

Key issues to watch in federal oil and gas climate regulations

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Executive Summary

In April, the Pembina Institute published a report outlining the key features of a credible greenhouse gas (GHG) regulation for Canada's oil and gas sector. Since that analysis was published, media reports have revealed some of the proposals that the federal and Alberta governments are considering.

This backgrounder updates our initial report in response to the new information that has become public in recent months. We focus on three issues to watch as the design of GHG regulations for the oil and gas sector is announced.

1. The implications of the proposals under consideration for Canada's target

In early 2010, the Harper government adopted a national emissions target for 2020, and since then it has affirmed numerous times that it intends to hit that target. Reaching that objective is no simple task: right now, Environment Canada projects that Canada is on track to miss that target by over 100 million tonnes (Mt), or more than the current emissions from Canada's entire electricity sector. If Canada is to get on track, oil and gas has a crucial role to play: the sector is responsible for nearly a quarter of Canada's emissions, and the oilsands in

particular are Canada's fastest-growing source of GHG pollution.

Unfortunately, none of the regulatory proposals reportedly under consideration to date are strong enough to close the gap between where Canada is currently headed and the 2020 target.

In this backgrounder, we focus on a hypothetical midway scenario, halfway between the lower-ambition industry association proposal and the higher-ambition option proposed by the Government of Alberta. This halfway point ("30/30") scenario would likely see oil and gas sector emissions increase from today's levels by 2020, even if we assume firms meet 100 per cent of their targets through improvements to their operations.

Recent economic modelling analysis shows that if the Government of Canada adopted a 30/30 proposal for the oil and gas sector without taking action in other sectors to pick up the slack, Canada would miss its 2020 target by approximately 74 Mt. This would leave Canada 12% above its target in 2020, with national emissions totaling 681 Mt instead of the target level of 607 Mt. That gap is equivalent to over 10% of Canada's total current (2011) emissions, and is more than the emissions generated by Canada's entire agricultural sector.

Asking that little of the oil and gas sector would leave the Government of Canada with three choices with regard to its 2020 target:

1. Rapidly adopting stringent policies for the remaining sectors.
2. Admitting that the sector-by-sector approach, as it has been applied, will see Canada miss its 2020 target by a significant margin.
3. Reversing its current position and adopting a national carbon price as a complement to the sector-by-sector regulations.

2. The technology fund and the 2020 target

Like Alberta's GHG regulations for heavy industry, the federal government's proposal is expected to give companies the option of complying with the regulations by making payments into a fund rather than improving their actual emissions performance.

The technology fund is a popular compliance option in Alberta: in 2011, the most recent year for which data has been reported, firms used the technology fund for nearly a third (32%) of their compliance. The technology fund has also accounted for 42% of all compliance to date in Alberta. Thus, it would be reasonable to expect a comparable level of interest from companies in taking advantage of the technology fund option as a means of complying with their targets under a federal regulation.

If the federal proposal does include a technology fund structured and managed like Alberta's, it is entirely possible that the fund will not generate any significant reductions in time for Canada's 2020 target deadline — particularly because the federal

regulations are not expected to go into effect before 2016.

3. The treatment of oil and gas subsectors

Media reports of the various proposals governments are considering are clear that the targets and prices under discussion would apply to the oilsands. What's not clear from those reports is whether the rest of the oil and gas sector will be treated the same way.

There is a risk that the approach to the oilsands represents the high-water mark for the regulations, and that other oil and gas subsectors may face even less stringent targets, weaker prices, or both. Although the oilsands are growing fast, the rest of the oil and gas sector still represents the majority of the emissions from producing oil and gas in Canada. Diluting the regulations for some subsectors risks making an already weak approach even less effective.

This backgrounder makes recommendations to address each of these issues. In our view, the federal government should:

- adopt a regulation for the oil and gas sector that is demonstrably strong enough to get Canada on track to achieve its 2020 target;
- spend some or all of the technology fund revenues on near-term, real and verifiable emission reductions; and
- apply a single, ambitious standard across the entire oil and gas sector, while providing companies the flexibility to trade amongst themselves.

It is no exaggeration to say that the oil and gas sector GHG regulations are a make-or-break moment for Canada's national 2020

target. A weak approach risks locking in “business as usual,” while a strong and effective regulation could make a significant difference in the environmental footprint of Canada’s oil and gas sector. Improved GHG performance in the oilsands — a sector under intense public scrutiny — would give

oilsands companies better answers to their critics and help provide the “social license” they need to operate successfully. Strong regulations would also help the oilsands improve its long-term competitive position as the world makes a transition to lower-carbon sources of energy.

