developing climate change plans, to much fanfare, and then allowed the plans to languish on the shelf, B.C. has undertaken an ambitious legislative and budgetary agenda even before its climate change action plan has been released. The plan was released in June 2008.

B.C. Premier Gordon Campbell unveiled the province's new direction on climate change policy in the 2007 Throne Speech, when he committed the province to a 33 per cent reduction in GHG emissions below 2007 levels by 2020.[9] This corresponds to about a 10 per cent reduction in emissions below 1990 by 2020. It still falls short of the science-based targets required to avoid dangerous climate change,[10] but it is reasonably ambitious given the growth in emissions since 1990 and the still relatively low emissions per capita in the province. According to B.C.'s *Greenhouse Gas Reduction Targets Act*, interim targets for 2012 and 2016 must be set by the end of 2008.

Another significant policy announcement made by the premier in that speech was the creation of the Climate Action Secretariat, and its placement within the Office of the Premier. This move allowed climate change to be addressed through a high-level body that reports directly to the premier and that has the ability to manage the issue across all government agencies. This organizational model is one that provinces are increasingly adopting and should be considered by all provinces and the federal government.

Other important policies from the Speech include:

- All new and existing electricity produced in B.C., including coal-fired power plants, will need to have zero net emissions by 2016.
- Emissions from oil and gas production will be reduced to 2000 levels by 2016.
- B.C. will join a cap-and-trade system with interested partners.
- New vehicles sold in B.C. will have to pass fuel-efficiency standards regulations by 2009.

Since the Throne Speech, the premier and the government have strengthened their commitment to tackling global warming through the development and implementation of many policies. These include a new provincial energy plan, a memorandum of understanding with municipalities on climate protection, the release of a new transit-oriented transportation plan, the 2008 provincial budget, and the introduction of numerous pieces of legislation enabling the province to take action in reducing GHG emissions.

CARBON TAX

The policy that has received the greatest attention is B.C.'s new revenue-neutral carbon tax. This tax-shifting measure was unveiled in the 2008 budget and was implemented on July 1, 2008.[11] The tax was initially set at $10 per tonne of carbon dioxide emissions, too low to have much impact on emissions in the short term, but it is scheduled to rise by $5 per tonne in each of the next four years, reaching $30 per tonne of CO_2 in 2012.

B.C.'s carbon tax is a landmark development, even though it is not, as some have claimed, the first carbon tax introduced in North America, or even Canada: Quebec has been collecting a tax on carbon emissions since September 2007. However, Quebec's tax was not intended to discourage the use of fossil fuels, thereby reducing greenhouse gas emissions. Instead, Quebec's tax was set at about $2 per tonne of emissions and its intention was merely to raise revenue in order to implement the province's climate change action plan.

B.C.'s carbon tax, by contrast, will reduce emissions, especially as it rises to levels that will provide incentives for businesses and individuals to make investments, change behaviour, and reduce emissions. The tax was designed to be revenue neutral, with all tax income returned to British Columbians through rebates to low-income earners (those most exposed to increased costs from the carbon tax), and cuts to personal income, corporate, and small-business taxes.[12] Preliminary analyses conducted by a well-known environmental consultant (M.K. Jaccard and Associates) estimate that the carbon tax will reduce B.C.'s emissions by three million tonnes, contributing nearly 10 per cent toward B.C.'s emissions target for 2020.[13] If the province increased the carbon price signal after 2012, as it should, GHG emissions would be reduced even further.

Although the B.C. government chose not to do so, a strong case can be made for governments to use significant portions of the revenue from a carbon tax to fund emission-reductions projects. First, some sectors that can play a positive role in reducing emissions do not respond significantly to increased carbon prices and are not easily regulated. Some industries that would benefit from funding programs include the building retrofit trades, public transit, and, at least in the short term, green-power options. Second, polling in Canada shows that the public generally supports using the revenue in this way, as long as the money is transparently earmarked for such programs.

It should be noted that the province has budgeted more than $1 billion over four years to other climate change programs[14] and has released a transportation plan calling for provincial investment of $5 billion in public transit by 2020.[15]

CAP-AND-TRADE SYSTEM FOR INDUSTRY

In April 2007, British Columbia joined the Western Climate Initiative (WCI), a growing initiative that now includes seven American states and three Canadian provinces (Manitoba and Quebec are also members). One of the main initiatives of the WCI is the design of a regional cap-and-trade system that would limit the net amount of greenhouse gases emitted from a range of industry sectors (and possibly from transportation and heating fuels) throughout the WCI jurisdictions. All large emitters within those sectors would be required to meet an emissions-reduction target, with each participant having the potential to create and sell credits if it reduced emissions below its target.

A broad-based and effective mechanism for putting a price on carbon – such as a cap-and-trade system – is an essential element to a climate change plan. The "cap" establishes an absolute emission-reduction target for industry, while the trading mechanism provides a price incentive to reduce emissions. However, the rules have yet to be established, and only the final design will determine the environmental effectiveness of the system and the credibility of the approach in the eyes of British Columbians.

For example, the overall target for all jurisdictions has been set by simply doing a weighted average of the different states' and provinces' emission-reduction commitments. When the final targets are negotiated and set, it is paramount that B.C.'s cap-and-trade targets for 2020 be at least as strong as its overall greenhouse gas reduction target for the province as a whole. Indeed, a valid argument can be made that this cap-and-trade reduction target needs to be stronger than that for the province as a whole, since emission reductions from industry will happen at a lower cost than emission reductions from non-capped sectors like transportation or buildings.

The rules of the cap-and-trade system also need to ensure the integrity of the system. For example, all credits should be auctioned so that governments do not provide windfall profits to the region's largest polluters (i.e., excess emission "allowances" that they can sell to others). Loopholes that weaken the system, such as a price cap on credits, must be avoided.

If forestry offsets are to be allowed, rules must be set to ensure their credibility. Forestry offsets are carbon-emission credits that proponents wish to generate through planting trees, forest-management practices, and reducing emissions from deforestation. The rules must address the possible temporary nature of carbon storage in forests, ensure that biodiversity impacts are avoided, and guarantee that emission reductions can be accurately verified.

TRANSPORTATION

The transportation sector is the greatest source of emissions in B.C. As noted above, the province has made numerous commitments to address these emissions. Since early 2007, the B.C. government has been Canada's most vocal advocate for the adoption of California's new CO_2 tailpipe emission standards for vehicles. At the premiers' meeting in Moncton in summer 2007, B.C.'s premier insisted several times that 12 of 13 premiers had agreed to California standards. Ontario was the exception. B.C.'s commitment was confirmed when it announced it would join the Western Climate Initiative, whose membership requirements entail adopting California's vehicle standards.

B.C.'s transportation plan also proposes an $11.1 billion expansion of public transportation for the Lower Mainland, Victoria, Kelowna, and more than 20 other B.C. communities.[16] Of that, the province has committed $4.75 billion and will ask the federal government for $3.1 billion. Local governments and provincial transportation organizations would provide the remaining funds. In its 2008 budget, the B.C. government allocated $370 million to public transit over the next four years, 13 per cent of its commitment up to 2020. The plans include rapid-transit extensions and additional buses and bus services, leading to increased ridership in many places, according to the province.

All of this is laudable, but it is in stark contrast to the Gateway Program, the province's plan to twin the Port Mann Bridge and expand Highway 1.[17] Local groups such as the Livable Region Coalition have been very critical of the Gateway Program.[18] Health Canada has called the province's claim that the project will reduce air pollution "misleading".[19] And Environment Canada, citing research on highway construction, has estimated that GHG emissions will increase even more than the province anticipates.[20] B.C., however, remains committed to it, even in the face of rising gas prices and an increasing demand for adequate and affordable alternatives to private automobile use.

B.C. has also introduced a bill that mandates renewable fuel content for gasoline and biodiesel. It is only enabling legislation; for regulations to be effective, they must include strict environmental criteria to ensure the greatest GHG benefit is derived from renewable fuels like ethanol that do not use food crops such as corn or canola in their production. The only way to ensure this is to require the use of cellulosic forms of ethanol, which are based on forest and agricultural residues.

ENERGY EFFICIENCY AND CONSERVATION

In most jurisdictions, energy efficiency and conservation provide the lowest-hanging fruit for reducing greenhouse gas emissions, in some cases allowing for cost savings. Unfortunately, these tools are often neglected by governments and are poorly understood by the general public, and therefore the information and financial barriers remain in place.

B.C. has, however, rightly committed itself to significant policies to boost the use of energy efficiency and conservation to fulfill the province's energy needs. The BC Energy Plan required that 50 per cent of new power demand be met through efficiency and conservation. Bill 15, now before the legislature, requires that demand-side management be considered as a means of meeting supply needs.

The last time an assessment of provincial climate change policies was made, B.C. was criticized for implementing a building-efficiency program that was entirely voluntary and therefore unlikely to be successful in reducing emissions. According to its Energy Plan, the province has a new mandatory building code under development, but we do not yet know just how green the new Green Building code will be.

RENEWABLE ENERGY

B.C. has also done a reasonable job of moving away from fossil fuel–based power and promoting clean and renewable energy. The BC Energy Plan stated that any new coal-fired power plants (B.C. presently has none) would not be allowed to emit greenhouse gases. This has challenged coal companies, electric utilities, and their supporters to show that a so-called "clean coal" plant – one with the ability to capture and geologically store carbon emissions – could be economically viable. Subsequently, the plans to use coal in these plants were put on ice (one was cancelled, one may go ahead using biomass as fuel instead of coal). This puts into question the veracity of the claims made by so-called "clean coal" advocates.

Bill 15, mentioned above, included not only changes to how utilities should address energy efficiency, but also stipulated that 90 per cent of the new electric capacity would have to be from "clean or renewable energy" sources. The definition has not yet been made public but it should include rigorous performance standards.

The same bill establishes a policy similar to a standard offer contract (SOC) for small-scale renewables that Germany and Ontario have implemented. An SOC normally guarantees that any production of renewable power in the province would get access to the grid at a fixed price, making it much easier for project developers to get financing. However, the B.C. policy is significantly weaker because it will buy the green power at a lower price, and regulatory hurdles remain, taking away the one big advantage of the SOC: certainty.

Finally, Bill 31 – like Bill 15, also enabling legislation – will allow the province to set regulations for emissions from landfill sites and electricity-generation facilities. It will also allow harvested timber to be burned as an energy source.

This brings us to one of the serious, and so far unaddressed, problems with rapid expansion of even small-scale renewable-energy sources. Existing B.C. policies remain inadequate to prevent the approval of renewable power-generation projects that have unacceptably high environmental impacts, especially when one considers cumulative

impacts. The province needs to undertake a coordinated ecosystem-based management approach that examines the potential of renewable energy throughout the province and assesses the ecological value and resiliency of potential areas of development. In other words, the province needs to ensure that British Columbians achieve maximum green energy benefit with minimum local ecosystem cost.

This lack of concern for the environmental impacts of energy development appears to be a trend for B.C. It is replicated in the government's approach to the fossil-fuel industry: providing subsidies to the industry and wanting to lift the moratorium on offshore oil exploration and development.

GOVERNMENT OPERATIONS

B.C. is becoming a leader in addressing emissions from its own operations and in engaging municipalities throughout the province. The government has committed to becoming carbon neutral by 2012. This is a huge step.

It has also spearheaded a Climate Action Charter, a memorandum of understanding with local governments, to collectively address greenhouse gases. To date, 115 local governments in B.C. have committed to measuring and reporting their emissions, pledging to become carbon neutral, and working toward creating compact, more efficient communities.

RECOMMENDATIONS:

- Redirect proposed funding to twin the Port Mann Bridge and expand Highway 1 into better public transit and green infrastructure for goods movement.
- Phase out the roughly $200 million per year in subsidies to the oil and gas sector and uphold existing moratoria on coastal oil and gas exploration and drilling in B.C. waters.
- Strengthen the environmental and planning requirements for energy-project development and oversight in B.C. to promote the development of renewable energy and ensure that these developments have low environmental impacts.
- Continue to show leadership among provinces and with the federal government.

Alberta has been ranked last on its climate change policies due to high and growing emissions and a plan to increase them until at least 2020.

Alberta

STRENGTHS:

- Has reduced greenhouse gas emissions from government operations by approximately 50 per cent through energy-efficiency improvements in its buildings and the purchase of renewable power.
- Has the highest installed wind capacity in the country.

WEAKNESSES:

- Has the highest GHG emissions in the country, though it is only fourth largest in population.
- Has the second-highest per capita GHG emissions in Canada and the second-highest growth in emissions since 1990 (after Saskatchewan).
- Has produced a weak and vague climate change action plan that promises to increase global warming pollution until 2020 and be 22 per cent above Kyoto targets by 2050.
- Has legislated an intensity-based emissions-trading system for heavy industry that will not reduce emissions below current levels.
- Has done nothing to curtail highly polluting tar sands development.
- Has no plan to reduce coal-fired power, which is responsible for approximately 80 per cent of its electricity.

MISSED OPPORTUNITIES:

- Recent debates on the oil and gas royalty structure and a provincial election that included tar sands and global warming as prominent issues gave the premier and government political space to take much more serious action on climate change. They failed to do so.

Greenhouse Gas Emissions

Alberta's greenhouse gas emissions rose again in 2006 and they now stand 37 per cent above 1990 levels.[21] The increase in GHGs since 1990 alone is greater than the *total* emissions of all four Atlantic provinces together. Per capita GHG emissions are three times

the national average and are only slightly behind those of Saskatchewan, making per capita GHG emissions in these two provinces the highest in the world.[22] The oil and gas sector is the greatest emitter in the province, responsible for almost 40 per cent of total emissions.[23] Oil and gas emissions are also rising the fastest, responsible for a staggering *annual* increase of 17 megatonnes since 1990.[24]

The electricity sector is the second-most polluting sector, due to its overwhelming reliance on coal-fired power, and is also responsible for significant growth in emissions since 1990.[25] Even in this case, however, the oil and gas sector is complicit, since the greatest factor in increased power use in the province is its use by the oil and gas sector.[26]

Climate Change Plan and Policies

It is astounding that, after all the attention and concern paid to climate change over the past few years, Alberta decided to release a climate change plan in January 2008 that is weaker and more vague than its 2002 plan.[27] The new plan anticipates that emissions in the province will continue to grow until 2020 (previously, the province planned to have emissions peak between 2010 and 2020).[28] The province's target for 2050 is arguably even worse, at 22 per cent above the Kyoto target 40 years after its deadline.[29]

The science of climate change shows that reductions of at least 80 per cent below 1990 levels are needed by 2050 if developed countries like Canada are to avoid dangerous climate change.[30] Alberta cannot claim "leadership, responsibility, action" as its plan does when the province plans to be above 1990 levels by 2050.

