

*A Response to
Saskatchewan's*

CLIMATE CHANGE

W H I T E P A P E R

By Brett Dolter PhD



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INTRODUCTION

The Saskatchewan government released their Climate Change White Paper on October 18th, 2016. The paper is positioned as an “alternative approach to Prime Minister Trudeau’s national carbon tax” (Government of Saskatchewan, 2016).

It is no secret that the Saskatchewan government is strongly opposed to a national carbon price. In the press release accompanying the report Premier Wall asserts, “Make no mistake - a carbon tax will harm Saskatchewan.”

The Saskatchewan government believes that “talk about a carbon tax and cap and trade is the wrong conversation to be having” and seeks to shift the national conversation to “one that has a global perspective and a focus on innovation” (p. 18).

But for this White Paper to truly shift the conversation on carbon pricing in Canada one would imagine it must do two of three things:

1. Show carbon pricing to be ineffective; or
2. Show carbon pricing to be harmful; and
3. Offer superior alternative policies.

Has the White Paper succeeded?

INEFFECTIVE TAX?

In making its “Case Against a Carbon Tax” the White Paper regularly invokes the spectre of British Columbia’s Carbon Tax. Here is a passage from page 27:

The New York Times applauded the British Columbia carbon tax, saying it was environmentally effective and did not damage the economy.” In fact, the provincial economy grew faster than its neighbours’ even as its greenhouse gas emissions declined.”

From Saskatchewan’s perspective, the two most important questions to ask are:

- *has the British Columbia tax sent a price signal that is causing people and businesses to change their behaviour and reduce their carbon output?*
- *has this been done in a manner that fosters continued economic growth and job creation?*

For some critics, the answer to both questions is a resounding no.

(Saskatchewan White Paper, p. 27)

In support of this “resounding no” to Saskatchewan’s questions, the White Paper cites a blog post by CCPA economist Marc Lee (Lee, 2016) and a *Policy Options* article by SFU economist Mark Jaccard (Jaccard, 2016). Let’s take a closer look at both of their arguments.

In his blog post, Lee argues that the effectiveness of the BC carbon tax has been “overstated by people who love carbon taxes.” His analysis looks at trends in average emissions per capita and he finds that emissions in BC have not decreased substantially with the introduction of the tax. Lee doesn’t, however, conduct a controlled econometric analysis to ask — holding other factors constant — has the carbon tax had an effect on BC emissions?

Other researchers have conducted careful economic analysis to understand the impact of the BC carbon tax. For instance, The *New York Times* article quoted in the White Paper cites research conducted by Brian Murray and Nicholas Rivers. Summarizing several studies of BC’s carbon tax, Murray and Rivers (2015) offer a *nuanced yes* to Saskatchewan’s two important questions:

“Empirical and simulation models suggest that the (carbon) tax has reduced emissions in the province by between 5% and 15% since being implemented. At the same time, models show that the tax has had negligible effects on the aggregate economy, despite some evidence that certain emissions-intensive sectors face challenges”

(Murray and Rivers, 2015)

UBC Economics Professors Werner Antweiler and Sumeet Gulati confirm this finding in the transportation sector in their working paper *Frugal Cars or Frugal Drivers? How Carbon and Fuel Taxes Influence the Choice and Use of Cars*. Antweiler and Gulati conclude that “without BC’s carbon tax fuel demand per capita would be 7% higher, and the average vehicle’s fuel efficiency would be 4% lower” (Antweiler & Gulati, 2016: p. 1).

Lee’s post is far from the smoking gun Saskatchewan needs to make its case against carbon pricing. It does not prove the carbon tax ineffective and Lee himself is not against carbon pricing. In fact, in the very same blog post cited by the government, Lee writes “a well-designed carbon tax can be the engine of a green industrial revolution” and, “to be truly effective, carbon taxes will need to be much higher than BC’s current rates” (Lee, 2016).

Mark Jaccard (2016) offers a different perspective. As of late, Jaccard has taken the position that carbon pricing is unlikely to be politically popular. Jaccard has never once argued that carbon pricing is ineffective, only that it might displease voters. Here is an excerpt from the Jaccard article cited in the Saskatchewan White Paper:

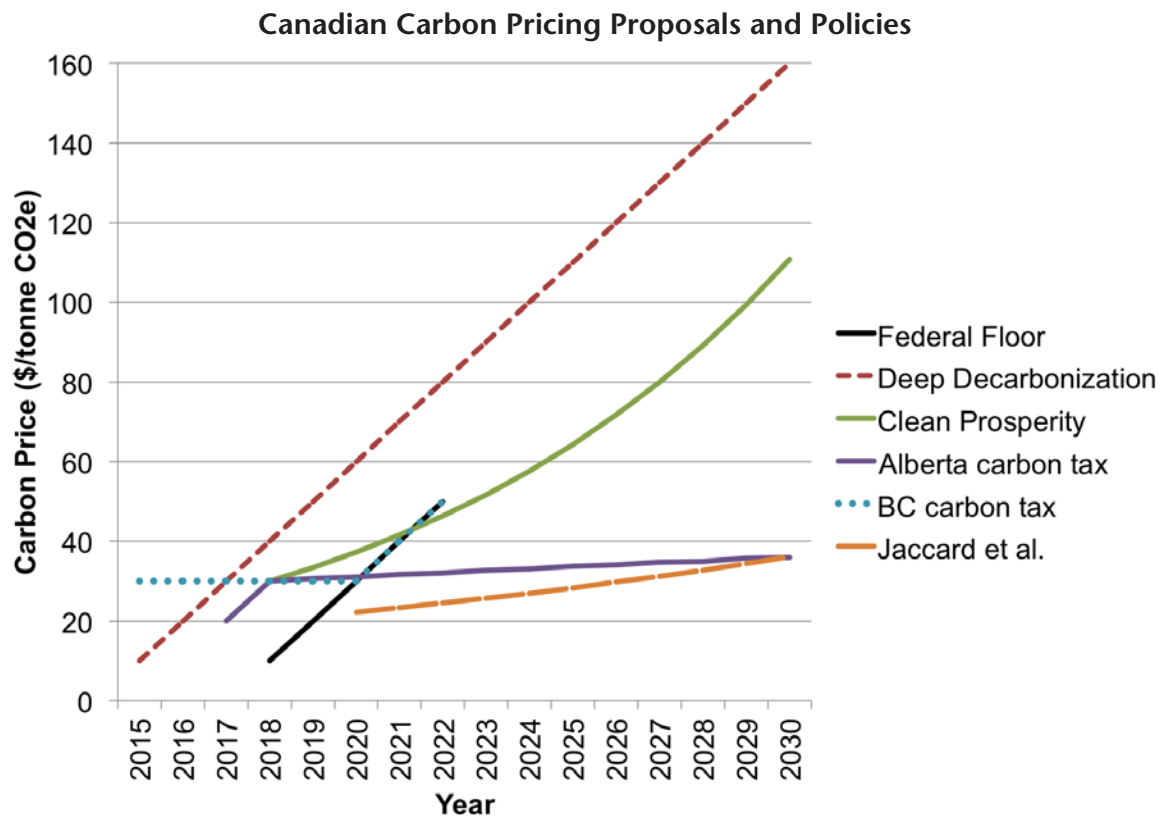
“The reality is that significant emissions reductions will happen only if we rapidly switch to zero- and partially-zero-emissions technologies. Fortunately, these are now commercially available. But they won’t be widely adopted unless technologies that burn coal, oil and natural gas are phased out by regulations or made costly to operate by carbon pricing. The latter can be either a carbon tax, as in British Columbia, or the price of tradable CO2 permits under an emissions cap, as in Quebec.

Most important of all, Trudeau must understand that relying solely on one of these two forms of carbon pricing to achieve even the seemingly modest Harper target may cost him his job. While carbon pricing has become a mantra for economists, environmentalists, academics,

celebrities, media pundits and even corporate heads, none of these people needs to get reelected. For politicians with survival instincts, it's a different game" (Jaccard, 2016).