Context

Environment Minister Peter Kent committed to publishing information about sectoral regulations for oil and gas in the first half of 2013. If he were to meet that deadline, we would see at least the outline of a regulatory initiative¹ in the month of June — although the federal government has already missed its deadlines on these regulations more than once.

The federal government has chosen sector-by-sector regulations as its main tool to work towards its national GHG reduction target. The target, adopted in early 2010, is to cut Canada's national emissions to 607 Mt by 2020² — a goal chosen because it matches the commitment that the United States made after international climate negotiations in Copenhagen in 2009.

Environment Canada's most recent projections conclude that under current conditions, Canada's emissions will instead reach 720 Mt by 2020. Canada would therefore miss its 2020 target by 113 Mt, which is more than the current emissions from all passenger transportation in Canada.

Because the government has already enacted regulations in the transportation sector, and adopted measures for coal-fired electricity generation that take effect in 2015, the oil and gas sector is by far the largest “piece of the puzzle” that remains to be regulated. The sector accounted for 23 per cent of Canada's total emissions in 2011, and the oilsands in particular are Canada's fastest-growing source of GHG emissions.

It is no exaggeration to say that the design of these regulations could make or break Canada's ability to achieve its national 2020 target. A weak approach risks locking in “business as usual,” while a strong and effective regulation could make a significant difference in the environmental footprint of Canada's oil and gas sector. Improved GHG performance in the oilsands — a sector under intense public scrutiny — would give oilsands companies better answers to their critics and help provide the “social license” they need to operate successfully. Strong regulations would also help the oilsands improve its long-term competitive position as the world makes a transition to lower-carbon sources of energy.

Since we published our analysis in April, journalists have uncovered some of the regulatory proposals governments are considering. These include a so-called “40/40”³ proposal from the

¹ Speaking at a House of Commons committee on March 5, 2013, Minister Kent said, “we are in the final stages now of setting the stringency levels, and I would hope that certainly by mid-year we would be in a position to share those.” Thus, an announcement from the federal government may include formal regulatory documents, but it could also merely outline the design and stringency of the regulations with specifics to be published later on. See <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6022248&Language=E&Mode=1&Parl=41&Ses=1#Int-7915689> for the transcript of the March 5 meeting.

² Also often expressed as a target of 17% below the 2005 level in 2020.

³ Shawn McCarthy and Nathan Vanderklippe, “Alberta's bold proposal stuns Ottawa and oil industry,” *The Globe and Mail*, April 3, 2013. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/albertas-bold-plan-to-cut-emissions-stuns-ottawa-and-oil-industry/article10762621/#dashboard/follows/>

Government of Alberta and a “20/20” proposal from the Canadian Association of Petroleum Producers (CAPP).⁴

These proposals build on Alberta’s current approach to regulating GHG emissions, which features an intensity target — a target set in terms of emissions per unit of production, such as per barrel of oil produced — and a technology fund price. In Alberta’s model, companies can opt to hit their target by actually improving their emissions intensity, but they can also choose instead to pay a fee for each tonne they go over the target. These revenues are turned over to an arms-length fund and spent on emission reduction technologies.⁵

Since 2007, Alberta has set a maximum target of a 12% intensity improvement for its heavy industry firms, and has charged a technology fund price of \$15 per tonne. So a 20/20 proposal would mean increasing those parameters to a 20% target and a \$20 per tonne price, while a 40/40 means a 40% target and a \$40 per tonne price. (The timeline for making those changes is not clear from media reports to date.)

Pembina’s analysis concluded that for Canada to meet its 2020 emissions target, federal GHG regulations would need to set a 42% target and charge a technology fund price of at least a \$100 per tonne by 2020. Unfortunately, the proposals currently being considered appear to have a far lower level of environmental ambition than our report recommended.

To understand the implications of the proposals the federal government is reportedly considering, we have created a hypothetical “30/30” proposal, which represents a midpoint between the industry association and the Government of Alberta’s proposals. A 30/30 proposal is also close to the Government of Canada’s reported position; according to media reports,⁶ Ottawa is considering a 30% intensity target and a technology fund divided into two tiers, with the lower tier at \$30 per tonne and the higher one at \$60.