The report sends two principal and contradictory messages: first, that the province is showing leadership on climate change, and second, that action on climate change is impossible without crippling the economy. The Alberta government states in the plan: "we are not prepared to forgo the opportunities our strong and vibrant economy provides."[31]

It is because the government believes the second message – that there is a trade-off between a healthy environment and a healthy economy – that it cannot deliver on the first, that it is providing leadership *or* responsibility *or* action.

INDUSTRY

With few exceptions, the climate change plan delivers mostly vague or meaningless policy prescriptions. One exception is the section on an emissions-trading system with industry, where the policy is not vague, just very weak. The emissions-trading system has been in place since July 2007 and the plan states correctly that Alberta was the first jurisdiction in Canada to regulate GHG emissions.[32] The problem is that the system is based on emissions intensity – GHG emissions per unit of economic activity, such as a barrel of oil. It

will not slow down very significant growth in the tar sands and it will result in significant *increases* in emissions.

Another reason global-warming pollution will continue to go up is that companies can meet 100 per cent of their obligations simply by paying $15 per tonne into an Emissions Management Fund, which will be used to "drive innovation, test and implement new technologies, and achieve the goal of greening energy production."[33] The investment activities of the fund provide no guarantee that the money paid into it will actually result in real emissions reductions. A government news release issued a month after the first compliance period (March 2008) shows that one half of companies' obligations were met by paying money into the Fund, delivering reductions on paper but not in reality.[34]

Because 70 per cent of Alberta's emissions come from industry, the plan admits that its approach will lead to continued emissions increases until 2020. There is no guarantee that emissions will actually peak by then either, since the vast majority of the emission reductions are supposed to come from carbon capture and storage (CCS).

An unproven technology should never form the basis of a climate change plan, and Alberta's plan includes several troublesome caveats.[35] First, a CCS Development Council will assess and recommend whether to regulate CCS standards. If the council does recommend regulation, the province can then decide if in fact it will or not. And finally, the stated regulations from the plan are that facilities would be "capture ready". In other words, facilities could add the capture and storage option if and when the technology was available. So many hurdles have to be cleared, not the least of which is to ensure that the technology actually works, in order for Alberta to deliver reductions.

GOVERNMENT

The Alberta government has shown leadership in one area, regarding GHG emissions from its own operations. Surprisingly, the plan does not mention this, but it was addressed in its 2002 plan and referenced in a glossy report from 2007.[36] According to that report, the government has reduced its own emissions by 50 per cent since 1990.[37] It has done so by completing energy improvements on every government-owned building, adopting a strong building code for the construction of new government buildings, and purchasing 90 per cent of its electricity from renewable and alternative energy sources.[38]

However, the emission reductions need to be put into perspective. They represent a decrease of 0.025 per cent of the province's total emissions.

ENERGY EFFICIENCY?

Other policies in Alberta's climate change plan have the potential to decrease emissions, specifically in the area of energy efficiency. The plan states that the province will develop an *Energy Efficiency Act.*[39] Such an Act could set strong standards for buildings, cars,

equipment, and appliances and could be important in addressing global climate change. However, the plan lacks details about what the Act will do and about targets for efficiency improvements.

Similarly, the promise to "implement energy efficiency standards in building codes for homes and commercial buildings" could result in strong action.[40] But we also know from Alberta's industrial regulations that regulatory standards could be too weak to actually produce environmental benefits.

ADAPTATION

The promise to develop a climate change adaptation strategy is welcome. The province already collaborates with other Prairie provinces on impacts and adaptation research. Similar to other vague promises, however, it remains to be seen if the adaptation strategy will be adequate or not.

RECOMMENDATIONS:

- Go back to the drawing board on climate change and develop an action plan that recognizes the urgency, including much stronger medium- and long-term emission-reduction targets.
- Place a moratorium on new tar sands projects until a strong regulatory system can be developed that addresses GHG emissions, water use, and biodiversity impacts.
- Develop a strategy to gradually reduce reliance on coal-fired power, through the same means used to reduce emissions from government (energy efficiency and clean power).
- Develop climate change policies for sectors that are not covered by the present plan but that also contribute to global warming, such as road transportation and agriculture.

Saskatchewan has the highest GHGs per capita in Canada but has set a target to reduce them by 2020.

Saskatchewan

STRENGTHS:

- New government has maintained reasonably ambitious targets to reduce greenhouse gas emissions to 32 per cent below 2004 levels by 2020 and 80 per cent below 2004 levels by 2050.
- Provincial government has maintained renewable-energy programs, including net metering and grants for solar hot water, small-scale wind, solar photovoltaic systems, and other small-scale renewable-electricity options.

WEAKNESSES:

- Has highest per capita GHG emissions in Canada.
- Experienced a 64 per cent increase in GHG emissions since 1990.
- Instead of addressing the greatest source of emissions, from the oil and gas sector, the provincial strategy wants to increase production, including from tar sands.
- New government abolished a $320 million fund set up by the former government in 2007 dedicated to addressing climate change.
- New government made substantial funding cuts to renewable-energy programs.
- New government eliminated Climate Change Secretariat and Office of Energy Conservation.
- No plan to change overreliance on highly polluting coal-fired power plants.

MISSED OPPORTUNITIES:

- Instead of strengthening existing climate change plan, Saskatchewan's new government gutted it, including many good renewable-energy and energy-efficiency programs.
- Partnership with federal government could have strengthened funding for renewable energy, energy efficiency, and conservation, rather than investing in carbon capture and storage, an unproven technology that would be expensive even if it could be implemented.

Greenhouse Gas Emissions

Saskatchewan's greenhouse gas emissions have increased by 64 per cent since 1990, the highest rate of growth in the country.[41] The province also has the highest emissions per capita, more than three times the national average.[42]

The three sectors with the highest emissions are also the three most responsible for the growth in those emissions. They are:

- the oil and gas sector (with 34 per cent of provincial emissions), whose emissions have more than doubled, mostly due to fugitive emissions,
- electricity production (21 per cent of total), and
- agriculture (17 per cent of total), because of explosive growth in cattle and swine populations and increased emissions from soils.[43]

Climate Change Policies

After being elected in November 2007, the Saskatchewan Party proceeded to cut or cancel many initiatives aimed at reducing greenhouse gas emissions. The previous NDP government released a climate change plan in June 2007, after years of delay and heavy criticism.[44] The David Suzuki Foundation ranked the province's approach to climate change as the worst in the country in two different assessments.[45]

Nonetheless, the long-awaited 2007 plan was an important step forward, especially given the government's previous indifference to climate change. It was combined with several concrete actions, including the introduction of net metering, the expansion of home-retrofit programs, and grants and financial assistance for renewable-energy systems in the residential, business, and municipal sectors. The former administration also launched a 300-megawatt electricity-conservation program and announced 100 megawatts more wind power, 50 megawatts using waste-heat recovery at natural-gas compressor stations and 20 megawatts of biomass, all to be in place by 2012. The 2007 program initiatives and several elements of the climate change plan were based on a strong report from the Legislative Secretary for Energy Conservation and Renewable Energy, Peter Prebble, published in December 2006.[46]

The plan itself had a number of notable features.[47] It set a reasonably strong emission-reduction target, though the government changed the baseline from 1990 to 2004, which made it seem stronger than it was. It promised a climate change secretariat, a very important structural element that recognizes the importance and relevance of action on global warming across government. No doubt its strength was its focus on energy efficiency, including a strategy, targets, and a building code for commercial buildings. The plan also promised only carbon-free electricity options in the future, but the renewable-energy

strategy dropped too many of the recommendations from the Prebble report. By far, the biggest weakness of the NDP action plan was the absence of a strategy to address the province's greatest source of emissions, the oil and gas sector, promising only to work with industry to propose recommendations by the end of 2008.

The government indicated its intention to move forward with the plan when, in September 2007, it sold its shares in the NewGrade heavy oil upgrader in Regina and used the revenue to establish a $320 million Green Future Fund dedicated to addressing climate change.[48] Money was allocated to advance energy conservation ($100 million), renewable energy ($75 million), and methane-gas capture ($20 million). Unfortunately, the largest chunk, $125 million, went to carbon capture and storage.

NEW GOVERNMENT'S APPROACH

The Saskatchewan Party has retained the previous government's greenhouse gas targets, with its leader and now premier, Brad Wall, committing to them in last fall's provincial election. Expressed as they should be, on a 1990 baseline, the targets are modest: 10 per cent above 1990 levels by 2020 and 68 per cent below 1990 levels by 2050. They are far from the science-based targets required to avoid dangerous climate change, at least 25 per cent reductions from 1990 levels by 2020.[49] However, given where provincial emissions are now, at more than 60 per cent *above* 1990 levels, much work will be required over the next decade to achieve them.

Other programs were also retained by the Saskatchewan Party. The residential home-retrofit programs are still in place, as are grant programs for solar hot water, solar photovoltaic systems, and small wind power. The new government has kept the net metering program, allowing small-scale renewable-energy producers to feed the power grid and receive a credit off their bills. The supply decisions with respect to 100 megawatts more wind, 20 megawatts of biomass, and 50 megawatts of waste-heat recovery by 2012 are still posted on SaskPower's website, and appear for now to still be SaskPower policy.[50]

The government has also made one new announcement. Owners of hybrids or other eco-vehicles will receive a 20 per cent discount from the public insurer on insurance and registration fees.[51] In 2008, 3,400 people received an average annual rebate of $172.

A large number of the initiatives taken by the former government have been cut, however. The Climate Change Secretariat was immediately dismantled and, by the spring of 2008, the Office of Energy Conservation had also been closed. The $320 million Green Future Fund was gutted, with the vast bulk of the money being diverted to highways and debt reduction.[52] A small amount of energy-conservation money appears to have been retained to fund the residential home-retrofit programs. The $75 million for renewable energy and the $20 million for methane capture are gone. The latter fund could be re-

placed by regulations to achieve the same goal, but the government has made no moves along those lines.

The $125 million for carbon capture and storage in the oil, gas, and electricity sectors that was in the Green Future Fund is also technically gone, but the government is preparing to spend funds on CCS from other sources. In fact, provincial funding for CCS may end up being much higher, given that one announced project, a "clean coal" project at the Boundary Dam Power Station, appears to have a $400 million funding gap. The $1.4 billion project will be heavily subsidized by the federal government ($240 million) and the provincially owned SaskPower ($758 million), for the purpose of capturing the carbon produced from 100 megawatts of the 813-megawatt plant.[53] Private-sector funding sources are also anticipated. However, there is currently a funding gap and a high risk of large cost overruns.

CCS for coal-fired power plants is likely the most expensive option for reducing emissions from the electricity sector, surpassing even the incredibly high cost of nuclear power. The only way to make these projects viable is to inject massive subsidies from government, including a public utility such as SaskPower, as this project does. If the utility were simply mandated to reduce emissions at the lowest cost, CCS would be at the bottom of a long list of options. In fact, in September 2007, SaskPower announced that it had shelved its plans for a brand new CCS coal-fired power plant when projected costs rose from $1.7 billion to $3.8 billion.[54] Similar projects in the U.S. and elsewhere have also been cancelled due to cost; even hundreds of millions of dollars of government money could not make them viable.

This leaves Saskatchewan in a difficult place. It has a reasonably ambitious target for greenhouse gas emissions for 2020, but at this point has no plan or strategy to get there. Saskatchewan Environment officials indicate that work has started on a new climate change plan that they hope to take to the new government by the end of 2008.

More urgency and commitment is clearly warranted. Even the previous plan would have needed strengthening in order to achieve the target, given the absence of any strategy to address the greatest and fastest-growing source of emissions, the oil and gas industry. Eliminating key components of that plan, like the Office of Energy Conservation, the Climate Change Secretariat, and funding for clean-energy options, is inexplicable and has made the Saskatchewan Party's task that much harder. And Premier Wall's clear intent to foster more tar sands developments without a strategy to minimize their environmental impact suggests that the government's priority, unfortunately, lies far from taking responsibility for the province's large impact on global warming.

RECOMMENDATIONS:

- Develop and release a strong climate change action plan based on the Prebble report and building on the 2007 Climate Change Plan.
- Slow down oil and gas development and put a moratorium on tar sands projects until a climate change plan compatible with the province's emissions reduction targets is in place.
- Re-establish the funding for renewable energy, energy conservation, and methane-gas capture that has been eliminated, and then further enhance it.
- Retain the mandate that all new electricity options be free of carbon emissions and allow SaskPower to make future investments based on lowest-cost options.
- Establish a cap-and-trade system that regulates emission reductions from heavy industry, including the industrial-scale hog and cattle facilities.
- Design a process for creating a new sustainable vision for Saskatchewan's economy.

Manitoba

Manitoba still focuses on large hydro dams but has recently released a climate change plan with measures regarding energy efficiency and renewables.

STRENGTHS:

- A new climate change action plan that will be backed by a legislated greenhouse gas target of six per cent below 1990 levels by 2012.
- National leadership on the installation of ground-source heat pumps, a renewable technology that delivers heating and cooling using the earth's energy.
- Strong proposed measures on energy efficiency, including energy-saving targets for Manitoba Hydro, greater efficiency standards for furnaces and boilers, and a new energy code for new commercial buildings (but not residential ones).
- Significant expansion of wind power, both achieved and planned, although policies on solar energy, including solar hot-water heaters, remain weak.
- Reasonably strong proposed measures to improve efficiency within government, including its buildings and vehicle fleet.
- Proposed a carbon tax of $10 per tonne, but only for coal use in the province.

WEAKNESSES:

- Still no information on progress on actions and commitments made in the 2002 climate change action plan.
- Strong policies on transportation still lacking, with a focus on dubious biofuels and a commitment only to form a committee to investigate California vehicle standards.
- Despite election promises regarding protecting boreal forest regions in Manitoba, no content in new plan about stewardship of carbon sequestered in forest regions, and no new protected lands in forest regions.
- Environmental review process is still not adequately including or assessing the implications of projects on climate change, despite a 2001 commitment to do so.