This is not an argument against the effectiveness of carbon pricing. Instead it is free political advice for Justin Trudeau.

Since that February *Policy Options* paper Jaccard has continued to build on his political acceptability argument. In a recent working paper with co-authors Mikela Hein and Tiffany Vass, Jaccard argues that flexible regulations can achieve reductions at a lower political cost than carbon pricing.



Each line represents a proposed or implemented carbon price pathway. The Federal Floor, Alberta carbon tax and BC carbon tax lines are proposed and implemented policies. The Deep Decarbonization line comes from Bataille, Sawyer and Melton (2015). The Clean Prosperity line is an estimate of the pricing path outlined in Bataille and Sawyer (2016). The Jaccard *et al.* (2016) line comes from the report authored by Jaccard *et al.* (2016).

Using carbon pricing alone Jaccard *et al.* (2016) calculate that Canada would require a price of \$160/tonne Carbon Dioxide equivalent (CO₂e) to meet the 2030 reduction target. An alternative would be to use a suite of “flexible regulations” such as a partial-zero-emission-vehicle standard for personal vehicles, zero-emission transit vehicles, performance standards for industry, a nation-wide coal phase-out by 2030 (save for plants with carbon capture and storage — CCS), and a requirement that thermal provinces achieve 90% emissions-free electricity by 2030. With these flexible regulations the carbon price would only need to escalate to \$40/tonne by 2030 (the Jaccard *et al.* line in the figure above).

These flexible regulations impose costs, but, so the Jaccard theory goes, these costs can be buried out of sight of the electorate.

Saskatchewan has experience with the cost of regulations. The province recently responded to the federal coal-fired electricity regulation by equipping the Boundary Dam III coal plant with carbon capture and storage (CCS) technology. There was a hefty price-tag: \$1.5 billion for 110 Megawatts of electricity capacity. A quick calculation reveals that the cost of using CCS to meet the federal regulation implies a carbon price of \$60/tonne CO₂e relative to a new conventional coal plant (see table below).

The Cost of the CCS Response to the Federal Coal-Fired Regulation

	tonnes CO ₂ e/MWh	\$/MWh	\$/tonne
New Coal plant	1.069	73.05	
Coal plant with CCS*	0.143	128.6	
Incremental change	-0.927	55.55	
Carbon tax equivalent			\$59.94

*Based on Boundary Dam Unit 3 cost with sales of captured CO₂

Author's calculations.

Will voters notice the increase to their electricity bills any less when it is caused by regulation? Maybe. But it still does not make the argument that carbon pricing is ineffective.

As Jaccard *et al* (2016) write, flexible regulations “will be less economically efficient” than carbon pricing. This means that we will pay more for emissions reductions achieved with flexible regulations than we would for reductions achieved with a carbon pricing policy. The career-minded politician would just have to hope the voters won't notice...

HARMFUL TAX?

Will a carbon pricing policy harm Saskatchewan as the White Paper suggests?

As evidence of harm, the White Paper presents a chart showing how much each sector would have to pay under a \$50/tonne carbon tax (see chart below). Adding the totals together, the White Paper estimates \$2.5 billion worth of carbon charges in Saskatchewan.

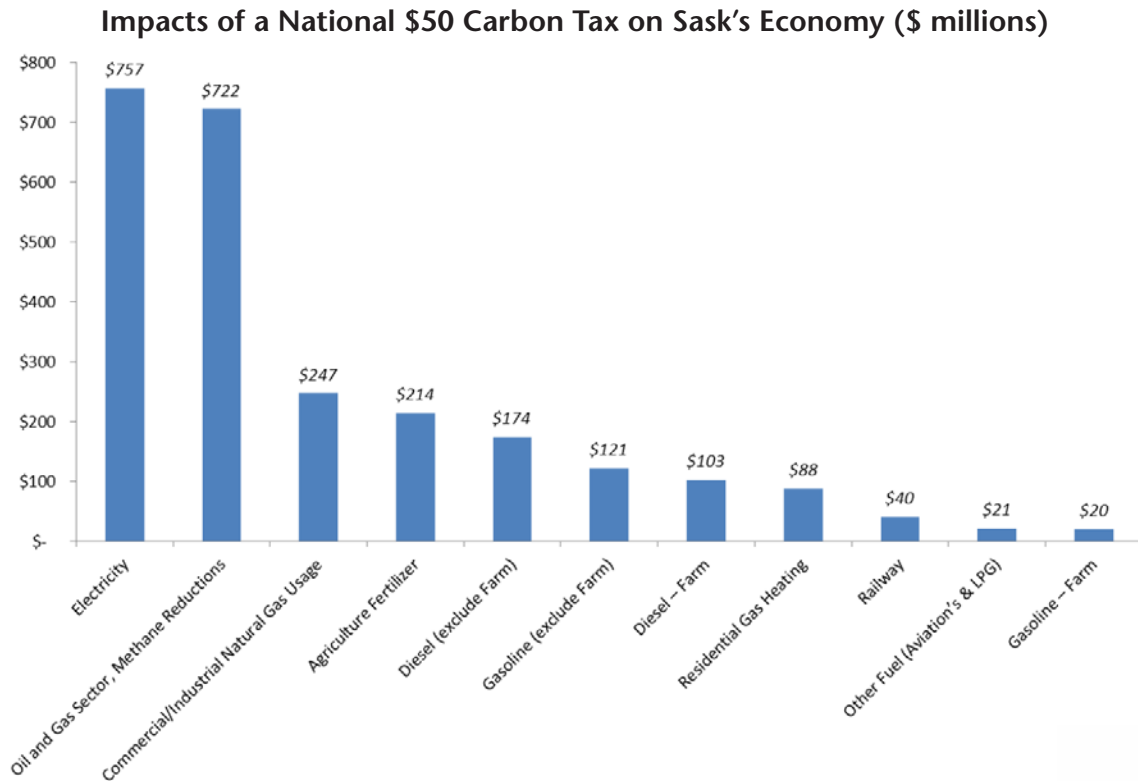


Figure from Government of Saskatchewan (2016) Climate Change White Paper. Available on-line at: <http://www.saskatchewan.ca/government/news-and-media/2016/october/18/climate-change-plan>. (p. 25)

But if \$2.5 billion in carbon taxation is collected in Saskatchewan where does this money go? Not to the federal government. They have promised to leave all of the carbon revenues with the provinces. So, unless the Saskatchewan government burns the cash on the front steps of the legislative building, they would have \$2.5 billion to spend.

How should this carbon revenue be used?

If Saskatchewan took a fee-and-dividend approach, the government could send a \$2172 cheque to every woman, man and child in the province.

If Saskatchewan wanted to take a double-dividend approach, it could reduce taxes by 36% across the board (the total forecast tax revenue from personal, corporate, sales, and property tax is \$6.9 billion for 2016-17).

If the province wanted to fill in the estimated \$454 million deficit it could do so.

Or the province could give the money right back to the companies and individuals paying the tax. In the chart above, SaskPower pays \$757 million/year for carbon emissions in the electricity sector. If this money went right back to SaskPower, in two years it would have the \$1.5 billion required to pay for Boundary Dam III. In two more years it would have another \$1.5 billion. What investments could SaskPower make in the following years to reduce its emissions? How much energy conservation could be achieved with a \$750 million budget for conservation initiatives?

More strategically, Saskatchewan could use some of the revenues to address competitiveness issues for 'emissions-intensive, trade-exposed' (EITE) industries like potash, agriculture, and oil and gas. In his Op-Ed to the Globe and Mail Premier Wall notes that "Saskatchewan has a disproportionate share of Canada's trade-exposed industrial sectors." A report from the EcoFiscal Commission confirms that Saskatchewan's emissions-intensive industries are more trade-exposed than other provinces (see figure below). One idea from the EcoFiscal commission is to offer output rebates to these EITE industries (Beale *et al*, 2015). The right incentives are then in place to maintain competitiveness; companies must pay for their emissions, but are rewarded for their output.