MISSED OPPORTUNITIES:

- The new climate change plan lacks regulations in many areas, including mandating best practices in agriculture, the capture of methane from landfills, and California vehicle fuel-efficiency standards. (The latter two have not been ruled out by the province.)
- Manitoba has a wide range of public works under construction that could lead to significant GHG emissions, such as Winnipeg's Floodway expansion, and yet does not consider these emissions as part of licensing and construction standards.

Greenhouse Gas Emissions

Manitoba's GHG emissions went up by 13 per cent between 1990 and 2006, though they stabilized over the final three years of that period.[55] The agricultural sector contributes 36 per cent of provincial emissions, the highest for any province or territory.[56] Road transportation (23 per cent) and industry (nine per cent) are the second- and third-most polluting sectors.

The vast majority (94 per cent) of the increase in emissions in Manitoba also came from the agriculture sector. Emissions from all agricultural sources increased, leading to overall sectoral increases of 40 per cent.[57] Emissions from enteric fermentation and manures management have increased due to expansion of the beef-cattle and hog industries.[58] Soil emissions have increased due to increased fertilizer usage. Pollution from road transport are also up overall, due to shifts from cars to SUVs, vans, and trucks and a shift from rail to road for freight transport.[59]

Residential buildings are emitting fewer GHGs due to a switch from home heating oil to natural gas and electricity.

Climate Change Plan and Policies

Manitoba released a new climate change action plan in April 2008.[60] The plan is generally stronger than the previous 2002 plan, and its target of six per cent below 1990 levels by 2012 is backed up in proposed legislation: Bill 15, the *Climate Change and Emissions Reductions Act*.[61]

However, some outstanding accountability issues with respect to the previous plan remain. That plan had transparency measures, including a public audit of government actions and results, that are absent in the updated plan.[62] Manitobans deserve to be informed of the successes and failures from that plan, including what occurred with emissions from different sectors. This exercise might also provide some important lessons to the government in implementing its new plan and commitments.

That a target for 2012 will be backed up by legislation does provide some degree of accountability and comfort for those wanting action on global warming, but at least one clause in the bill is a concern. The minister is given the authority to decide how GHG emissions are calculated, including how offsets are included. The bill should use the United Nations Framework Convention on Climate Change reporting methodology as the standard for measuring emissions, as well as for calculating any emission reductions that may have occurred through government policy.

ENERGY EFFICIENCY

One of the areas where the Manitoba government – including its government utility, Manitoba Hydro – has historically done well is energy efficiency, and this plan continues that leadership. The new climate change plan reiterates Hydro's 2006 targets for energy savings by 2018: 2,695 GWh of total electricity and 101 million cubic metres of natural gas.[63] These will mostly be achieved through Hydro's Power Smart Program, which includes energy-efficiency policies across sectors (residential, business, and industrial). Starting in 2009, a minimum efficiency standard for natural gas furnaces of 92 per cent will also help.

The government will also implement new energy-efficiency requirements as part of a 2010 building code for commercial buildings, but an advisory committee will determine the details.[64] On existing buildings, the province is expanding its Lower Income Energy Efficiency Program provincewide, with a modest target of 4,600 low-income dwellings retrofitted over the next three years.[65]

Manitoba also continues to be a national leader in the installation of ground-source heat pumps. Spanning both energy-efficiency and renewable-energy categories, ground-source heat pumps reduce the amount of energy required to heat and cool buildings by using the earth's energy to do both. According to the government, a household can reduce its GHG emissions by five tonnes per year.[66] Manitoba installs these systems at a rate that is much higher than the size of its population or building stock. However, one project that called for ground-source heat pumps to be installed throughout a new southwestern Winnipeg subdivision has floundered.

RENEWABLE ENERGY

Manitoba is also making progress in installing low-impact renewable energy, especially wind power. The province is looking to add 1,000 megawatts of wind in the next decade.[67] The St. Leon Wind Energy Project is already operating, and more projects will come online in the next two to three years. In 2007, Manitoba Hydro issued a request for proposals for another 300 megawatts of wind power.[68]

In addition to this, wind-monitoring towers are being erected in off-grid communities to determine the viability of switching from diesel generators to wind power. According to the *Climate Change and Emissions Reductions Act*, Manitoba Hydro must make recommendations to the government on how to reduce or eliminate diesel in five remote communities.[69]

Implementation of solar energy has been much slower. The province funds solar-power research, and several Winnipeg buildings, including aquatic centres and a low-income high-rise, now use solar energy.[70] However, the potential, especially in solar hot-water heaters, is far from being realized.

GOVERNMENT

New policies include reasonably strong measures for government buildings and vehicles. According to Bill 15, government buildings will require a minimum of LEED® Silver standards.[71] This will complement a similar policy, implemented in 2007, for non-residential buildings *funded* by the province.

A new green government fleet policy will require the use of hybrid electric vehicles.[72] By 2010, legislation will extend to include efficiency and fuel use for heavy-duty fleet vehicles. However, what appears to be lacking so far is a hard commitment to legislate efficiency measures for residential buildings and personal vehicles across the province (see above and below).

TRANSPORTATION

Manitoba's new climate change plan does not commit the province to California standards for fuel efficiency in vehicles, despite government promises. Instead, the plan proposes that an advisory board be struck to recommend emission standards that will take effect "in conjunction with the California standard".[73] The so-called made-in-Manitoba vehicle standard is so vaguely worded ("ensure that a greater percentage of high efficiency vehicles become part of the private fleet") that any improvement could be claimed a success.

The Manitoba government will not escape scrutiny on this measure, since it is the most important one for reducing emissions from the transportation sector, Manitoba's second-highest source of emissions. Other provinces, including ones with low populations, have already committed to California standards for vehicle purchases, so anything less will open up questions about the province's commitment to tackling climate change. Manitoba's $2,000 rebate for the purchase of a hybrid vehicle has a much smaller impact on vehicle emissions, because it does not include disincentives, such as a tax on gas guzzlers. Incentives are also used by those who would have bought that vehicle in any case.

Other measures in the climate change plan will encourage sustainable forms of transportation. The province will legislate 50/50 funding agreements with municipalities to share the *operating* costs of public transportation, including rapid transit.[74] So far, though, no information has been provided on funding for new public transportation corridors, a long-standing issue for the City of Winnipeg. The province has provided funding for biking and walking trails in Winnipeg.

One of the most problematic parts of the transportation policy is its biofuels strategy. The province has gone beyond the five per cent federal target and, as of January 2008, mandated that 8.5 per cent of its gasoline contain ethanol.[75] Operators of an ethanol plant in Minnedosa announced the plant will run on imported U.S. corn. The plan also has a suite of measures to promote biodiesel, including removing the fuel tax on biodiesel, establishing biodiesel demonstration projects, releasing a 10-point biodiesel promotion plan, and setting targets for biodiesel production: four plants by 2008 and annual production of 85 million litres by 2012.[76]

However, the plan does not address the increasingly important issue of using food crops to produce biofuels. Any incentive or regulation that leads to more biofuel production from crops will displace food production, unless explicit steps are taken to ensure only non-crop feedstocks are used for biofuel production. For ethanol, that means using forest residue to produce cellulosic ethanol, which also significantly increases the GHG benefit.[77] Manitoba has not done this, so its policies may contribute to greater world hunger through higher grain prices, with at best minimal global warming benefits.

AGRICULTURE AND LANDFILLS

Agriculture is a major contributor to Manitoba's GHG emissions. The province's climate change plan offers a suite of "best practices" that are designed to decrease these emissions. The government will encourage farmers and the agri-food industry to voluntarily adopt the measures.[78] Government representatives insist that most in the sector will follow the new standards, since pilot projects were successful and the changes will lead to cost savings for those who adopt them.

That remains to be seen. If it makes sense both economically and environmentally for farmers and the agriculture industry to adopt these practices, then what is the concern with making them mandatory? Making them mandatory would provide business certainty and overcome some of the barriers, such as lack of information or the need for initial investments that will get recouped over time. Therefore, the province should keep the option open to legislate these best practices if take-up is low or insufficient.

The landfill-gas policy is similarly voluntary. The plan rightly states that increasing the composting of organic waste will reduce emissions from landfills.[79] Bill 15 compels

landfill operators to submit a plan for "monitoring, controlling, collecting, or using" its methane emissions, but it falls short of mandating that they be captured and used as an energy source.[80]

The province needs to go further. It should mandate and fund municipal composting programs and legislate methane capture from landfills, especially the larger ones.

INDUSTRY

The plan has two main ways to tackle emissions from heavy industry. The first is a coal strategy, which includes introducing a tax on coal use and using the lone coal-fired utility facility in the province only "to support emergency operations".[81] Industrial facilities using coal will be placed on a schedule to voluntarily phase it out.

The second is to establish a cap-and-trade system for heavy industry. The province has joined both the Western Climate Initiative[82] and the Midwestern Greenhouse Gas Reduction Accord.[83] This is potentially very good, but the exact rules of each have not yet been established. If Manitoba agrees to strong emission-reduction targets through these initiatives, and if the systems adopted do not have significant loopholes, then it may be a very effective way to reduce emissions from industry. Despite these new commitments outside of Manitoba, the premier maintains that industry emission reductions will be voluntary and cooperative.

ACCOUNTABILITY

There are some concerns about the Manitoba government's accountability on climate change issues. The province never explained the successes and failures of its 2002 climate change plan and the reasons that emissions have risen since then. This kind of analysis, and its public disclosure, can be useful in ensuring that lessons have been incorporated into new policies and actions.

Transparency and accountability measures also need to be put into the present plan. A progress report every two years is a step forward but is still insufficient. The plan also lacks mandatory GHG accounting in environmental assessments and in the consideration of government projects. Reporting on GHG emissions from any significant public works would also help the citizens of Manitoba to more fully consider their merits and impacts.

Conclusion

Manitoba took a significant step forward with its updated climate change action plan, providing strengthened policies in several places. In addition, the legislated target for 2012 does provide greater public accountability for Manitoba citizens, especially given

the recent record. However, questions remain about whether the plan will deliver the required emission reductions in the short term. Greater accountability will further the climate change goals laid out. A longer-term vision (2020 and beyond) would be helpful in establishing the need to move forward quickly with this plan.

RECOMMENDATIONS:

- Strengthen the climate change action plan by committing to California vehicle-emission standards and landfill-gas capture.
- Consider mandating agricultural "best practices" if take-up is not very high.
- Ensure environmentally rigorous targets and rules for cap-and-trade systems the province implements.
- Set an ambitious GHG emission-reduction target for 2020, one that is in line with the science of avoiding dangerous climate change (25 per cent below 1990).
- Report on actions and results from the 2002 climate change plan, including publicly posting pollution-emissions data, targets, and reductions and whether predicted emissions reductions were achieved.
- Build climate change impacts, GHG emission-reduction targets, and carbon inventory into all provincial government licences for new developments, new business agreements, and all public works. Avoid public funding for any project that significantly adds to emissions.
- Ensure that Manitobans have information about – and can provide input into – all climate change initiatives in which the province is participating, including the *Climate Change and Emissions Reductions Act*.
- Provide public information regarding all Manitoba industrial sites emitting between 50,000 and 300,000 tonnes of CO_2 equivalents annually (the federal threshold for reporting).

Were it not for its multi-billion-dollar plans for nuclear expansion, Ontario could become the climate change leader in Canada.

Ontario

STRENGTHS:

- Released comprehensive climate change action plan that covers most key sectors and activities.
- Made advances in renewables and conservation/efficiency programs and policies in electricity sector.
- Announced it will join a cap-and-trade system for heavy industry in partnership with Quebec.
- Has a good transit plan for Greater Toronto and Hamilton, but dependent on one third of the financing from the federal government.
- Places to Grow Plan sets targets for urban density and intensification, but still allows the majority of new development to occur in greenfields.
- Appears to have strong leadership from premier's office, including creation of Secretariat in Cabinet Office reporting directly to premier.

WEAKNESSES:

- Heavily dependent on nuclear refurbishment and expansion, diverting resources from clean-energy options.
- Recently suspended successful program for procuring renewable energy.
- Details lacking in many areas of the climate plan, and slow or inadequate progress in others.
- Ontario Power Authority targets for renewable energy and energy efficiency are interpreted as caps (maximums) rather than minimum goals, limiting the real potential for clean-energy options.

MISSED OPPORTUNITIES:

- At the conclusion of the 2007 Council of the Federation meeting, Premier Dalton McGuinty could have joined the other 12 premiers in committing to California auto fuel-efficiency regulations, virtually assuring a strong Canada-wide standard.
- A more ambitious renewables, conservation, and energy-efficiency strategy, as had been proposed by government advisors, could have allowed for a 2012 coal phaseout and Kyoto compliance.

Greenhouse Gas Emissions

Ontario has the second-highest level of greenhouse gases in the country.[84] This is primarily due to its large population, since its per capita emissions are lower than the national average.[85] Provincial emissions have increased by nine per cent since 1990, but have dropped in the past three years.[86] The greatest polluters by sector are road transportation (25 per cent of total GHG emissions), industry (21 per cent), and electricity (15 per cent).

Road transportation is also the fastest-growing source of emissions in the province. This is due to both a shift from cars to SUVs, vans, and pickups and more transport trucks on the road, as the manufacturing sector moves increasingly toward "just-in-time" delivery for parts and final products.[87] Both of these are being exacerbated by urban sprawl, especially in southern Ontario.

Emissions from commercial and institutional buildings have also increased, largely because of growing financial, insurance, and real-estate sectors and the subsequent increase in commercial floorspace.[88] Finally, emissions from electricity have also increased but have been dropping for most of this decade, including in 2005 when the province shut down a coal-fired power plant.[89] Conservation programs are also having an impact and resulted in reduced power consumption in 2006.

Climate Change Action Plan and Policies

The year 2007 was busy for the Ontario government on the climate change front. After three years of delay on global warming, the Liberal government delivered the province's first real climate change action plan in the lead-up to the election in October.[90] Though some good policies had been implemented prior to 2007, and holes and faults remain with its current action plan, the province took some big steps toward comprehensively addressing its GHG emissions.

As part of the plan, the province has also set the most ambitious greenhouse gas emission-reduction target of any province: 15 per cent below 1990 levels by 2020.[91] As mentioned throughout this report, this goal falls short of the science-based targets needed to avoid dangerous climate change, namely at least 25 per cent reductions by 2020,[92] but it would be an accomplishment for the province to reach that target with virtually no help from the federal government.

The province has also made some important governance changes that should not be overlooked. The establishment of a Conservation Bureau has the potential to engage citizens on the important behavioural changes needed to move toward sustainable energy systems.[93] However, the Conservation Bureau can become more effective with two reforms. First, in electricity, it should be given the explicit goal of maximizing energy efficiency

(rather than being constrained by an artificial cap), which would allow it to investigate opportunities that go beyond simply reducing the consumption of power during peak hours. Second, the Bureau's mandate should be expanded to address all energy-efficiency opportunities, not just those in the electricity sector.

More recently, the government created a climate change secretariat that reports directly to the premier. This fundamental change has the potential to address global warming across all government operations and hopefully signals a commitment by the premier and cabinet to faster progress in reducing GHG emissions.

ELECTRICITY SUPPLY: THE GOOD AND THE BAD

The largest single source of reductions in Ontario, 30 million tonnes or almost one third of planned reductions, is expected to come from the shutdown of the four remaining coal-fired power plants by 2014.[94] The province has faced much criticism over this shutdown, because the initial promise, in 2003, was for a 2007 deadline. That timeline was extended to 2009 early in the Liberal government's mandate. Then, last year, the province extended the deadline to 2014 but, this time, entrenched it in legislation.

What this means is that a projected supply gap will have to be filled in the next six years. The government has implemented some progressive policies to increase energy efficiency and conservation efforts (see below) and to get more renewable power supply. However, it has concentrated its planned spending on nuclear power, an expensive and controversial technology that is unlikely to help meet the gap left by the coal phase-out and the increasingly unreliable existing nuclear reactors.

One of Ontario's strong policies has been its standard offer program (SOP), a policy that guarantees access to the grid at a set price for power projects using wind (11 cents/kWh) or solar (42 cents/kWh) energy.[95] This policy was used to make Germany and Denmark world leaders in the use of wind power. The Ontario government estimated that the policy will add 1,000 megawatts of new capacity within 10 years, but that goal has already been met in the first year, and there is the potential to add much more.[96] Therefore, it is worrisome that the Ontario Power Authority (OPA) scaled back this successful program in May 2008.[97] In the future, the OPA may make revisions to the SOP that would limit the ability of renewable power projects to access the grid. Rather than limiting access, the OPA needs to find ways to overcome any transmission and distribution system challenges from renewable-energy expansion. The government has a target to double all renewable power capacity, including hydro, to 15,700 megawatts by 2025,[98] but this target could be much higher if cost-effective clean-power opportunities were maximized.

The government has announced an intention to add a clean-energy standard offer program, similar to the one for renewable energy, that focuses on co-generation projects.[99]

Co-generation involves the production of both power and heat from one facility, thus decreasing energy waste and maximizing the efficiency of the operation.

Ontario is also experimenting with pilot projects that offer zero-interest loans for integrating renewable-energy systems like solar hot-water heaters into existing buildings. In order to maximize possible opportunities, the province needs to take it a step further and include in its building code a mandatory requirement to have solar hot-water heaters on every new building and integrate geothermal energy as part of larger developments, including commercial and institutional buildings and subdivisions. In fact, this could be done in every province and territory in Canada.

But the monumental flaw in Ontario's energy-supply strategy is its continued focus on nuclear power, both through refurbishing aging reactors and building new ones.[100] The province is already saddled with a $30 billion debt from past nuclear developments, and recent refurbishing projects have again gone over budget, adding to the province's liability. Furthermore, the timeline for building any new reactors extends well past the critical coal shutdown deadline of 2014.

Comprehensive energy and economic modelling have shown that the province could shut down the coal-fired power plants and fill its power supply gap without the use of nuclear power and at a lower cost to Ontario citizens and ratepayers.[101] It is not too late for the province to scrap its nuclear plans and undertake a much more aggressive efficiency, conservation, and clean-power strategy that is less risky, both environmentally and economically.

ENERGY EFFICIENCY AND CONSERVATION

Ontario has been increasing its activities in energy efficiency and conservation. Like its plans for renewable power, though, it has relied on the lowest estimates of the potential in these areas and therefore has a low level of ambition. Nonetheless, the province has set a target to save 6,300 megawatts of power through conservation, with 40 per cent of that coming by 2010, and has backed that with $2 billion in dedicated funding.[102] The 6,300-megawatt target, however, is only 65 per cent of what the Ontario Power Authority's own studies have said is economical and achievable.[103]

The province has implemented various policies to reach those targets. It is slowly phasing in a new building code, with the final expected to be in place by 2012. The provincial government is offering home-retrofit grants of up to $5,000 to supplement federal grants and has also offered a $150 grant for home-energy audits, which the federal program used to include but has since cut.[104] It has also removed the provincial sales tax for a brief period on energy-efficient appliances and is phasing out incandescent bulbs by 2012, the same timeline as the federal government.

On the conservation front, the province has undertaken quite a large public-engagement strategy, which started in the summer of 2007 and continues through 2008. Along

with television, newspaper, and billboard ads, the province is implementing fridge buy-back programs and compact fluorescent light-bulb giveaways. It could go further by enforcing the *Energy Conservation Leadership Act*, which could require municipalities to develop energy-efficiency plans and targets and override municipal bylaws, like clothesline bans, that limit opportunities for saving energy.[105]

INDUSTRY

With all the controversy over the future direction of Ontario's electricity system, including the coal phase-out and the role of nuclear power, Ontario's climate change action plan virtually ignored heavy industry and its greenhouse gas emissions. Non-electricity sources of emissions from industry are larger than those from the electricity sector, though emission-reduction opportunities in this area are more modest than those made possible by a coal phase-out. Ontario's plan merely calls on the federal government to create a carbon-trading system based on absolute emissions reductions and using 1990 baselines, rather than the current weak and discredited federal proposal.[106]

Thankfully, industrial GHG emissions may finally be addressed through a joint cap-and-trade system involving Ontario and Quebec. The recent announcement from the two provinces had no details to assess how effective the final system will be in reducing emissions.[107] But if the system is developed and implemented quickly, if emission-reduction targets are ambitious, if the GHG permits are auctioned rather than given out for free, and if the system omits loopholes such as price caps or a weak offsets system, then it could be effective. Clearly, many pitfalls remain and the two provinces need to develop a regime that is as rigorous and ambitious as possible.

TRANSPORT

Emissions from the transportation sector make up the greatest source of greenhouse gas emissions in Ontario, and the province can boast only a mixed record on the issue. On the positive side, funding for public transit is unquestionably one of the highlights of the Ontario climate change action plan. The ambitious transit strategy for the GTA and Hamilton to be implemented by 2020 is integrated with Toronto's proposal and involves 900 kilometres of new and improved rapid transit.[108] The province has committed $11.5 billion to the plan and has requested a further $6 billion from the federal government.

The commitment to transit, however, is undercut by ongoing expansions of the highway system that perpetuate urban sprawl. In the 2008 budget, investments in highway construction ($1.48 billion) were still higher than those for transit ($1.25 billion), but the gap was narrowed relative to 2007.[109]

Between 2007 and 2010, the province will also transfer $1.6 billion in gas-tax revenue to its municipalities to invest in transit. According to government figures, the amount allocated to transit since 2003 is $4.9 billion.[110]

However, the most effective policy to reduce emissions from road transportation is to regulate strong fuel-efficiency standards for passenger vehicles, something the province refuses to do. Ontario's approach, giving $2,000 rebates for the purchase of hybrids, is weak in comparison.

During the 2007 premiers' meeting in Moncton, Premier McGuinty was the lone holdout on committing to California standards. This was a huge missed opportunity, one that would have ensured that all of Canada would be bound by the stricter standards and would have sparked momentum in U.S. states as well. While half the provinces are moving forward with California standards nonetheless, the federal government is now undertaking a negotiating process to set nationwide regulations, and its announcement of this process appeared to favour the weaker George Bush White House standards.

URBAN PLANNING AND DEVELOPMENT

Strongly tied to emissions from road transportation are issues of urban planning, which include the degree to which sprawl is curtailed, an area where provinces can have a lot of influence. Once again, Ontario's record is mixed. The *Green Belt Act* was a successful piece of legislation that ensured protection of much of the remaining undeveloped areas of the green belt, which is directly in the path of Toronto's sprawl.[111]

However, the Places to Grow plan for the Golden Horseshoe was largely a missed opportunity.[112] The 40 per cent intensification target essentially allows 60 per cent of new development to be sprawl, which is in line with historical growth patterns. Also, urban-density targets in the Places to Grow plan are too low, and in some municipalities are barely sufficient to support minimal transit services.

As mentioned above, the Liberals also have plans for billions of dollars in spending on new highways. Though these are a reined-in version of what the previous government planned, the substantial investment will only encourage unsustainable forms of transportation.

METHANE EMISSIONS, AGRICULTURE, AND LANDFILLS

The action plan also has some policies to address methane emissions from the province, the vast majority of which come from agriculture and landfills. The province has established a $9 million program for farmers and the agri-food industry to invest in biogas digesters that will allow methane emissions from manure to be captured and converted into electricity.[113] The province has planned regulations on capturing methane from landfills using, as in other parts of the plan, a phased-in approach.

FORESTRY

The province has also launched a consultation process on the future of the boreal forest in Ontario, framed as preserving this important carbon sink. The outcome is still unknown but it may lead to the protection of both forest carbon and biodiversity through one initiative. It could, though, go in a very different direction, given that the provincial government is also mapping the North for its mining potential.

ADAPTATION

Finally, the province will establish an expert panel on climate change adaptation. The panel, with two prominent adaptation researchers as co-chairs, will help the province develop strategies to adapt to present and future impacts from changes in the climate.[114]

RECOMMENDATIONS:

- Move forward quickly with Quebec on a strong cap-and-trade system for large emitters.
- Adopt California standards for vehicle fuel efficiency.
- Cancel the planned highway expansions and redirect funding to sustainable transportation options such as transit.
- Rather than tying up tens of billions of dollars in new nuclear power plants, put resources toward:
    - Energy efficiency, conservation, and clean renewable sources of energy, and
    - Building a decentralized smart grid that can reliably get electricity to users from a diversity of small-scale sources.
- Reform the Conservation Bureau's mandate to maximize conservation and energy-efficiency opportunities in all sectors and not be bound by an artificial cap on energy savings in the electricity sector.
- Enforce the *Energy Conservation Leadership Act* by requiring municipalities to develop energy-efficiency plans and targets.
- Better integrate research, development, and deployment of new green technologies, and emissions-reduction strategies, in order to facilitate Ontario's emergence as a leader in green technologies and protect and expand Ontario's manufacturing job base.
- Task the Climate Change Secretariat with assessing how current initiatives, such as the Places to Grow plan, the *Greenbelt Act* and other elements of Go Green actually result in GHG emission reductions.

Quebec

Quebec is gradually implementing its strong 2006 climate change plan, including the installation of 4,000 MW of wind power.

STRENGTHS:

- Has a strong plan that commits to reducing greenhouse gas emissions loosely in line with the Kyoto Protocol (six per cent below 1990 levels by 2012).
- Has reduced emissions since 1990, with a substantial decline from 2003 to 2006.
- Has recently committed to joining a cap-and-trade system, reversing its voluntary 2006 approach to emissions from heavy industry.
- Is implementing important transportation policies, including California fuel-efficiency standards for vehicles, significant funding for public-transport expansion (both service increases and infrastructure), and mandatory speed limiters for transport trucks.
- Is following through on its significant commitment to wind-power development.
- Has implemented the first carbon tax in North America, though it remains at too low a level to actually decrease carbon emissions.

WEAKNESSES:

- Remains committed to unsustainable transportation policies, such as funding for roads and highways, with no policies to curtail urban sprawl.
- Is moving forward with large hydroelectric projects that threaten biodiversity.
- The province does not plan on actually reducing overall energy use, one of the first priorities for reducing greenhouse gas emissions.

MISSED OPPORTUNITY:

- The 2006 climate change plan and the introduction of a carbon tax opened the door for Quebec to show leadership on unsustainable energy projects based on fossil fuels. However, a new liquefied natural gas (LNG) project has the potential to undermine gains made from other policies.

Greenhouse Gas Emissions

Quebec's greenhouse gas emissions dropped by six per cent between 2003 and 2006, leaving the province slightly below (minus one per cent) 1990 levels, with the lowest per capita emissions in the country.[115] Because of low electricity emissions from its large hydro base, road transport is the greatest source of emissions (34 per cent of overall emissions) followed by industry and manufacturing (23 per cent).[116]

Road transportation is also responsible for the greatest increase in GHG emissions, due to increased use of gas guzzlers by individuals and more miles covered by transport trucks.[117] Offsetting this growth are 22 to 26 per cent decreases in emissions from:

- the manufacturing sector, mostly pulp and paper industry, which has suffered a downturn in Quebec but has also decreased emissions through the use of wood waste for energy; and
- magnesium and aluminum production, which have changed their industrial processes to decrease non-carbon GHG emissions.[118]

Climate Change Plan and Policies

In the David Suzuki Foundation's 2006 assessment, Quebec ranked top among provinces on climate change on the merits of what was then a new and fairly ambitious action plan.[119] The province is still a leader in the fight against global warming and has moved on some aspects of its plan, but it risks losing momentum if it does not show more urgency in implementing policies.

On the positive side, it now has a small carbon tax in place, it has passed California efficiency standards for vehicles, and it has committed to join a cap-and-trade system for its heavy industry. However, Quebec is still putting a lot of money into roads, highways, and bridges and remains enamoured with large-dam construction, more so even than its heralded commitment to wind power.

THE NEW: INDUSTRY, CARS, AND A CARBON TAX

A few recent developments have furthered Quebec's leadership in tackling global warming. In June 2008, Quebec and Ontario announced that they would jointly implement a cap-and-trade system by 2010 for heavy industry.[120] Details remain scant, but the premiers of both provinces indicated they want to reduce absolute emissions rather than going with the weak and discredited federal system of setting targets based on intensity (per unit of economic activity).