Proportion of Emissions-Intensive Trade-Exposed Industries by Province

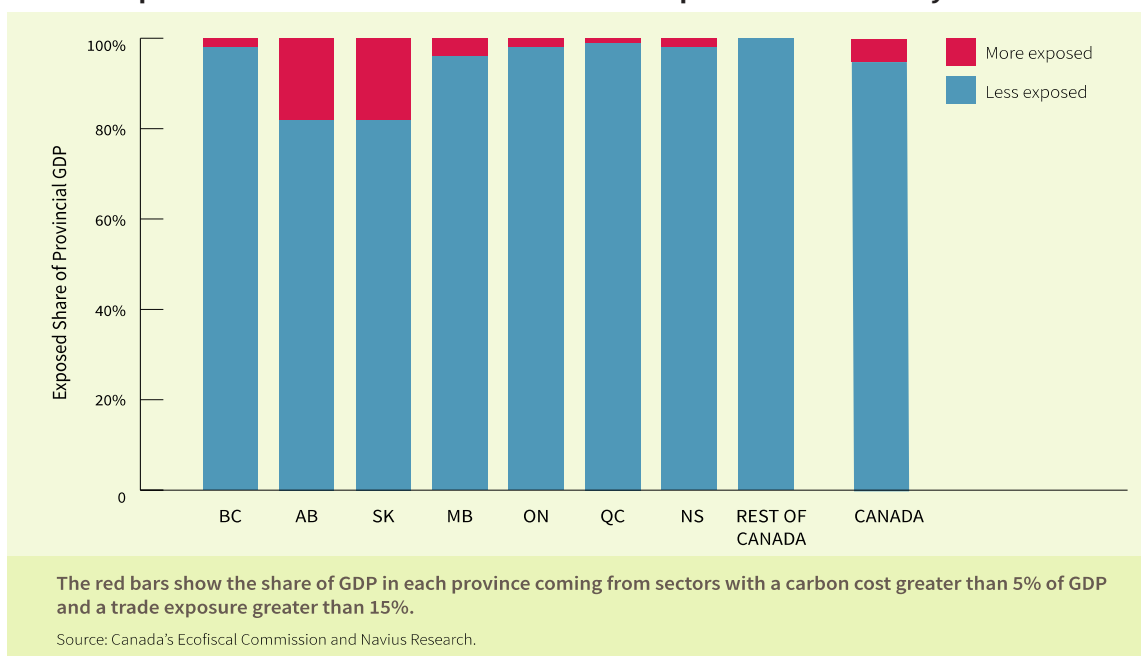


Figure from: Elizabeth Beale, Dale Beugin, Bev Dahlby, Don Drummond, Nancy Olewiler, Christopher Ragan (2015) Provincial Carbon Pricing and Competitiveness Pressures: Guidelines for Business and Policymakers. Ecofiscal Commission. Available on-line at: <https://ecofiscal.ca/wp-content/uploads/2015/11/Ecofiscal-Commission-Carbon-Pricing-Competitiveness-Report-November-2015.pdf>.

These are just options for spending the revenue from a carbon tax. But it is important to note that the federal government has not prescribed a carbon tax; they are introducing a national *carbon price*. Ontario and Quebec meet the carbon price requirement with their cap-and-trade systems. In their report for Clean Prosperity, Chris Bataille and Dave Sawyer (2016) model the possibility of Saskatchewan meeting the national carbon price with a hybrid system that would include a carbon tax on buildings, transport and light industry, and a "nationally tradeable intensity standard and output-based allocations (OBA) for the EITE (trade-exposed) industries."

An intensity standard would require trade-exposed industries to improve the emissions intensity of their output. For example, in the potash industry, GHG emissions per tonne of potash might have to

decrease by 20% by 2017. If a firm fails to improve their performance they pay a fee for every tonne of GHG emissions that is above their performance target. This means trade-exposed industries don't have to pay for every tonne of GHGs they produce, which lowers the cost of the regulation, but they have a strong incentive to achieve reductions. This is the plan neighbouring Alberta is putting into place with their *Climate Leadership Plan* (Government of Alberta, 2016). It is also not so different from the plan the Saskatchewan government introduced in 2009 with Bill 95 (An Act respecting the Management and Reduction of Greenhouse Gases and Adaptation to Climate Change) but has yet to enact (Government of Saskatchewan, 2009).

In their analysis, Bataille and Sawyer find that Saskatchewan would do well under a hybrid climate policy system. GHG emissions would be reduced by 33% by 2030, and GDP would actually increase by 4.23% over the reference case (see figure below). This outcome depends on Saskatchewan hooking into a national system where industries that can beat their performance targets can then sell those credits to companies in the rest of Canada. According to Bataille and Sawyer's model, there is low-hanging fruit to be picked in Saskatchewan, and it would be cheaper for some firms outside of the province to pay for reductions in Saskatchewan than it would be to reduce their own emissions. The resulting revenues could be an economic boost for Saskatchewan.

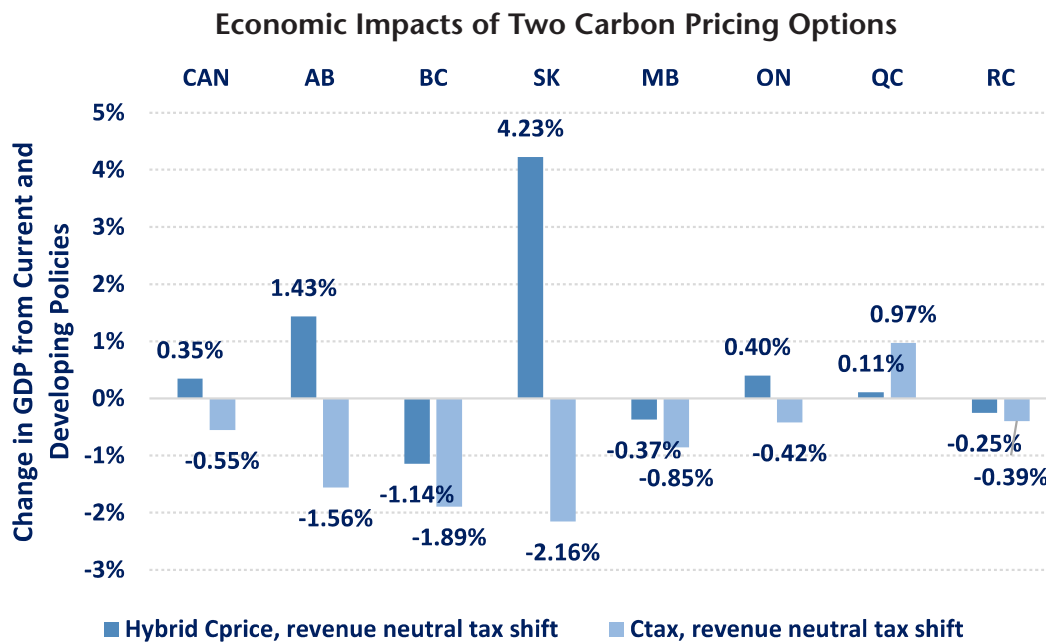


Figure from: Chris Bataille and Dave Sawyer (2016) *Canadian Carbon Pricing Pathways: The economic and emission outcomes of leading policies*. Final Report September 15, 2016. Available on-line at: <http://www.enviroeconomics.org/single-post/2016/09/06/Assessing-Canadian-Carbon-Pricing-Pathways>.

The White Paper presents an incomplete analysis of the impact of carbon pricing on Saskatchewan. It focuses on the costs of a carbon price without considering the beneficial uses of the revenues. It neglects to evaluate the possibility of a cap-and-trade approach to carbon pricing, except to note that permit prices are low and unpredictable in the California and European markets. And it fails to explore hybrid approaches, such as the approach proposed by Bataille and Sawyer, which actually show Saskatchewan benefiting from Canadian climate action.