The announcement came only two months after Quebec decided to join the Western Climate Initiative, an initiative of three Canadian provinces and seven Western U.S. states

that also includes a cap-and-trade system.[121] The rules of the system will be negotiated over the course of 2008, but its main elements will be emission-reduction targets for industrial polluters, with an incentive for companies to reduce below their target and sell credits to other emitters.

It remains to be seen how the two different cap-and-trade systems will co-exist. No matter what system is used, a number of important details will determine just how rigorous the regime will be. These include what the emission reduction target will be, what proportion of the permits are auctioned versus given out for free, and whether loopholes such as price caps or loose offsets rules will weaken the system. That Quebec is finally subjecting its heavy industry to mandatory emission reductions is nonetheless an important step forward, because its 2006 plan had only a voluntary approach to this important source of global warming pollution.[122]

The WCI also entails regulating California fuel-efficiency standards, but Quebec has been moving forward on this for some time. Its 2006 plan included California standards[123] and the province had already tabled the necessary legislation before the WCI announcement. It is an important, even necessary, step for a province that has transportation as its most important source of GHG emissions, and personal vehicles as the greatest polluter in that sector.

Another important step forward was the implementation of North America's first carbon tax. That happened in October 2007. The tax remains a small one and is intended only to generate revenue, $200 million per year, so the government can implement its climate change plan.[124] That includes significant funding for public transportation, another key element to reducing pollution from road transport. With the cap-and-trade system still a few years away from completion, Quebec should contemplate gradually raising the tax, so that industry, businesses, and individuals get the clear signal that Quebec has a long-term dedication to tackling global warming. Like B.C., Quebec can easily ensure that industry does not pay twice for its emissions once the cap-and-trade system is in place.

PROGRESS FROM THE 2006 PLAN

Many other policies are outlined in Quebec's climate change action plan, which just celebrated its second anniversary. Last year, a Quebec government report showed that progress was slow, notwithstanding the achievements outlined above. The 2008 progress report came out too late to incorporate into this report.

Without reiterating all the details of the plan,[125] some elements are noteworthy. The plan promised to reduce emissions to 1.5 per cent below 1990 levels by 2012, with a promise to get to the Kyoto-like target of minus six per cent if the federal government delivered on a $358 million funding commitment from 2005. When the federal Conservative government did deliver, Quebec adopted the new target.

Overall, the plan was deemed to be a good one because it proposed strong policies in road transportation. In addition to California car regulations and $7 billion in transit funding over 10 years, subject also to federal funding, the action plan had tax exemptions on employer-provided transit passes, a modest surtax on registration fees for big gas guzzlers, and regulations to install mandatory speed limiters in transport trucks (in partnership with Ontario).

The big weakness of the province's transportation policies is a $1.4 billion expansion of roads and highways. Combined with the lack of meaningful policies to curtail sprawl, this expansion threatens to increase rather than decrease personal-vehicle use and emissions of both global warming pollution and local air pollutants.

The province's actions in electricity are also mixed. Quebec has followed through on its commitment to add 4,000 megawatts of wind power and expand its activities in energy efficiency. However, the capacity of large hydro dams will expand more quickly than that from wind, and energy use overall will increase, according to its energy plans.[126]

Other highlights of the 2006 climate change action plan include a new, more energy-efficient building code, which is scheduled to come into force this year. Government buildings will have an even stricter code. And Quebec will regulate the capture of methane from municipal landfills, as outlined two years ago.

ADAPTATION

Quebec has also shown progress on researching the present and future impacts of climate change and how to adapt to them by establishing and funding a prestigious research network called OURANOS. The 2006 plan also had an extensive monitoring and warning system.

GOVERNANCE

Finally, as far back as 2000, Quebec had put into place some strong governance measures. It has an intergovernmental body of 14 ministries and governmental agencies to address climate change within the government. The committee also engages with those in other levels of government, the private sector, and in non-governmental organizations to develop expertise and provide advice to the government on tackling global warming. As mentioned, a progress report is due every year detailing how the plan is being implemented.

Conclusion

Quebec has been surpassed by the progress made over the last year on climate change by its most western counterpart. Nonetheless, it remains a climate change leader in Canada. It is implementing its plan and regulating stronger efficiency standards for vehicles and

buildings. It is following through on its commitment to install what will be unprecedented growth in wind power in Canada. And its most recent announcement to join a cap-and-trade system for heavy industry fills the one important hole in its 2006 plan.

More urgent progress on its 2006 commitments would reinforce this leadership. Of greater importance, however, is its commitment to technologies (hydroelectric dams, liquefied natural gas terminals) and policies (funding for more roads and highways) that at least diminish and may even overwhelm its advances in GHG emission reductions.

RECOMMENDATIONS:

- Maintain its leadership role in Canada by continuing to implement and strengthen its climate change action plan.
- Set an ambitious goal for reducing GHG emissions that is in line with avoiding dangerous climate change (at least 25 per cent below 1990 levels by 2020).
- Reconsider unsustainable energy projects such as large hydroelectric dams and LNG terminals.
- Pass legislation to curtail urban sprawl, and reconsider increased road, bridge, and highway construction.

New Brunswick is taking greater leadership on climate change, but that could be undermined by dirty energy developments.

New Brunswick

STRENGTHS:

- Released its first climate change action plan, with the goal of reducing emissions to 1990 levels by 2012 and 10 per cent below 1990 levels by 2020.
- Strengthened Efficiency NB, a provincial energy-efficiency agency that facilitates improvements in energy efficiency for homes, businesses, and industry.
- Set a renewable target that ensures approximately 450 megawatts of wind will be installed by 2010, or 10 per cent of electricity sales within New Brunswick.
- Proposed regulations for improved efficiency in buildings, vehicles, and appliances, but details and timelines for implementation remain vague.

WEAKNESSES:

- Action plan does not address the industrial sector, relying instead on the weak and discredited federal system.
- Continued emphasis on nuclear power, with plans to refurbish the Point Lepreau plant and undertake a feasibility study on building a second nuclear plant on the same site.
- Emphasis on unsustainable energy developments, mostly for export to New England states, including:
  - Built a second power line designated for electricity exports;
  - Permitted a Canaport liquefied natural gas terminal in Point Lepreau; and
  - Proposed a second Irving Oil refinery in Saint John.

MISSED OPPORTUNITIES:

- Failure so far to act on industrial emissions, through a provincial or regional cap-and-trade system, when public support for environmental regulations remains high.
- Focusing on imported unsustainable energy options when New Brunswick has good potential for energy development that prioritizes low-carbon indigenous resources and distributed generation.

Greenhouse Gas Emissions

Greenhouse gas emissions dropped considerably between 2005 and 2006 due to extraordinary hydro flow, which reduced electricity production from coal and petroleum sources.[127] Despite this one-year anomaly, electricity consumption and greenhouse gas emissions are both trending upward, and the province's GHG pollution remains 13 per cent above 1990 levels and per capita carbon pollution is third in the country (behind Saskatchewan and Alberta).[128]

Electricity is the greatest emitter in the province (36 per cent of provincial emissions), followed by road transportation (22 per cent) and fossil-fuel industries (14 per cent).[129] Emissions from fossil-fuel industries have more than doubled since 1990 due to increased petroleum refining and natural-gas production. Even the growth in transport emissions, the second-highest in the province, is partly due to diesel trucks supporting those industries.[130] Another factor has been a shift in personal vehicles toward larger gas-guzzling SUVs, vans, and pickup trucks.

Climate Change Plan and Policies

In June 2007, New Brunswick released its first plan to address climate change.[131] The plan has a five-year timeframe (2007-2012) with fairly ambitious short-term targets for reducing greenhouse gases: a 5.5-megatonne reduction by 2012, corresponding to about one quarter of its present emissions.[132] If achieved, New Brunswick's 2012 GHG emissions would be reduced to 1990 emission levels. The plan also reiterates the pledge it made as part of the New England Governors/Eastern Canadian Premiers meetings to reduce emissions to 10 per cent below 1990 levels by 2020.

Overall, the plan has some good initiatives, but certain proposed policies – standards for vehicles, buildings, and appliances – have vague details and timelines. These will have to be clarified, with strong standards and quick timelines, in order to reach the 2012 target. The province will also have to forego several unsustainable energy projects that will add considerably to emissions. On the positive side are the plan's policies on efficiency and commitments to renewable energy.

ENERGY EFFICIENCY

New Brunswick's climate change plan highlights Efficiency NB's programs to improve the end-use efficiency of homes, other buildings, and businesses by providing information, support, and financial assistance. The agency's budget for the last two fiscal years was approximately $15 million, with the federal government contributing a small portion of that amount in 2008/09.[133] The province plans to update its building code to surpass the federal government's model building-energy code. It also plans to make Energy Star

appliances and equipment the standard. However, both of these initiatives will be phased in, with no stated deadline date, and with contingencies.[134]

The plan also cites an energy-efficiency study that shows energy use could be reduced by five to 13 per cent in the province's industrial sector, but does not commit the province to those targets.[135] However, the province is putting a lot of effort and resources into efficiency at the industrial level and does seem to have broad engagement across that sector.

RENEWABLE ENERGY

The action plan's renewable-energy strategy is not very detailed, merely reiterating a previous target to have 10 per cent of electricity sales come from new renewable sources by 2016.[136] However, that target was more recently strengthened by moving the timeline up to 2010 and including it in the *Electricity Act*. It includes wind, hydroelectric, biomass, tidal, geothermal, and solar energy, but it appears the vast majority, if not all, will come from wind power. Other options are also being explored, including research on tidal power, a feasibility study on small-scale hydroelectric projects, "assessing and fostering" the development of other renewables, and implementing a policy for switching from fossil fuels to bioenergy.[137]

Through a combination of energy efficiency and renewable energy, New Brunswick's plan sets a target of reducing emissions from the electricity sector by 25 per cent between 2003 and 2020, and achieving a 65 per cent reduction by 2050.[138]

OTHER POLICIES

In addition to some reasonably good policies on efficiency and renewables, the New Brunswick action plan has very few strong policy proposals. The plan is vague in many places, making it difficult for the province to assess progress or be accountable. Industrial emissions outside of electricity are left to the very weak federal system. Most of the other policies are not regulatory, but are rather about "educating", "encouraging", "supporting", or "sharing". Voluntary initiatives such as these have historically been ineffective in actually provoking meaningful change in environmental protection, in this case in the form of reduced greenhouse gas emissions. The province is also at the beginning stages of developing an adaptation plan. Research and planning anticipated in the plan could potentially lead to a strong capacity to adapt to future changes.[139]

The government does set a target of reducing emissions within its own operations to 25 per cent below 2001 levels by 2012.[140] Part of this will involve making all new government buildings, including hospitals and schools, certified to LEED environmental standards. This target, however, does not compare favourably to those in other provinces, notably in B.C., where government operations are expected to be carbon neutral (a 100 per cent reduction) by 2012.

The province has also created a climate change secretariat to coordinate implementation of the climate change action plan and report on progress, most importantly greenhouse gas emission trends.[141] The secretariat is housed within the Department of the Environment and so will not have responsibility across all government departments and agencies. It has to report to the legislature every year.

UNSUSTAINABLE ENERGY DEVELOPMENTS

Of great concern in the plan are the references to numerous unsustainable energy projects, and a failure to mention several others. First is the continued emphasis on nuclear power. The Point Lepreau nuclear power plant will be refurbished by 2009. Another one is proposed for the same site exclusively to export power to New England.[142]

Nuclear power has been touted by some as a clean source of energy that could help reduce greenhouse gas emissions. The reality is that nuclear power is so expensive that investments crowd out investments in other emission-reduction options that have greater potential and are more attractive economically, namely renewable energy and energy efficiency. Other negative aspects of nuclear power, such as the unresolved waste issue or the dangers of nuclear proliferation, make this the wrong choice.

Of equal concern are other planned energy developments that won't just forestall emission reductions but will instead increase emissions. The focus in almost every case is primarily for export to New England states. For example, a second power line has been built to carry power from Quebec to New England. More lines are proposed to facilitate nuclear-power expansion and export, though they may also carry some wind energy.[143]

The Irving Oil refinery was substantially expanded eight years ago and a second large refinery has been proposed.[144] The two Irving refineries would be the largest in the country and the second one alone could add as much as three megatonnes of GHG emissions every year,[145] pushing up New Brunswick's annual emissions by 17 per cent.[146] Much of the final product will end up in Boston, where it will cause a 40-megatonne increase in emissions.[147]

Finally, another liquefied natural gas terminal has received the go-ahead to receive LNG from ships and distribute the gas, also to New England. The project is scheduled to open in 2008.[148]

Conclusion

New Brunswick deserves praise for finally developing and releasing a climate change action plan, and setting a fairly ambitious short-term emission-reduction target. The province is making some progress, especially in renewable energy and energy efficiency. However, given the fossil fuel–based energy developments it is pursuing and the generally weak or vague nature of the policies proposed in the plan, it remains uncertain whether the province can get there.

Much will depend on the influence of market forces. NB Power's emissions are dropping because of the rising cost of petroleum products and the switch to both cheaper and less-polluting alternatives. Government policy also needs to drive sustained change, however, so that emissions stay down whatever the price for different energy sources. The province will therefore have to implement proposed regulations on buildings, vehicles, and appliances.

Big emitters will make the most difference. Emissions reductions from NB Power are crucial and could be made more certain through a carbon-pricing policy – either a cap-and-trade system or a significant carbon tax. Regardless, a new Irving refinery will make short-term emission-reduction goals impossible to attain. The province, therefore, has a real challenge if it wants to be taken seriously as a leader on climate change.

RECOMMENDATIONS:

- Implement regulations to reduce industrial emissions (responsible for 50 per cent of emissions), either through a cap-and-trade system or a significant carbon tax.
- Place a moratorium on developing new, or refurbishing existing, large-scale fossil fuel–based power-generating stations.
- Implement a plan to reduce, and eventually eliminate, exports of electricity originating from non-renewable sources.
- Quickly pass legislation, as proposed, for improved energy efficiency in vehicles (California standards), buildings (EnerGuide 80), and appliances (Energy Star).
- Direct future energy-provision growth toward distributed generation that utilizes New Brunswick's abundant renewable resources instead of continuously importing fossil fuels.
- Establish a feed-in tariff for energy from renewable sources and continue to increase incrementally the percentage of renewable energy provided by NB Power.