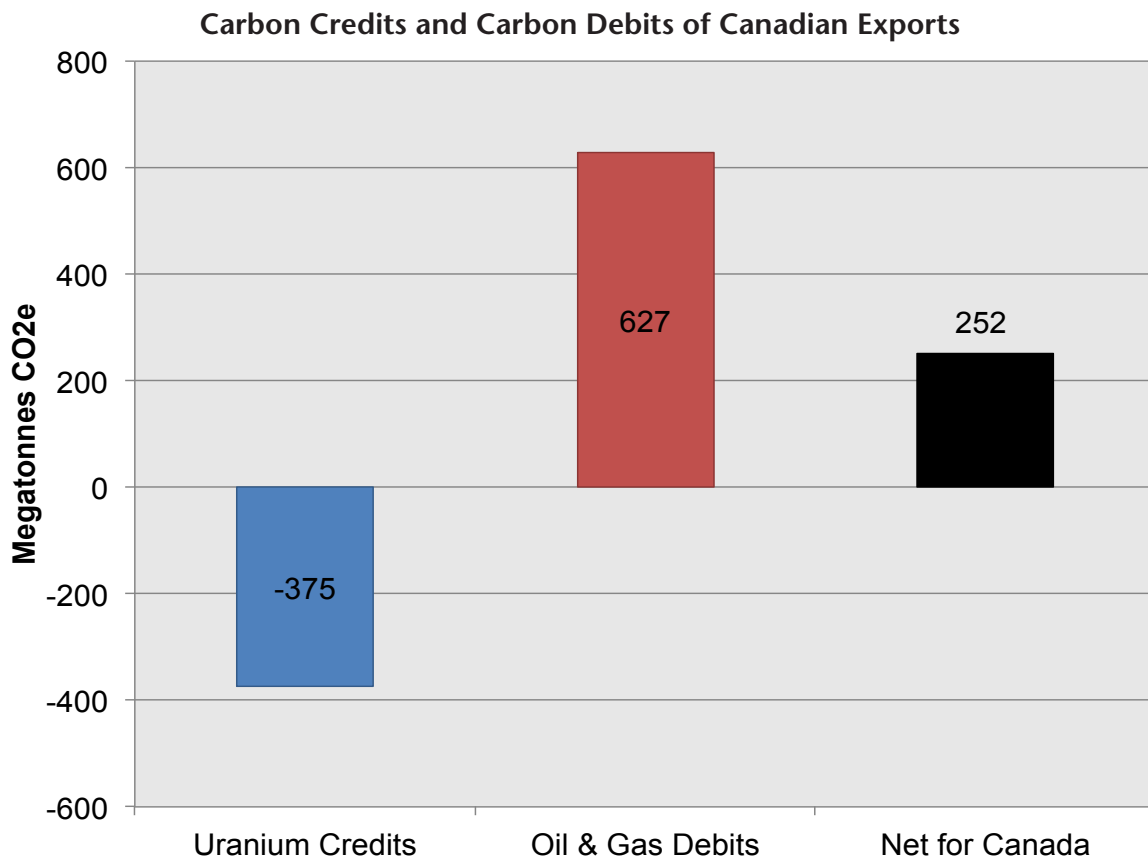
Very few things in life appear desirable when we focus only on the costs (why get married when a ceremony and reception will cost thousands of dollars?) A more robust analysis would outline the opportunities that carbon pricing could bring to the province.

ALTERNATIVE POLICIES

At the very least, an effective White Paper should introduce captivating new ideas for reducing Saskatchewan’s emissions. Has the White Paper done so? Here is an analysis of four of the ideas proposed in the White Paper. You be the judge as to whether these are likely to shift the national conversation.

Idea 1: Saskatchewan should receive 375 Mt of credit for exporting uranium

The White Paper argues that Saskatchewan exports of uranium lower global GHG emissions by replacing coal plants with nuclear power plants. Let’s accept this claim, but then let’s think through the consequences. If Saskatchewan receives 375 Mt of credit for exporting uranium, is Canada willing to own 627 Mt of GHGs from exported oil & gas? True, Saskatchewan’s oil and gas exports only account for about 100 Mt of emissions, but Alberta would then be on the hook for much of the remaining 527 Mt. Asking for credits for uranium opens a Pandora’s box of global GHG accounting issues that the Government of Saskatchewan would be wise to avoid.



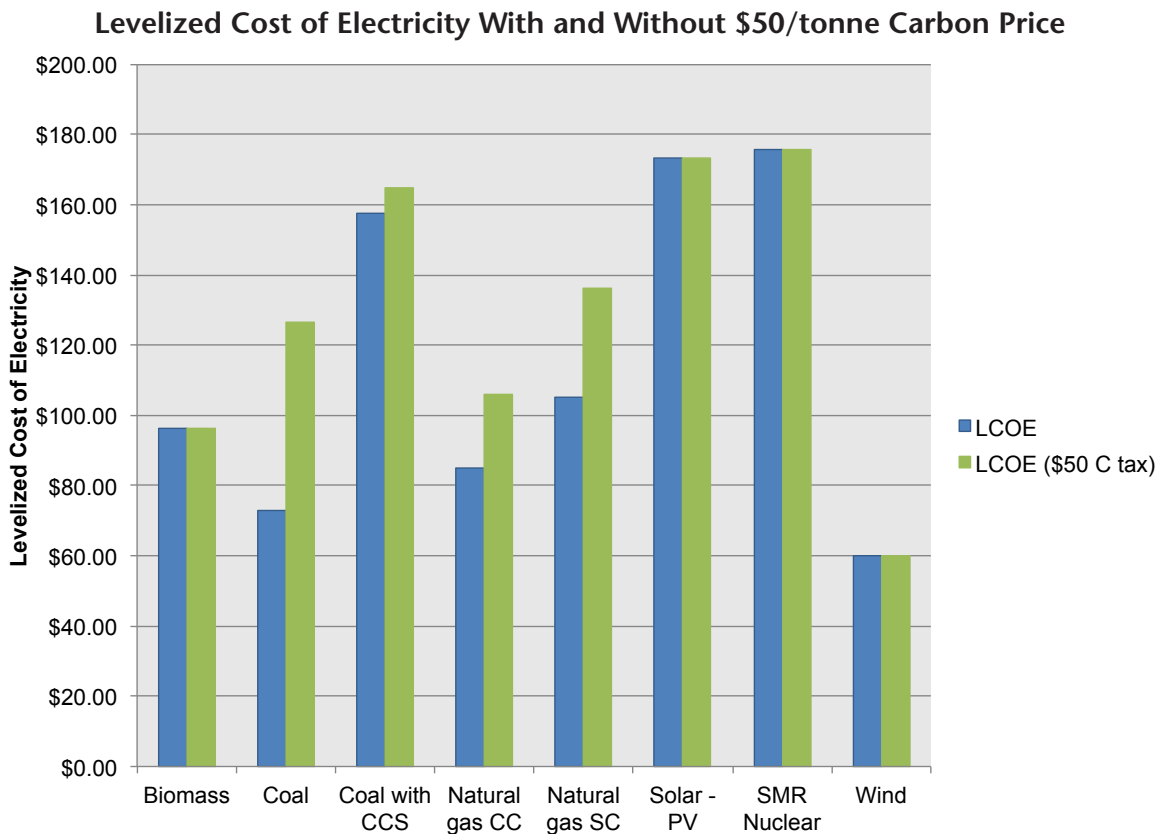
(Author’s calculations, see Appendix 1 for assumptions)

Idea 2: Bring carbon capture and storage to the world

The White Paper positions Saskatchewan as a small portion of global emissions (more on this to come), but a leader in carbon capture and storage (CCS) technology. As the White Paper asserts, “We [Saskatchewan] can help the world clean up coal-fired electricity generation as the world shifts to newer technologies” (p. 15).

This may very well be true. Equipping coal plants in China and India with carbon capture and storage (CCS) could reduce global emissions. Saskatchewan could play a role in that. But what would lead these other countries to decide to introduce CCS when the technology is so expensive? The elephant in the room is a global carbon price. Effective carbon pricing can shift the comparable economics of electricity generation sources (see figure below). The green bars in the figure below show how a \$50/tonne carbon price makes conventional coal more expensive, and improves the economics of CCS.