Prince Edward Island

Because it has no climate change plan, P.E.I. is experiencing rising emissions from transportation, causing the province to fall behind on climate change.

STRENGTHS:

- Reached its target of having 15 per cent of its electricity come from renewable energy three years ahead of its 2010 timeline.
- Beginning to look at energy efficiency by establishing an Office of Energy Efficiency and hiring experts to study the island's energy-efficiency potential.
- Established a public-transit system in Charlottetown, which is enjoying good ridership.

WEAKNESSES:

- Does not have a climate change action plan.
- Remains the only province lacking a building code set at the provincial level, though the municipalities of Charlottetown and Summerside have implemented standards.
- Reduced the tax on gasoline by four cents a litre.
- Does not have a baseline for greenhouse gas emissions from government operations.

MISSED OPPORTUNITY:

- At last year's Council of the Federation, Premier Robert Ghiz expressed support for California vehicle fuel-efficiency standards (an important development given P.E.I.'s high transport emissions). However, the Energy Strategy Discussion Document did not mention this policy as an option, preventing the province from truly finding out its level of support.

Greenhouse Gas Emissions

Between 2003 and 2006, P.E.I.'s greenhouse gas emissions declined by six per cent, but remain five per cent above 1990 levels.[149] The greatest contributors to provincial GHG pollution are road transportation (31 per cent) and agriculture (24 per cent).[150]

The biggest reason for growth in emissions has also been transportation-related, namely a shift to SUVs, vans, and pickups and an increase in off-road transportation.[151]

The manufacturing sector contributes 150 per cent more pollution than in 1990 due to growth in industries such as fish-processing and aerospace and the absence of policies to address that.

Climate Change Plans and Policies

Prince Edward Island's climate change action plan expired five years ago and the province has had no cohesive approach to the issue since then.[152] In 2005, a legislative committee from the former government produced a report, based on consultations with the public, on how the province could tackle climate change.[153] The report included mostly voluntary initiatives and was never developed into an action plan in any case.

The Ghiz government is developing a plan but has not set a date for its release. It is expected to have the same target established under the New England Governors/Eastern Canadian Premiers meetings: 10 per cent reductions in GHGs below 1990 by 2020.

RENEWABLE ENERGY

P.E.I.'s renewable-energy strategy has for many years been its strength *vis à vis* reducing emissions that lead to global warming. Its *Renewable Energy Act* set a legislated target of 15 per cent renewable energy by 2010, something it achieved last year using almost exclusively wind power.[154] The province then committed to a 30 per cent target by 2016 and was even contemplating a 100 per cent target, something deemed reachable under the renewable-energy strategy.[155] To help reach its targets, the province produced a wind atlas that maps the island's "hot spots" for wind-power production. It also established designated areas for large wind projects and set a guaranteed price, a so-called purchase-price agreement, that utilities pay for wind power from large-scale generators.

However, after winning the last election, the Liberals eliminated some of the policies of the previous Conservative government. The new government dropped the higher 30 per cent target for renewables. It has not renewed the purchase-price agreement. It also cancelled the small incentive, a sales-tax exemption, on small-scale renewable energy. It still has a net metering program – allowing small-scale producers to reduce or eliminate their power bills by feeding green power into the system – but this has not led to substantial growth in renewable electricity coming from small producers.

A recently released *Energy Strategy Discussion Paper* asks P.E.I.'s citizens whether the province should implement a feed-in tariff or not.[156] A true feed-in tariff, a policy that guarantees grid access and a set price for small renewable-power producers, would significantly boost incentives and production. This policy was responsible for tremendous growth in wind power deployment in Germany, for example, and has recently been implemented by Ontario.

ENERGY EFFICIENCY

P.E.I. has only recently started investigating energy efficiency as an option for reducing energy use and GHG emissions. For example, the province responded to Maritime Electric's demand-side management proposal, requesting more comprehensive programming. (Maritime Electric is P.E.I.'s utility and buys most of its power from New Brunswick to supply Island customers.)

The province established the Office of Energy Efficiency as a division of the province's Department of Environment, Energy, and Forestry to run several energy-efficiency programs.[157] It replaced the cancelled federal subsidy for pre- and post-retrofit energy audits. It also introduced a more generous subsidy for energy audits for low-income households. And finally, it supplemented the federal subsidy that is based on actual energy-efficiency improvements on homes. All of these make it even more cost-effective for individuals to make investments in energy efficiency and save money in the long run.

The government also hired the Vermont Energy Investment Corporation (Vermont EIC) to conduct an energy-efficiency potential study. The result was a fairly comprehensive study that showed there was considerable potential to save energy in the residential, commercial, and transport sectors from all fuel types.[158] The study also recommended policies to access this potential.

Following up on this study, the Energy Strategy Discussion Document asks citizens what measures should be adopted by the Island.[159] Two areas where efficiency gains can be made are in buildings and personal vehicles. P.E.I. remains the only province without a building code, though codes exist for Charlottetown and Summerside. Adopting the Model National Energy Code for Buildings for new government buildings would not be ambitious or comprehensive enough. Other provinces, including Quebec, Ontario, B.C., and Nova Scotia are implementing stronger standards for all new buildings.

Vermont EIC's energy-efficiency study recommended greenhouse gas emission standards for vehicles, essentially the equivalent of fuel-efficiency standards.[160] The premier has also stated that P.E.I. will implement California standards for vehicles by 2010, but has not followed up with legislation yet. However, the Energy Strategy Discussion Document does not even suggest fuel-efficiency standards of any kind as an option.[161] It focuses much more on the use of biofuels, an approach that has modest to no GHG benefits yet displaces agricultural food crops.

OTHER POLICIES

The overall strategy to tackle climate change in P.E.I. lacks cohesiveness, no doubt the result of not having a climate change action plan. Some programs have helped, such as establishing a transit system for Charlottetown. A more strategic and comprehensive plan would look at other factors determining emissions from transportation, such as urban form

and the extent of sprawl. Not only does the province lack a strategy to reduce sprawl, the new government reduced the gas tax by four cents per litre, encouraging more car use.

Global warming pollution from government operations is another example of a disjointed approach. The province has implemented some good initiatives, such as the purchase of more fuel-efficient vehicles for the government fleet and requiring a higher portion (40 per cent) of public energy from renewable power. However, the provincial government has not even established a baseline for its own emissions, so the GHG benefits of its policies are not known.

Adaptation should be a very important issue for a province that is likely one of the most vulnerable in Canada. P.E.I. has a good mapping system for forecasting impacts and has made funding available for research on impacts and adaptation, but it does not yet have an adaptation strategy, nor has it established a scientific advisory panel on climate change adaptation.

RECOMMENDATIONS:

- Finalize and publish a comprehensive, ambitious climate change action plan.
- Implement policies to harness all of the province's feasible energy-efficiency potential.
- Commit in legislation to California standards and other measures to reduce emissions from transportation.
- Implement strong policies to reduce emissions from agriculture, the greatest source of emissions for P.E.I. after road transportation.
- Finalize an adaptation strategy.

Nova Scotia

Emissions from its coal-fired power plants are predicted to stay high in Nova Scotia, something that could be addressed in its forthcoming climate change plan.

STRENGTHS:

- Passed *Environmental Goals and Sustainable Prosperity Act* that legislates target to reduce greenhouse gas emissions to at least 10 per cent below 1990 levels by 2020.
- Created long-term, least-cost electricity-sector plan to stop growth in electricity use by investing five per cent of power revenue in energy efficiency.
- Mandated that 10 per cent of electricity sales be obtained from new renewable sources by 2013.
- Established North America's first in-stream tidal technology centre.
- Promised to legislate California fuel-efficiency standards for vehicles and an Energuide 80 building code, though details and an implementation timeline remain unclear.

WEAKNESSES:

- Has vague and confusing policy on industrial GHG regulations and carbon pricing.
- Has funding for transit that is much lower than other provinces.
- Is planning to significantly expand road and highway construction.

MISSED OPPORTUNITIES:

- Neglecting to ramp up fuel-oil energy efficiency to the same degree as electric-efficiency efforts.
- Nova Scotia lacks an action plan for utilization of combined heat and power within its industrial sector and in conjunction with expansion of natural-gas distribution.
- Nova Scotia's rural communities could be deriving greater benefit from policies to encourage community-based renewable-energy development.

Greenhouse Gas Emissions

Nova Scotia's emissions have grown by three per cent since 1990.[162] The percentage is smaller than expected due to a precipitous drop in emissions from electricity between 2005 and 2006, which was due to three factors: a return to a lower-carbon fuel for electricity, a labour shutdown at a pulp and paper mill, and a good year for hydroelectricity production.[163]

Nonetheless, electricity is still the largest source of GHG emissions (31 per cent) in the province because a majority of its power comes from coal.[164] Electricity is also the primary reason for growth in emissions since 1990, though the exact increase is unknown for reasons of confidentiality.[165] Road transport is the second-most important sector in terms of GHG emissions (20 per cent) and its pollution levels have increased due to a shift from cars to SUVs, vans, and pickups.[166] Buildings are the next most important source of GHGs, though emissions from residential buildings are dropping while those from commercial buildings are increasing.

Climate Change Plan and Policies

Nova Scotia has no climate change action plan *per se*, but the province has initiated an extensive consultation process to produce a plan, which is expected in the fall of 2008.[167] Previous action plans such as the Green Energy Framework and the Electricity Marketplace Governance Committee were incomplete and were never carried forward to full implementation.[168]

Nova Scotia has implemented other global warming policies. Most importantly, in the spring of 2007, the provincial legislature passed the province's *Environmental Goals and Sustainable Prosperity Act*, which includes a long-term goal to see Nova Scotia "demonstrate international leadership by having one of the cleanest and most sustainable environments in the world by the year 2020."[169] The Act enshrines a goal of reducing GHGs to at least 10 per cent below 1990 levels by 2020, a target consistent with the regional target established by the New England Governors and Eastern Canadian Premiers. This target falls short of emission reductions that are consistent with avoiding dangerous climate change, at least 25 per cent reductions below 1990 by 2020.[170] However, the Act includes an annual review of the adequacy of the goals to ensure that Nova Scotia shows "international leadership."

ENERGY EFFICIENCY

Nova Scotia Power's Integrated Resource Plan established a least-cost strategy that includes investing five per cent of utility revenues in energy efficiency in order to stabilize energy use.[171] Electricity sales had been expected to grow by roughly two per cent per year. The Utility and Review Board has approved an initial $13 million budget through 2009 for

electric-efficiency programs. A government consultation process has recommended the creation of a "performance based independent efficiency agency" that is expected to collect ratepayer funding to ramp up to higher levels of energy savings.

The government has invested $10 million, currently through Conserve Nova Scotia, over the past three years in multi-fuel efficiency initiatives.[172] A study conducted by Conserve Nova Scotia showed that greater investments in fuel-oil efficiency savings were cost-effective. Unfortunately, the 2008 provincial budget neglected to increase energy-efficiency funding in the building sector,[173] despite the evidence of the potential for cost-effective GHG reductions in this area.

The *Environmental Goals and Sustainable Prosperity Act*, however, did commit the province to implementing EnerGuide 80 by 2011, a building code that includes greater energy efficiency. Consultations have also been conducted on improving the energy efficiency of appliances.[174] Actual regulations and implementation details are still pending.

RENEWABLE ENERGY

Nova Scotia has introduced a mandatory standard to have 10 per cent of electricity sales come from *new* renewable sources by 2013, with all renewables – current and new – contributing 18.5 per cent that same year.[175] The policy has thus far resulted in Nova Scotia Power negotiating a first installment of wind contracts for 240 megawatts. Total installed wind capacity is expected to reach 581 megawatts in 2013.[176] A wind-integration study undertaken by the Department of Energy explored the potential to install between 781 and 981 megawatts of power by 2020 through system upgrades.[177] Research and development on tidal energy is also underway, with the province committing financing and helping to complete North America's first in-stream tidal technology centre.[178]

While Nova Scotia's energy-efficiency and renewable-energy targets are impressive, the power utility's emissions are nonetheless expected to remain well above its 1990 emission levels beyond 2020. In the power sector, Kyoto targets will not be reached until 2030.[179] To meets its own legislated target, the province will need to regulate GHG emissions and compel Nova Scotia Power to reduce the amount of coal-fired electricity used for base-load generation. The provincial government has so far been unwilling to do that, and its support for such policies has been confused or nonexistent at meetings and conferences including last year's Council of the Federation, the annual meeting of Canadian premiers. The provincial government has yet to discourage the use of electric heating, an inefficient and high-emitting practice in a province run primarily on coal power.

The continued expansion of natural-gas distribution infrastructure offers opportunities for the province to increase the use of combined heat and power and district heating. This would coincide well with an efficiency agenda, since both these options significantly increase the energy efficiency of using natural gas. But the province has failed to capitalize on this.

TRANSPORTATION

Nova Scotia has also failed to adequately address road transportation, a major GHG source. The *Environmental Goals and Sustainable Prosperity Act* commits the province to California-like vehicle standards. Much like the building code, this commitment remains vague and ill-defined, but the forthcoming plan may clarify the exact standard and the implementation timeline.

The province is also putting more resources into the same old unsustainable transportation options, while making only modest investments in promoting alternatives. The province's per capita transit funding, for example, is a small percentage of the national average and is even well below funding from provinces of similar size.[180] The additional $3 million in the 2008 budget for sustainable transportation in rural communities is welcome but will not fill the substantial hole. Meanwhile, as part of its "Atlantic Gateway" initiative, the province is planning to significantly expand roads and highways.[181]

Conclusion

Nova Scotia appears to be on the cusp of joining provincial leaders on climate change. It has taken some important steps, especially with the *Environmental Goals and Sustainable Prosperity Act*. It is implementing important policies in renewable energy and, to a lesser degree, energy efficiency. However, it is still missing some important opportunities, especially in electricity, buildings, and transportation. The opportunity is still available for policies to be strengthened in order to reach its now legislated target. The province's commitment to tackling climate change will be assessed to a large extent on the upcoming climate change plan and its implementation.