How can we achieve a global carbon price? At the bare minimum we would expect that wealthy countries like Canada would lead by example and adopt one first. Saskatchewan’s opposition to carbon pricing may be getting in the way of the province’s CCS export strategy.



(Author’s calculations)

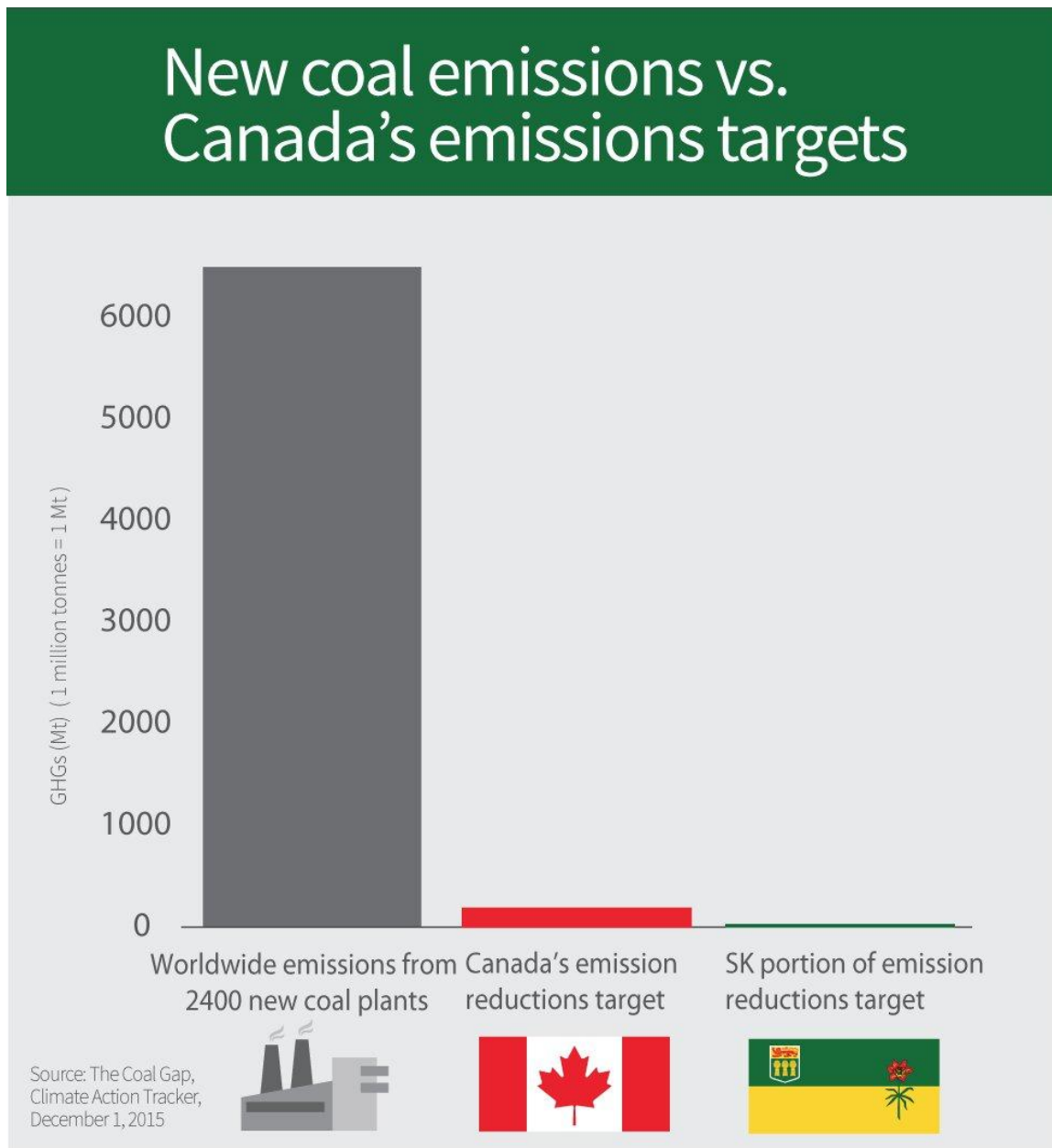
Idea 3: The federal government leads the development of a small, modular nuclear reactor

The Saskatchewan government is an advocate of nuclear power. After the 2009 Uranium Development Partnership (UDP) consultation they backed away from the idea of building a nuclear power plant in Saskatchewan, but the dream has not died. The Saskatchewan government has since mused of building ‘small, modular nuclear reactors’ in the province. These reactors would be small enough to integrate onto the provincial grid, likely 300 megawatts (MW) or smaller. However, as of yet, these reactors don’t exist in commercial form. So, the White Paper asks the federal government to create one, “Saskatchewan calls on the federal government to take a leading role in a program to develop a small reactor that could be deployable in Canada and all over the world” (p. 39). It is easy for a province to ask the federal government to foot the bill for a provincial priority (note: this ‘cap-in-hand’

policy is materially different from a 'cap-and-trade' policy). But how much would the development of this reactor cost? And didn't the federal government already divest from Atomic Energy of Canada Limited (AECL) in 2011 to cut its losses in this area? (CBC news, 2011). Saskatchewan has paid a high price to pioneer CCS technology. Does Saskatchewan (or Canada) want to play the Guinea pig for a second, capital-intensive power generation technology?

Idea 4: Saskatchewan is a small contributor to global emissions

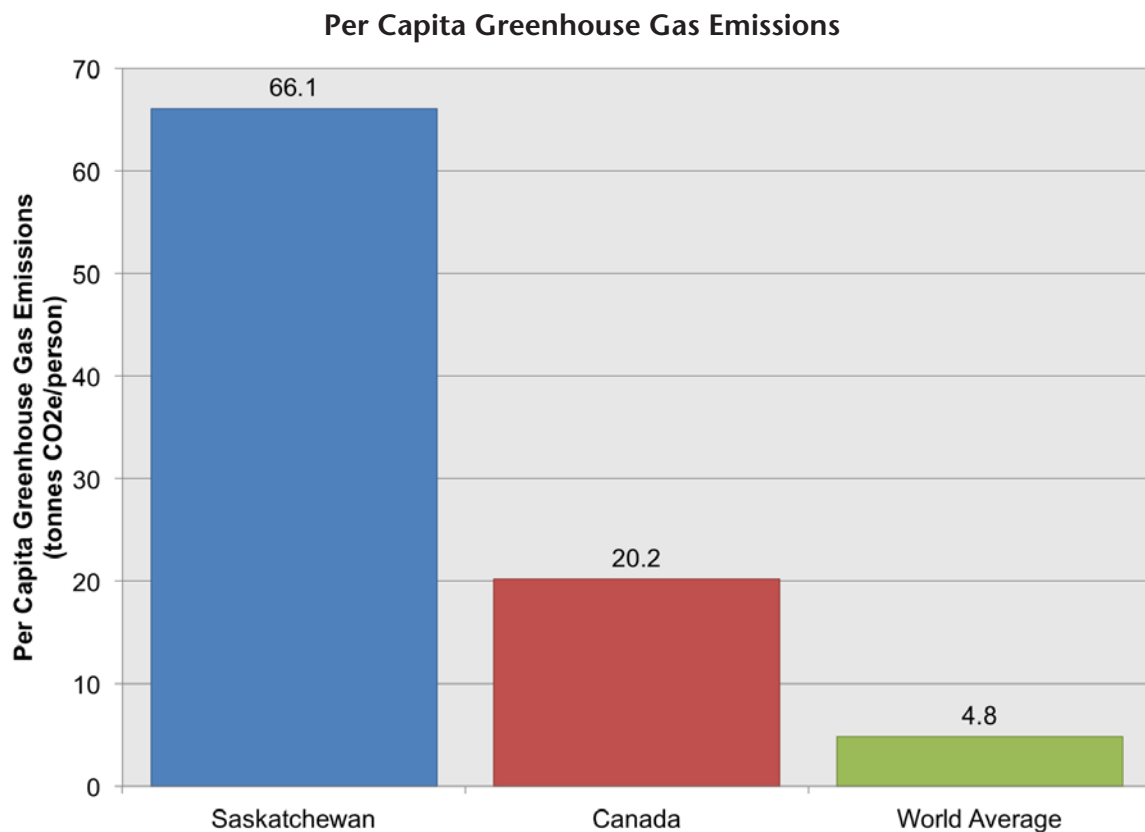
The White Paper states "that Canada's national emissions represent less than two percent of the global total" (p. 10). The figure below, featured in the accompanying press release, emphasizes Saskatchewan's relatively small contribution to global emissions reduction efforts by comparing Saskatchewan's reduction target to emissions from 2400 planned coal plants.



(Source: Government of Saskatchewan website: <http://www.saskatchewan.ca/government/news-and-media/2016/october/18/climate-change-plan>)

As noted above, part of the province’s argument is that CCS can help reduce coal emissions around the globe. But, another strategic purpose of the image above is to drive home the point that Saskatchewan is a small contributor to a global problem.

This is less a policy idea and more of a way of re-framing Saskatchewan’s responsibilities. But, it is possible to generate a similarly uneven looking chart with a very different frame. The figure below illustrates Saskatchewan’s contribution to global emissions relative to our population (per capita GHG emissions). In this chart we see that Canada’s share of global emissions is four times higher than its share of the world’s population. Saskatchewan’s share of GHGs is over 13 times higher than its share of population. This provides an international fairness argument for Canada and Saskatchewan taking strong action to reduce GHG emissions at home. We are polluting beyond our fair share.



See Appendix 2 for data.

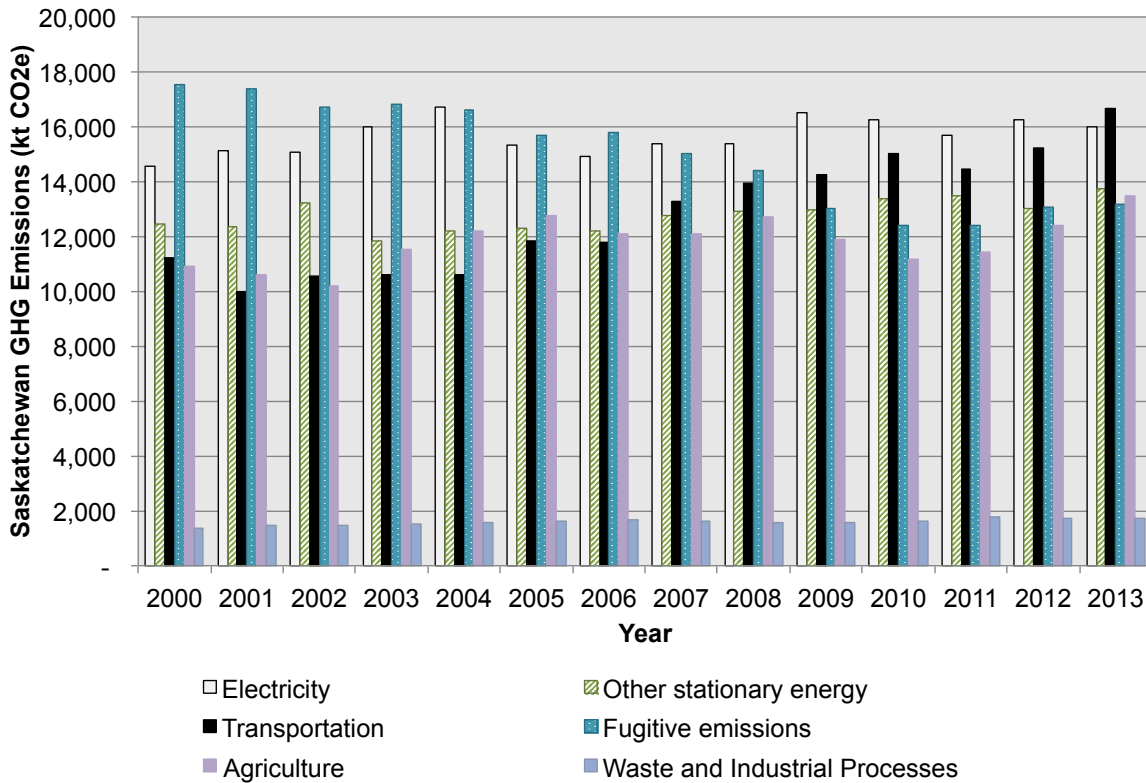
There is also a more important reason for reducing GHG emissions at home. In a recent column, Andrew Coyne reminds us that climate change is a “collective action problem” (Coyne, 2016). Climate change affects everyone, but it may be tempting for some regions to “free-ride” on the GHG reduction efforts of others. Imagine a potluck supper, and you show up without a dish of your own. You are a “free-rider” and enjoy the meal without any effort. Now, of course, if all guests showed up without a dish, there would be no supper.

Global GHG reduction is like this imagined potluck. For it to work, everyone has to bring a dish to the table. The Paris Agreement was a first step in this direction. To stretch the metaphor, countries around the world decided there will be a potluck; they committed to reduce emissions to keep warming below 2 degrees Celsius. It is now up to every country, and every province, to get in the kitchen and get cooking on emission reductions.

MISSING POLICIES

Despite coming in at 53 pages, the White Paper is nearly silent on transportation emissions. This is a big oversight. Transportation emissions are a large and growing part of Saskatchewan's emissions profile. Depending on how you divide them up, transportation emissions may actually be the largest source of GHGs in the province (see black bars in figure below).

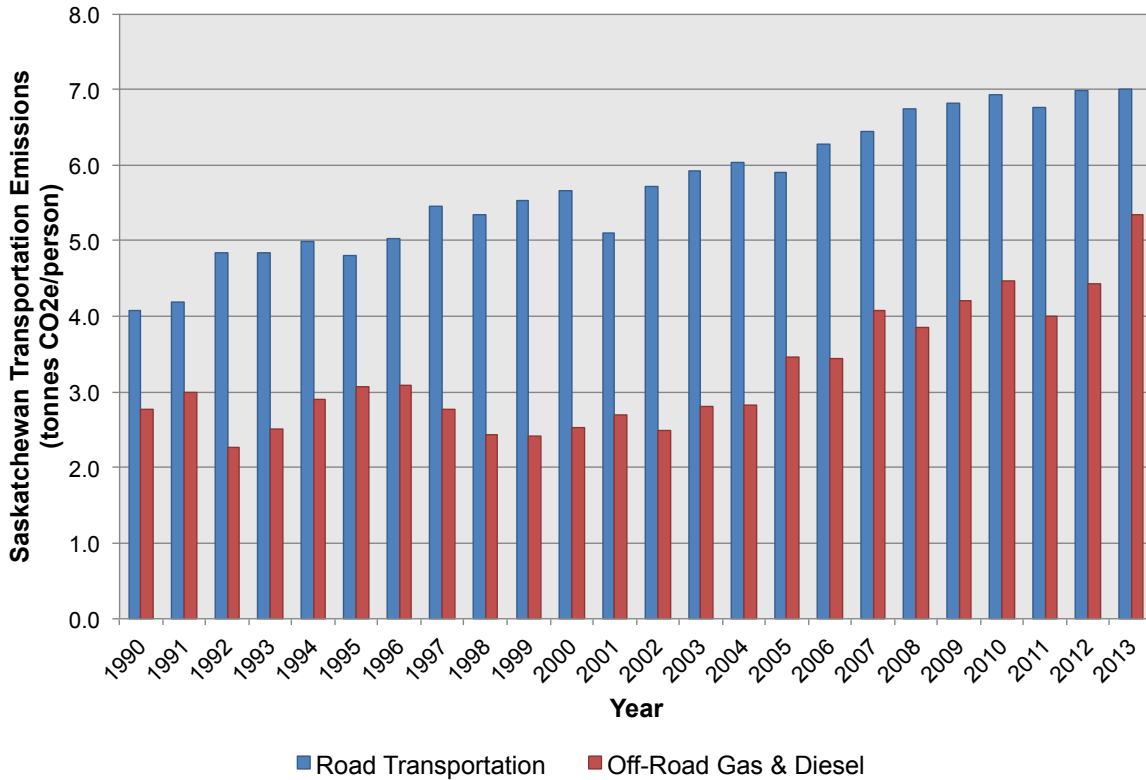
Saskatchewan's Greenhouse Gas Emissions by Sector (2000-2013)



(Source: Environment Canada, National Inventory Report 2015)

Some of the increase may be due to population growth in Saskatchewan, but transportation emissions have also increased substantially in per capita terms.