RECOMMENDATIONS:

- Establish regulations and carbon pricing to reduce emissions from the province's coal-intensive electricity sector.
- Increase funding for multi-fuel (oil and natural gas) energy-efficiency initiatives to complement electric-energy savings investments.
- Introduce a suite of energy-efficiency regulations to complement energy-savings goals, including California vehicle standards for fuel efficiency, the restriction of electric resistance heating, and following through on EnerGuide 80 standards for new buildings.
- Modernize the electricity grid and utilize energy-storage technologies to expand renewable-energy generation.
- Dramatically increase funding for sustainable-transportation infrastructure to bring funding at least up to the Canadian average.
- Create a combined heat and power action plan.

Newfoundland and Labrador

Newfoundland and Labrador has introduced energy-efficiency and renewable-energy measures but still has no regulations for its electricity and oil and gas sectors.

STRENGTHS:

- The Energy Plan contains a suite of policy actions related to energy efficiency and conservation and support mechanisms for investment in renewable-energy projects.
- Has undertaken the initial stages of adaptation planning in some key areas.
- Has increased renewable-energy implementation, including 51 megawatts of wind commissioned by Hydro and a $4.5 million investment in a wind/hydrogen demonstration project.

WEAKNESSES:

- Still no greenhouse gas targets or timelines in the climate change action plan, although an update is due by the end of 2008.
- No strong policies, such as California vehicle standards, to address emissions from transportation, the province's greatest source of emissions.
- Has only voluntary flaring guidelines to address huge increase in emissions from oil and gas sector.
- No regulations, such as a cap-and-trade system, to address GHG emissions from heavy industry, including the power sector.
- GHG emission reductions are overly focused on building the Lower Churchill Dam and a transmission line from Labrador to Newfoundland.

MISSED OPPORTUNITIES:

- The Energy Plan could have emphasized the possibilities of developing decentralized, small-scale renewable-energy projects, especially for remote communities, rather than recommitting to building more long-distance transmission lines.
- The Energy Plan did not prioritize investment in cost-effective energy-efficiency measures in all sectors.

Greenhouse Gas Emissions

Newfoundland and Labrador's GHG emissions increased up until 2002 but have been dropping since then, and 2006 data (latest data available) show that GHG emissions are the same as they were in 1990.[182] Between 2003 and 2006, provincial emissions have dropped by 14 per cent. Oil and gas, however, remains the greatest GHG polluter in the province (responsible for 28 per cent of emissions), and has produced the greatest growth in emissions since 1990.[183] Road transportation is the second-highest emitter of greenhouse gases (20 per cent).[184]

Emissions from electricity are on the decline, with a big drop between 2005 and 2006. This is due to a switch to somewhat cleaner fuels (when previous supply problems got resolved) and an increase in hydroelectric capacity.[185]

Climate Change Plan and Policies

Newfoundland and Labrador expects to update its 2005 climate plan by the end of 2008. The 2005 plan had no greenhouse gas targets and relied mostly on voluntary and educational initiatives.[186] For example, it included no real policies to address the sector with the highest emissions (transportation) or the sector with the fastest-growing emissions (oil and gas), whose emissions have doubled since 1990.

Newfoundland did release an energy plan, *Focusing Our Energy*, in September 2007.[187] Its overarching framework appears to make protecting the environment a priority. Its number 1 principle is "Sustainability", its first goal is "Environmental Leadership", and it also includes a goal to invest oil and gas revenues in Newfoundland's future, including renewable-energy infrastructure and increased energy efficiency.[188] Details of the energy plan do include some good initiatives in these areas and forecasts more to come from the climate change action plan. However, the energy plan is overwhelmingly focused on developing large-scale and in some cases unsustainable energy projects, such as more offshore oil projects and the Lower Churchill Dam and transmission line.[189]

ENERGY EFFICIENCY AND CONSERVATION

Beginning with the strong aspects, the energy plan promises to establish an Energy Conservation and Efficiency Partnership (ECEP) with $5 million in funding to develop a five-year conservation and efficiency plan by March 2008.[190] However, as of this writing, that plan has not been released and so the effectiveness of the ECEP and the level of ambition of the plan remain to be seen. Several environmental groups, including the David Suzuki Foundation, have advocated a model such as Efficiency Vermont,[191] which has also been adopted by New Brunswick and Nova Scotia.

The energy plan also allocates funding for one year to provide energy audits to homeowners. These energy audits are available to homeowners both before and after investments to retrofit their homes to make them more energy efficient.[192] This measure complements a federal program that provides grants based on the improvement in efficiency. The province will also fund energy audits and retrofits for low-income households, a much-needed program since low-income households are least able to invest in making their homes more energy efficient.

Paradoxically, while the province is assisting citizens to retrofit homes, Newfoundland and Labrador is only "investigating" a stronger building code for the construction of new residential, commercial, and institutional buildings.[193] Updating building codes at the earliest possible opportunity would allow the province to avoid the costs of auditing and retrofitting new buildings in the medium term.

Similarly, the energy plan considers incentives for its citizens to buy more fuel-efficient vehicles but will only "investigate" mandatory fuel-efficiency standards.[194] Momentum is building in North America, among many U.S. states and at least five provinces, to adopt California vehicle standards. Much higher mandatory standards would help to mitigate the "thousands of individual decisions concerning vehicle purchases, driving habits, and distance traveled" that the plan bemoans.[195]

GOVERNMENT

Interestingly, the plan has much stronger measures for vehicles and buildings within the government's own operations, a welcome approach. The Newfoundland government will have to ensure that at least 25 per cent of its fleet purchases are fuel-efficient vehicles.[196] It will also require all new government or government-controlled buildings and all major renovations to be 25 per cent more energy efficient than required by the current code.[197] These buildings must also achieve a LEED Silver Standard, a high standard that incorporates different environmental attributes. With the long lifetime of buildings and the high environmental and fuel costs of driving, it only makes sense, especially from an economic viewpoint, to have strong, mandatory standards for all buildings and vehicles, not just those owned by government.

PROGRESS ON 2005 CLIMATE CHANGE PLAN

The Newfoundland and Labrador government has followed through on some initiatives from the 2005 climate change plan. It has made modest advances in renewable-energy development. Newfoundland and Labrador Hydro has commissioned, through a request-for-proposal mechanism, 51 megawatts of wind projects.[198] The province has also made a

$4.5 million investment in a Wind-Hydrogen Power Generation Demonstration Project as a commitment under the plan. [199]

Also, the province is slowly developing its adaptation strategy from the 2005 plan. Adaptation workshops have been organized throughout the province. Natural-hazards mapping and assessment is underway. A cohesive and comprehensive adaptation plan would be helpful, possibly facilitated by a scientific advisory panel on adaptation.

THE ENERGY PLAN: TOO MUCH "MORE OF THE SAME"

As mentioned above, the energy plan's strong focus is on unsustainable energy development.[200] The upcoming climate change plan risks being similarly unsustainable. Any credible climate change action plan has to tackle the greatest sources of emissions and those with the greatest growth, using significant policy instruments such as pricing signals, regulations, and incentives. Additional growth in the oil and gas sector alone could overwhelm any progress made in reducing greenhouse gas emissions in the areas outlined above.

The policy proposals in the energy plan are weak for the four largest emitting sectors, in descending order:

- Transportation: create incentives for buying fuel-efficient vehicles and "investigate best practices" in other transport sub-sectors,
- Oil and gas: a voluntary standard for flaring,
- Electricity: build the Lower Churchill Dam and a transmission line from Labrador to Newfoundland, and
- Waste: investment in one landfill gas-capture project.[201]

Regulations or fiscal disincentives would signal a much stronger commitment from the government to reduce overall GHG emissions: California standards for vehicles; a cap-and-trade system or carbon tax to reduce emissions from industry, including the oil and gas and electricity sectors; and mandatory capture of emissions from landfills.

If the energy plan is any indication of its priorities, the province seems overly dependent on the development of the Lower Churchill River and significant investments in more long-distance transmission lines. The energy plan seems to indicate that the Lower Churchill project is the main way that Newfoundland and Labrador will reach its GHG target set by the New England Governors/Eastern Canadian Premiers: 10 per cent below 1990 levels by 2020. The province will miss its 2010 target because the Lower Churchill will not be in place until 2015.[202]

On the surface, the Lower Churchill project may sound like a good one. Develop renewable energy and explore transmission from Labrador to Newfoundland. But as the energy plan states, 85 per cent of the province's citizens already have access to renewable

energy, mostly from existing hydro developments. The Lower Churchill project will have significant impacts on the landscape and terrestrial and aquatic ecosystems within the Churchill basin. The option of a new transmission corridor to Newfoundland would compound those impacts.

A similar issue is the connection of remote communities via new transmission lines. The province has acknowledged that building a transmission line to the north and south coast of Labrador would be incredibly costly and add only 3,500 people to the grid, but a government news release reiterates its commitment to these projects.[203] Unfortunately, the only other option discussed in the release is for these communities to continue using diesel-generated electricity, which is highly polluting and costly.

And yet, the energy plan itself does mention the possibility of using wind power and a storage device such as hydrogen to replace diesel generation in remote communities.[204] A pilot project already exists to electrify Ramea with wind power, and the province is investigating other options for renewable power and storage. This is the way of the future, so we hope the province will build on the lessons from Ramea and undertake similar projects.

RECOMMENDATIONS:

- Set strong GHG reduction targets and timelines that meet or exceed those established by the New England Governors/Eastern Canadian Premiers.
- Develop a comprehensive climate change action plan, in consultation with multiple stakeholders, which includes a strong carbon price – through a carbon tax or cap-and-trade system – to reduce emissions from heavy industry to avoid dangerous climate change.
- Enact California fuel-efficiency standards for new-vehicle purchases.
- Establish an energy-efficiency and conservation agency, similar to Efficiency Vermont, to develop programming to educate and deliver efficiency programs for all sectors.
- Establish minimum and sustained investment levels in energy efficiency (especially for the building sector) and conservation.

So far, the Yukon only has plans to address emissions from government operations, though a forthcoming climate change plan could change that.

Yukon

STRENGTHS:

- Has reduced emissions since 1990, though it is largely due to the closing of the Anvil Range mine.
- Has a plan to reduce emissions from government operations, though most of the reductions will only happen after 2017.
- Proposed a climate change secretariat to coordinate action and provide annual reports to the legislature.

WEAKNESSES:

- Has been very slow in developing a climate change action plan, with a release date scheduled for the end of 2008, two and a half years after its framework strategy.
- Will only be setting a GHG emission reduction target and "implementation strategy" by the end of 2010.
- Is supporting fossil-fuel megaprojects such as development of natural gas and oil reserves and massive pipelines to feed southern markets.
- Is actively promoting new mines, without considering increased GHG emissions from their use of diesel-fueled power.
- Promotes sprawling urban subdivisions.

MISSED OPPORTUNITY:

- Yukon's small population and lack of an entrenched oil and gas industry can allow it to be innovative in both mitigation and adaptation, especially through the use of public engagement.

Greenhouse Gas Emissions

Greenhouse gas emissions in the Yukon have declined by 27 per cent since 1990, largely because the Anvil Range mine was closed in the late 1990s.[205] Emissions have decreased a further 10 per cent since 2003.[206] Road and off-road transportation are the greatest source of emissions, followed by residential, commercial, and institutional buildings.

Decreased mining activity has led to a precipitous decline in GHG pollution from electricity, as has the addition of more residents to the hydro-powered grid.[207] However, natural-gas production and shipment via pipeline to B.C. has led to increased emissions as have the diesel trucks used to support that industry.

Climate Change Policies

The Yukon government has not yet delivered a full climate change plan with concrete policies, a surprisingly laid-back approach considering the urgency required to tackle climate change from a place that will be highly affected by those changes. The territory released an inventory of initiatives on climate change in 2001, most of which were programs and policies from elsewhere, including the federal government, municipal governments, and even NGOs. In September 2006, the Yukon released a climate change strategy, mostly a high-level vision document with little detail.[208] The territory stated at the time that a comprehensive and detailed action plan would follow, to be developed through broad consultations. Almost two years later, in May 2008, the territory released a draft climate change plan, stating that the final plan will be out at the end of 2008 and that it will require two more years, until the end of 2010, to have an actual GHG target and implementation strategy.[209] And *that* strategy will have to be phased in "in many cases."

The government says the main reason for the continued delay is to allow it to consult with the public. There's nothing wrong with consultations, except those were initiated two years ago and, had they been prioritized, could have been completed long ago. Another stated reason for the delay is to conduct an inventory of GHG emissions: "what kinds of gases are being produced, by what sector, and how much."[210] Environment Canada already produces an annual inventory with that data and, though it is proxy data, it gives a clear enough picture of the source and quantity of emissions to develop a plan and a target.

ADAPTATION

The climate change draft plan has four sections: education, adaptation, mitigation (i.e., reducing emissions), and research.[211] The draft plan states that adaptation is the highest priority, but actions listed in this section are still at the assessment stages: establishing research centres, monitoring changes, and assessing risks. This also seems to highlight a lack of urgency, especially since impacts in the North are already occurring and being documented through studies like the *Arctic Climate Impacts Assessment*. The 2006 strategy focused on the biophysical and socioeconomic impacts of global warming and made a strong case for developing and implementing an adaptation plan quickly.[212] A broad adaptation plan for the Yukon is well overdue.

A small-scale adaptation project is underway, but this five-year project only involves three Yukon communities. The funding is very limited considering what is truly required for the Yukon to adapt to the impacts of climate change.

REDUCING GHG EMISSIONS

The mitigation section has some detail on reducing emissions from government. There are targets: halt the increase in GHG emissions by 2012, a 20 per cent decrease between 2012 and 2017, and going carbon neutral by 2022.[213] The final goal is an ambitious one, but with an extended timeline. As a point of comparison, the B.C. government is planning on being carbon neutral 10 years earlier, in 2012, and has already received commitments from more than 100 municipal governments to do the same.

The draft plan addresses emissions that are outside of government. This is a step forward, since the strategy from two years ago only considered government-related emissions. However, the policies being considered are mostly voluntary or incentive programs, including:

- Provide incentives to buy fuel-efficient vehicles,
- Develop, in collaboration with industry, best management practices for reducing emissions,
- "Explore" a green-building pilot project in Whitehorse, and
- Work with municipal governments to reduce solid waste.[214]

Given the urgent need to address global warming, the Yukon must consider much stronger policies, like those put in a "continue to explore" list in its draft plan.[215] Emissions standards for vehicles, regulations for waste and biogas capture, a carbon tax, a stronger building code, and renewable-energy targets need to not only be "explored" but adopted and implemented.

RENEWABLE ENERGY AND ENERGY EFFICIENCY

The Yukon government already has some community-based programs, mostly informational in nature, which it funds or contributes to. Energy-efficiency and renewable-energy programs are administered through the Energy Solutions Centre.[216] Yukon Housing provides information on energy efficiency in residential homes. The territorial government also funds the Northern Climate ExChange, an information-sharing and educational partnership between Yukon College and the two senior levels of government.[217] The Northern Climate ExChange is the organization implementing the small-scale adaptation plan.

The Yukon also released a draft of an Energy Strategy in May 2008.[218] It promotes oil and gas development and suggests that the Yukon may want to link to the B.C. grid. This may be to import power from B.C. to power new mines or to export power from yet-to-be-developed mega-dams (another proposal from the Strategy). Both would have

serious impacts on the local ecology and would encourage energy use instead of energy efficiency.

The Yukon Energy Corporation has officially stalled its research into wind energy and is no longer monitoring or planning to develop wind energy. Although the Energy Solutions Centre has stated that it wishes to do so, there seems to be little cooperation between the Centre and the Yukon Energy Corp. for the transfer of research equipment or information. Yukon Energy and the Yukon government have not formalized any policies to mandate or even encourage renewable-energy projects.

GOVERNANCE AND ACCOUNTABILITY

The draft climate change plan does have some very good governance and accountability measures.[219] First, the Yukon will be setting up a climate change secretariat to ensure "effective implementation and coordination" of the government's commitments on global warming. The secretariat will work with and report to government departments involved in climate change and energy. What is not clear – but would strengthen its role considerably – is whether the secretariat would report to the premier's office or cabinet. This would place responsibility at the highest level and signal climate change as a real priority.

There is also a review process. The secretariat will provide annual reports to the Yukon legislature. The action plan will also be updated two years after its release. That is when overall targets will be set. And the plan will also be reviewed and updated every five years.

These accountability measures will help. Successes and weaknesses can be brought to light and allow for modifications and improvements. The challenge for the Yukon will be to develop a stronger, more ambitious plan than the draft plan suggests, so that all the reviews will be able to report real progress in the form of reductions in greenhouse gases.

RECOMMENDATIONS:

- Complete the climate change action plan with strong policies that address the vast majority of GHG emissions within the Yukon. Set GHG reduction targets for 2020 based on best climate change science.
- Implement as quickly as possible a territory-wide climate change adaptation strategy.
- Join Canadian provinces that have committed to a cap-and-trade system for heavy industry.
- Stop promoting fossil-fuel developments that will only add to an unsustainable global energy system.

The government of the Northwest Territories claims that the Mackenzie Gas Project is the solution to saving the polar bear, though it also admits NWT's emissions will soon double or triple.

Northwest Territories

STRENGTHS:

- Has committed to reducing greenhouse gas emissions from government operations by 10 per cent below 2001 levels by 2011.

WEAKNESSES:

- NWT climate plan only addresses three per cent of the territories' total GHG emissions, those from government.
- Has neither a policy nor set targets for industrial emissions, which make up half of the territories' total GHG emission sources.
- NWT accepts that its GHG emissions will double or triple in the next few years.
- Has climate change action plan that relies exclusively on delivering information programs and subsidies and does not consider other policy instruments such as a carbon tax or regulations such as energy-efficiency standards.
- Claims that the Mackenzie Gas Project is a solution to climate change.

MISSED OPPORTUNITIES:

- Released a climate change action plan that merely acknowledged that an adaptation strategy "needs to be developed", but only promises one upon implementation of the action plan.
- Updated its 2001 climate change action plan in 2007 without developing any new policy approaches to reducing emissions.

Greenhouse Gas Emissions

A small population and low greenhouse gas emissions means data for the territories is more variable and often combined with other territories. The Northwest Territories and Nunavut split in 1999; therefore, data going back further than that are not disaggregated. GHG emissions in the two territories have decreased by 27 per cent between 1990 and 2006, and emissions in the NWT have declined by 10 per cent in the past three years.[220] The electricity sector is the highest emitter in the NWT. Though the electric utility

has increased hydro capacity since 1990, remote communities are still using diesel generators.[221] Transportation, both on and off-road, is also a significant contributor to GHG emissions.

Growth statistics since 1990 are combined for the NWT and Nunavut. The territories have seen increased emissions from both transport trucks and off-road diesel vehicles.[222] Emissions have declined from commercial and institutional buildings and the oil and gas industry.

Climate Change Plan and Policies

In 2007, the government of the Northwest Territories released a revised climate change action plan, *NWT Greenhouse Gas Strategy: A Strategy to Control Greenhouse Gas Emissions in the NWT, 2007-2011*.[223] The strategy is an update from the 2001 inventory, but includes few new policy initiatives. In fact, the plan only sets a target for reducing emissions from government operations and "encourages all other sectors to develop their own emission management plans and targets."[224] According to the plan, government-based emissions make up three per cent of total NWT emissions. Meanwhile, total emissions are expected to at least double in the next four years due to mining and oil and gas projects, especially the Mackenzie Gas Project.[225]

This is highly irresponsible given that, during consultations with stakeholders, the government was criticized for a lack of specific targets and the absence of an implementation plan in its 2001 plan. This plan does not rectify those issues and the very small scope of the plan does not reflect a statement by the former NWT Minister of the Environment and Natural Resources that "Global climate change is one of the most serious environmental, economic, and political challenges of our time."[226]

INDUSTRY

Industrial development is the major source of new emissions in the NWT and will continue to be so for the foreseeable future. The NWT government sees this development as an essential part of creating jobs and growing the NWT economy but is clearly unwilling to make these industries take responsibility for their impacts on global warming. The NWT government claims, in fact, that only the federal government has the ability to regulate these industrial emissions. However, the territorial government does retain jurisdictional authority to tax carbon-dioxide emissions, reduce or eliminate subsidies at airports and on roads, and regulate energy-efficiency standards for buildings and vehicles.

Furthermore, the government's claim that the Mackenzie Gas Project is part of the solution to climate change[227] shows that policy-makers underestimate the impact of the project on global greenhouse gas emissions. The basis for this claim is that the natural

gas produced in the Mackenzie will be used to displace coal for power production. There is no evidence that this has happened elsewhere and, in any case, the most likely destination for *this* natural gas is Fort McMurray, for producing unconventional crude from the tar sands, the most unsustainable of energy projects and the opposite of the cure for climate change.

That said, other energy developments could have a positive effect on the territories' emissions, although current proposals are not enough to offset the massive increase from industrial development. First, there is a proposal to build transmission lines and supply diamond mines with power generated at an expanded, existing hydroelectric dam. While this initiative could potentially reduce emissions by 0.3 megatonnes, about 17 per cent of the NWT's emissions, it is still in the early planning stages.[228]

Similarly, the NWT's climate change action plan has different proposals for renewable energy projects (micro-hydro, wind, ground-source heat pumps, and solar hot-water heating), but strategies in these areas are all still being assessed, monitored, or tested. Likewise, guidelines for distributed generation systems are still being developed.

RECOMMENDATIONS:

- Set emission-reduction targets for all emissions, including industry, and policies to reach them.
- Introduce a carbon tax.
- Eliminate subsidies for roads and airports.
- Build on Yellowknife's initiative and mandate Energuide 80 energy standards for new residential and commercial buildings throughout the NWT.

Nunavut

Nunavut's climate change focus is on adaptation, with no plan or target to reduce emissions.

STRENGTHS:

- Has undertaken a long consultative and scientific process to develop adaptation strategies for the territory.
- Has targets for improving the energy efficiency of government and government-funded buildings.
- Is considering improved regulations in energy efficiency, including buildings and appliances.

WEAKNESSES:

- Upcoming climate change plan will have no targets or measures to reduce greenhouse gas emissions.
- Only promises to develop a transportation strategy, with no mention of reducing the environmental impact of transportation, despite it being the largest contributor to GHG emissions.
- Plans to develop the territory's uranium and oil and gas resources – despite the known impacts of these activities, especially on Northern communities and environments.

MISSED OPPORTUNITY:

- The recent energy strategy and the upcoming climate change strategy provided opportunities for Nunavut to set goals and strategies to reduce its greenhouse gas emissions. It appears that won't be done.

Greenhouse Gas Emissions

As explained in the NWT section, greenhouse gas data going back further than 1999 are combined. Data is available for each after they split in 1999. Total GHG emissions in the NWT and Nunavut have decreased by 27 per cent between 1990 and 2006, and emissions in Nunavut have declined by 69 per cent between 2003 and 2006 (data variability may have overestimated this total).[229] Because inter-city travel is done by air, aviation is the greatest contributor to GHGs in Nunavut, followed by road and off-road transportation, and electricity.[230] All electricity production in Nunavut is diesel powered.[231]

Nunavut and the Northwest Territories have experienced growth in emissions from both on-road and off-road diesel vehicles, while reductions have occurred in commercial and institutional buildings and the oil and gas industry.[232]

Climate Change Plan and Policies

Nunavut does not have an active climate change action plan, but it will complete a draft plan at some point in 2008. Government officials have said that the plan will focus exclusively on adapting to climate change. Its Energy Strategy, released in September 2007, does include measures that may reduce greenhouse gas emissions, but the focus is clearly on energy security.[233] This is not terribly surprising, given the territory's small population and financial resources and high vulnerability to global warming. However, Nunavut is so vulnerable to climate change that it needs to send a clear and forceful signal that reducing emissions is important.

ADAPTATION

The territory has for many years engaged its citizens and important stakeholders on adapting to climate changes. In 2005, after a series of consultations with the Inuit, the territory released a series of papers that documented the changes being seen on the ground.[234]

Over the past year and a half, four workshops have been organized to discuss adaptation strategies. The last one, in March 2008, brought together Inuit elders and youth to discuss the impacts of climate change in Nunavut and attempted to pass on traditional knowledge of the land and the changes being experienced.

Nunavut has also hired scientists to produce assessments of the impacts of climate change. Though not exhaustive geographically, the studies assessed the global warming impacts on water flow, coastal erosion, vegetation, and terrain stability in different locations. The Nunavut government has also engaged the Canadian Institute of Planners to help develop community adaptation plans for all communities. Two, for Clyde River and Hall Beach, have already been completed.

More discussions with stakeholders and a government department workshop will complete the process before the draft of the climate change plan is produced, likely later this year. This involved process appears to have been successful in engaging citizens on the issue and gathering a lot of information on climate change impacts and adaptation strategies from a variety of perspectives.

MITIGATION

Nunavut has focused less on mitigation, actually reducing GHG emissions and the impact on climate change. The primary objective of the energy strategy is "reducing Nunavut's dependence on fossil fuels."[235] But given that one of the four main policy actions is to foster oil and gas development, the objective appears to be to decrease the territory's reliance on *imported* fossil fuels.

Nonetheless, the objective is a valid one and some of the policy actions (implementing conservation, energy efficiency, and alternative-energy programs) could lead to lower environmental impacts, including emissions that contribute to global warming.[236] Besides, one strategic objective is to reduce GHG emissions.

One big hole in the energy strategy is the issue of transportation. The transportation section has few details, promising only to develop a strategy in the future, and suggesting a short list of fairly weak policies to be considered.[237]

The conservation and energy-efficiency programs include a lot of awareness programs, but supplemented with more rigorous policies, like targets and regulations.[238] For example, Nunavut plans to develop new standards for retrofitting buildings and constructing new ones. However, no details are included so it remains to be seen how strong these will be. The government building program is more detailed, striving for 20 per cent reductions in energy use from government buildings and achieving 25 per cent better than the National Model Building Code for homes financed through the Nunavut Housing Corporation.[239] A new *Energy Efficiency Act* was also introduced in 2007 to outlaw incandescent bulbs, and more updates are anticipated.[240]

A strategy is also in place to develop more renewable energy to replace the diesel generators that Nunavut now depends on for all of its power. The strategy suggests that different policies and technologies should be investigated but also concedes that hydroelectricity will be the focus.[241] One larger dam with a storage reservoir and two to three run-of-the-river projects are being considered. A pilot project using solar hot-water heaters and a solar wall is also mentioned.[242]

The last policy objective, to oversee the development of the territory's uranium and oil and gas resources, is the most troubling.[243] Despite the usual rhetoric about ensuring environmental sustainability, no details are given. It is understandable that Nunavut would want greater economic development, but when developing unsustainable energy resources, it is very difficult if not impossible to avoid environmental degradation through greater impacts on the land and increased air pollution. A strong regulatory environment is required, but the energy strategy gives no indication that this is a priority and Nunavut, as a territory, has limited jurisdiction in this area. Analysis of the exponential increase in the volume of oil spills in Nunavut over the last decade[244] does not give any reassurance that Nunavut will be able to avoid greater environmental impacts from greater resource development.

Conclusions

It is not surprising that Nunavut is focusing on climate change adaptation rather than mitigation. But the territory is so vulnerable to climate change that it needs to send a clear and forceful signal to the rest of Canada and the world that reducing greenhouse gas emissions and minimizing climate change as much as possible is of paramount importance. Its approach so far does not do this. More thought needs to be put into how it can also address its own contribution to global warming, so that others can be more forcefully compelled to do the same.

RECOMMENDATIONS:

- Reconsider having only adaptation measures in the upcoming climate change plan and include a framework for developing mitigation strategies.
- Include greenhouse gas considerations as part of the transportation strategy.
- Reconsider the development of uranium mining, a dangerous and unsustainable industry.
- Require that any new oil and gas development be carbon neutral, including the implementation of GHG accounting methodologies, the development of mitigation strategies to reduce emissions from operations, and the purchase of high-quality offsets for remaining emissions.
- Assess the potential of renewable-energy technologies other than hydro.
- Develop high energy-efficiency standards for buildings and appliances.

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In the absence of effective policies from Canada's federal government to tackle global warming, many provinces have stepped up to implement their own plans and policies.

Provincial Power Play: Breaking Away from Federal Inaction on Climate Change documents this shift, assessing each province's climate change plans and programs and comparing the relative merits of each. With a few notable exceptions, provinces are moving forward with more ambitious targets and stronger policies than those of the federal government.

The David Suzuki Foundation is committed to achieving sustainability within a generation. Combatting global warming is a vital element in creating a sustainable, prosperous future.

David Suzuki Foundation

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