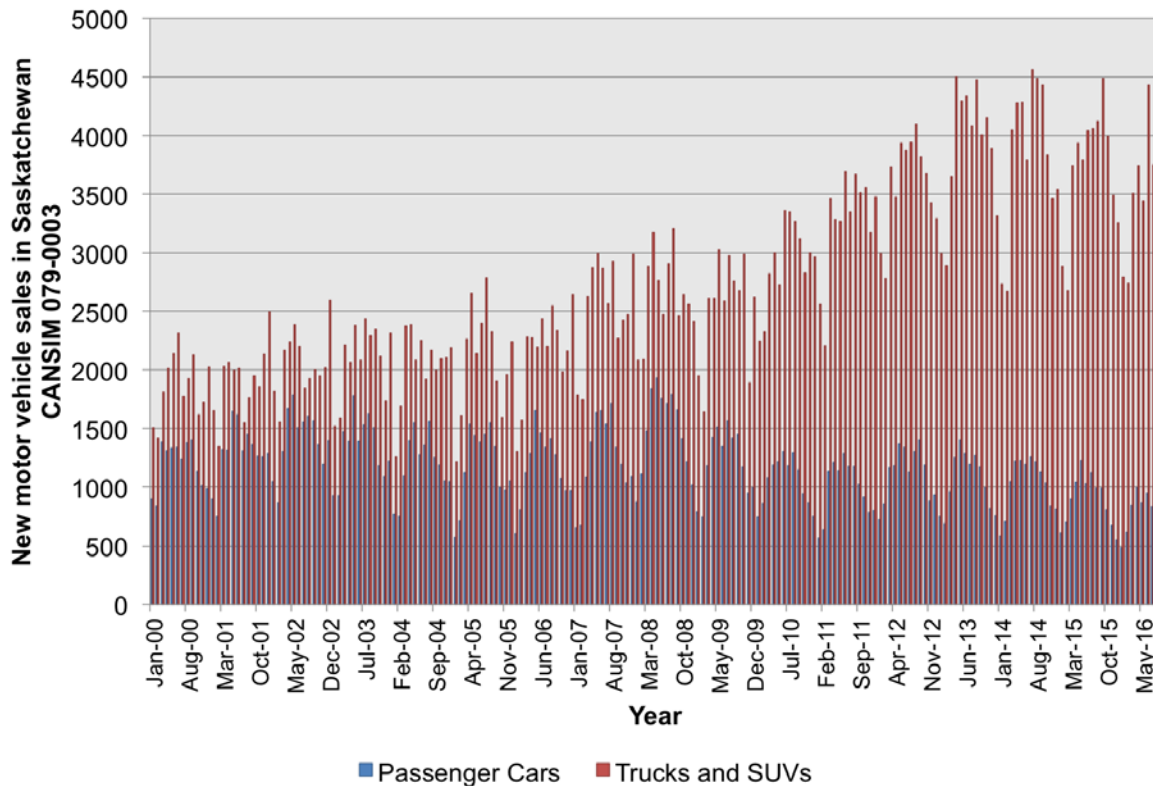
Per Capita Transportation Emissions in Saskatchewan (1990-2013)



(Source: Environment Canada, National Inventory Report 2015; Population from Statistics Canada CANSIM Table 051-0001)

As noted above, the paper by Antweiler and Gulati credited BC’s carbon tax for reducing gasoline consumption and improving fleet efficiency by encouraging people to purchase more fuel efficient vehicles. The trend in Saskatchewan has been for drivers to purchase trucks and SUVs (see figure below). Just take a look around during your morning commute and ponder how many people now drive SUVs and large trucks. There has been a sea change in transportation choices in the past fifteen years.

New Vehicle Registrations in Saskatchewan (Monthly, 2000-2016)



(Source: Statistics Canada CANSIM 079-0003)

For every \$10/tonne added to a national carbon price, gasoline prices go up by a little over 2 cents/litre. When the \$50/tonne price floor comes into place in 2022, gasoline prices will have increased by 11 cents/litre. This may not seem like a lot; gasoline prices recently jumped by 7 cents/litre in one day due to market forces. But researchers Schaufele and Rivers (2013) have found that price increases due to carbon pricing are more “salient” to drivers. By studying reactions to BC’s carbon tax, Schaufele and Rivers (2013) found that, despite a lock-in to daily commutes and habits, drivers in BC found ways to reduce gas consumption in the short-term.

There is also a mental shift that occurs when we realize prices will continue to creep upwards, slowly, over time. As Antweiler and Gulati (2016) found, in the medium-term, when it comes time to purchase a new vehicle, a carbon tax will lead drivers to shift their purchase decisions and choose vehicles that are more fuel efficient.

The evidence from BC’s experience is clear; a carbon tax reduces transportation emissions. The White Paper failed to spell out how emissions from transportation will be reduced in Saskatchewan, and its credibility suffers because of the omission.

CONCLUSION

As the very least the White Paper is a clarification of the Saskatchewan government's thinking on climate policy. On the positive side, the White Paper offers strong words on the need to reduce greenhouse gas emissions, "There is no doubt that the cost of inaction is far greater than the cost of smart, effective actions that actually reduce GHGs" (p. 4). Clearly, there is more work to be done to convince the Saskatchewan government that carbon pricing qualifies as one of these smart, effective actions.

So how do we move forward from here?

Rather than changing the conversation in Canada, perhaps it is best to think of the White Paper as the start of a conversation in Saskatchewan. Next door, Alberta developed a climate policy supported by industry and environmental groups alike. They invited a panel of experts to gather information, and conducted a provincial consultation. The result was the Climate Leadership Report (Government of Alberta, 2015).

It would be commendable to see the Government of Saskatchewan convene a Climate Leadership Panel in Saskatchewan. This panel would produce a fulsome review of the literature on carbon pricing, hybrid performance standards, and flexible regulations. It would model and quantify the likely GHG and GDP implications of the policies. And it would provide a suite of options for reducing emissions in the province. The panel would engage with citizens, businesses, and industry to understand their concerns and to seek out their ideas. It would produce a report, a green-and-white paper perhaps, outlining how Saskatchewan will reduce emissions and protect its economy. That would indeed be something to shift the national conversation.

REFERENCES

- Antweiler, Werner and Sumeet Gulati (2016) "Frugal Cars or Frugal Drivers? How Carbon and Fuel Taxes Influence the Choice and Use of Cars." Available at SSRN: <https://ssrn.com/abstract=2778868> or <http://dx.doi.org/10.2139/ssrn.2778868>.
- Bataille, Chris and Dave Sawyer (2016) Canadian Carbon Pricing Pathways: The economic and emission outcomes of leading policies. Final Report September 15, 2016. Available on-line at: <http://www.enviroeconomics.org/single-post/2016/09/06/Assessing-Canadian-Carbon-Pricing-Pathways>.
- Beale, Elizabeth, Dale Beugin, Bev Dahlby, Don Drummond, Nancy Olewiler, Christopher Ragan (2015) Provincial Carbon Pricing and Competitiveness Pressures: Guidelines for Business and Policymakers. Ecofiscal Commission. Available on-line at: <https://ecofiscal.ca/wp-content/uploads/2015/11/Ecofiscal-Commission-Carbon-Pricing-Competitiveness-Report-November-2015.pdf>.
- CBC News (2011) "AECL sold for \$15M to SNC-Lavalin." Available on-line at: <http://www.cbc.ca/news/business/aecl-sold-for-15m-to-snc-lavalin-1.985786>.
- Coyne, Andrew (2016) "Andrew Coyne: Canada a small part of global emissions problem, but costs of inaction are not zero." National Post October 12, 2016 Available on-line at: <http://news.nationalpost.com/full-comment/andrew-coyne-canada-a-small-part-of-global-emissions-problem-but-costs-of-inaction-are-not-zero>.
- Government of Alberta (2015). Climate Leadership: Report to Minister. Available at: <http://www.alberta.ca/documents/climate/climate-leadership-report-to-minister.pdf>
- Government of Alberta (2016) "Carbon Levy and Rebates: Large Industrial Emitters." Available on-line at: <http://www.alberta.ca/climate-carbon-pricing.aspx#industry>.
- Government of Saskatchewan (2016) Climate Change White Paper. Available on-line at: <http://www.saskatchewan.ca/government/news-and-media/2016/october/18/climate-change-plan>.
- Government of Saskatchewan (2009) Bill 95 'An Act respecting the Management and Reduction of Greenhouse Gases and Adaptation to Climate Change.'
<http://www.qp.gov.sk.ca/documents/english/FirstRead/2009/Bill-95.pdf>.
- Jaccard, Mark (2016) "Want an effective climate policy? Heed the evidence." Policy Options. Available on-line at: <http://policyoptions.irpp.org/magazines/february-2016/want-an-effective-climatepolicy-heed-the-evidence/>.
- Jaccard, Mark, Mikela Hein and Tiffany Vass (2016) "Is Win-Win Possible? Can Canada's Government Achieve Its Paris Commitment...and Get Re-Elected?" EMRG Working Paper. School of Resource and Environmental Management, Simon Fraser University. Available on-line at: <http://rem-main.rem.sfu.ca/papers/jaccard/Jaccard-Hein-Vass%20CdnClimatePol%20EMRG-REM-SFU%20Sep%2020%202016.pdf>.
- Lee, Marc (2016) "Don't believe the hype on BC's carbon tax." Canadian Centre for Policy Alternatives Behind the Numbers blog. Available on-line at: <http://behindthenumbers.ca/2016/03/03/dont-believe-the-hype-on-bcs-carbon-tax/>
- Murray, Brian and Nicholas Rivers (2015) "British Columbia's revenue-neutral carbon tax: A review of the latest "grand experiment" in environmental policy." Energy Policy. 86, pp. 674-683. DOI: <http://dx.doi.org/10.1016/j.enpol.2015.08.011>.
- Porter, Eduardo (2016) "Does a carbon tax work? Ask British Columbia." New York Times, March 1, 2016. Available on-line at: <http://www.nytimes.com/2016/03/02/business/does-a-carbon-tax-work-ask-british-columbia.html>.
- Statistics Canada (2016) CANSIM Statistical Tables. Search on-line at: <http://www5.statcan.gc.ca/cansim/home-accueil?lang=eng>.
- Wall, Brad (2016) "A better emissions solution than a revenue-neutral carbon tax." The Globe and Mail. Available on-line at: <http://www.theglobeandmail.com/report-on-business/rob-commentary/a-better-emissions-solution-than-a-revenue-neutral-carbon-tax/article32352958/>.

APPENDIX 1

Greenhouse Gas Emissions Resulting from Combustion of Fossil Fuel Exports from Canada						
	Crude Oil			Natural Gas		Total Export Emissions (megatonnes CO2e)
	Annual (thousand cubic meters)*	Barrels (thousands)	Emissions (megatonnes CO2e)	Annual (million cubic meters)*	Emissions (megatonnes CO2e)	
2000	80317	505179	258	101246	187	445
2001	79571	500486	255	108240	200	455
2002	84917	534112	272	107728	199	471
2003	89512	563013	287	101472	187	475
2004	94150	592186	302	105261	194	496
2005	91642	576411	294	106271	196	490
2006	102771	646410	330	102102	189	518
2007	106231	668173	341	108844	201	542
2008	108693	683658	349	103983	192	541
2009	109024	685740	350	95240	176	526
2010	110833	697119	356	95589	177	532
2011	126210	793837	405	92716	171	576
2012	136990	861641	439	88290	163	602
2013	148317	932886	476	81932	151	627
*Source: CAPP 2015 Statistical Handbook for Canada's Upstream Petroleum Industry						
Conversion factors						
1 cubic meter of oil equals			6.28981	barrels of oil		
1 barrel of refined oil releases			0.51	tonnes CO2e		
1 million cubic meter of natural gas releases			1846.8	tonnes CO2e		
Oil barrel emissions from: http://www.canadasoilsands.ca/en/explore-topics/ghg-emissions						
Natural gas emissions from: Environment Canada. (2014). National Inventory 1990-2012, Part 2, Annex 8. p.183 - 187						

APPENDIX 2

Region	Population	Emissions (Mt CO2e)	Per Capita Emissions (tonnes CO2e/person)
Canada	36,286,425	732	20.2
Saskatchewan	1,150,632	76	66.1
Earth	7,349,472,000	35,625	4.8
Region	Population (%)	Emissions (%)	Emissions (%) / Population (%)
Canada	0.494%	2.05%	4.16
Saskatchewan	0.016%	0.21%	13.63
Earth	100.000%	100.00%	1.00
Canadian population data for July 2016 from: Statistics Canada, CANSIM Table 051-0001, http://www5.statcan.gc.ca/cansim/a26			
World population data from: United Nations https://esa.un.org/unpd/wpp/			
Canadian Emissions Data for 2014 from Environment Canada (2016) National Inventory Report: https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=662F9C56-1			
Global emissions data for 2014 (without LULUCF/LUCF) from United Nations Statistics: http://unstats.un.org/unsd//ENVIRONMENT/qindicators.htm			

EXECUTIVE SUMMARY

The Saskatchewan government released a Climate Change White Paper on October 18, 2016. This response to the White Paper offers analysis and ideas for moving forward. The main messages of this report include:

- A carbon price of \$30/tonne carbon dioxide equivalent (CO₂e) has worked in British Columbia. BC's revenue-neutral carbon tax has reduced greenhouse gas (GHG) emissions by 5-15% below what they would have been without carbon pricing.
- The alternative to carbon pricing is regulation. Regulation has a hidden cost. The federal coal-fired electricity regulation required Boundary Dam III to be shutdown or equipped with carbon capture and storage (CCS) technology. The Boundary Dam III CCS project has a hidden or implied carbon price of \$60/tonne (CO₂e).
- Saskatchewan has a choice of what kind of carbon price to introduce and how to spend the revenues. Saskatchewan could introduce a carbon tax or a cap-and-trade system.
- A carbon tax of \$50/tonne may impose a cost of \$2.5 billion. This money is not lost. It stays in the province and could be returned to citizens directly by providing a \$2172 rebate cheque to every woman, man and child in the province, or by reducing corporate, sales, and property taxes by 36%.
- Carbon pricing can create competitiveness risks for 'emissions-intensive trade-exposed' industries. These industries can be protected with output subsidies that reward production. Or the cost of carbon pricing can be reduced for these industries if Saskatchewan introduces a hybrid carbon pricing system, involving performance intensity standards tied into a national cap-and-trade system.
- Saskatchewan would like carbon credits of 375 Megatonnes (Mt) for exporting uranium. Applying the same logic, Canada would face international carbon debits of 627 Mt (in 2013) for exports of oil and natural gas.
- Saskatchewan would like to see countries around the world adopt carbon capture and storage (CCS) technology for their coal plants. A global carbon price would be an effective way to create incentives for the adoption of CCS.
- Saskatchewan's Climate Change White Paper lacks details on how the province will reduce GHG emissions from the transportation sector. Total GHG emissions from road transportation increased by 89% from 1990-2013 and per capita GHG emissions from road transportation increased by 72% in the same period. Carbon pricing sends the signal to drive less and purchase more fuel-efficient vehicles.
- We recommend that Saskatchewan create a Climate Leadership Panel to study the options for carbon pricing, evaluate their impacts on Saskatchewan, receive feedback from citizens and industry, and move from White Paper to Climate Change Plan.



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