We made an estimate of the implication of a 30/30 proposal drawing on Environment Canada’s *Emissions Trends*⁷ data and the results of economic modelling analysis of the regulatory proposals from the International Institute for Sustainable Development.⁸

⁴ Nathan Vanderklippe, “Alberta, industry face wide gap on carbon tax,” *The Globe and Mail*, April 9, 2013. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/alberta-industry-face-wide-gap-on-carbon-tax/article10911280/#dashboard/follows/>

⁵ Alberta’s Specified Gas Emitters Regulation (SGER) also allows firms two other options to meet their targets: they can purchase emission reductions from other firms that have done better than their target levels, thus generating credits known as Emission Performance Credits, or they can purchase offset credits (emission reductions from outside the regulated sectors) from projects in Alberta. As with the technology fund, firms have unlimited access to these two options.

⁶ Nathan Vanderklippe, “Alberta, industry face wide gap on carbon tax,” *The Globe and Mail*, April 9, 2013. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/alberta-industry-face-wide-gap-on-carbon-tax/article10911280/#dashboard/follows/>

⁷ Environment Canada, *Emissions Trends 2012* (Environment Canada, 2012). <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=253AE6E6-5E73-4AFC-81B7-9CF440D5D2C5>

⁸ Dave Sawyer and Dale Beugin, *Oil and Gas Greenhouse Gas Regulations: The Implications of Alternative Proposals* (International Institute for Sustainable Development, 2013). <http://www.iisd.org/publications/pub.aspx?pno=2786>

Implications of a “30/30” proposal for Canada’s target

In the absence of federal GHG regulations, Environment Canada predicts that oil and gas emissions would reach 204 Mt by 2020. We estimate that a 30/30 proposal would give the sector a reduction obligation of about 39 Mt in 2020,⁹ leaving the emissions from Canadian oil and gas at approximately 165 Mt in 2020. (More information about our calculations is provided in Appendix B.)¹⁰

Today’s oil and gas sector emissions total 163 Mt,¹¹ so a 30/30 proposal would allow oil and gas emissions to increase, albeit slightly, from today’s level. That assessment also assumes that oil and gas companies meet their targets entirely through reducing emissions in their own operations. In reality, as the next section discusses, companies are likely to choose other options to meet their targets if the federal government allows them to do so, which could leave the sector’s actual emissions well above today’s levels in 2020 under a 30/30 proposal.

Our analysis of the emission levels required to achieve Canada’s 2020 target found that the oil and gas sector would have to reduce its net emissions by 86 Mt below business as usual in 2020¹² — more than twice the reduction that we estimate that a 30/30 proposal would produce.

If the Government of Canada adopted a 30/30 proposal for the oil and gas sector without taking action in other sectors to pick up the slack, Canada would miss its 2020 target by approximately 74 Mt. This would leave Canada 12% above its target in 2020, with national emissions totaling 681 Mt instead of the 607 Mt target. That gap is equivalent to over 10% of Canada’s total current (2011) emissions — more than all of the emissions generated by Canada’s agricultural sector.

So would a 30/30 proposal mean that Canada is guaranteed to miss its national 2020 target?

If the federal government continues on its current sector-by-sector approach, missing the national 2020 target is the most likely outcome.

However, this is not inevitable. The federal government has two main options to avoid that fate: imposing much stronger regulations on the remaining sectors, or adopting an economy-wide

⁹ This reduction assumes that all compliance options that the sector takes would result in real emission reductions by 2020. In fact, as discussed in next section, it is unlikely that the technology fund will reduce emissions by one tonne for every \$30 payment made by 2020. Real-world experience with offset credits, in Alberta and elsewhere, also indicates that some of the credits firms purchase will prove not to represent new and additional emission reductions.

¹⁰ Our 30/30 results are based on the International Institute for Sustainable Development’s modelling in the policy paper *Oil and Gas Greenhouse Gas Regulations: The implications of alternative proposals* as cited above. That paper includes modelling results for a proposal combining a 30% intensity target with a two-tier technology fund, with prices set at \$30 per tonne and \$60 per tonne. Since their results show that only 3% of compliance would occur at the \$60 per tonne price, we treat the two proposals (30/30 and 30/30+60) as equivalent throughout this backgrounder.

¹¹ Environment Canada, *National Inventory Report 1990-2011: Greenhouse Gas Sources and Sinks in Canada* (Environment Canada, 2013). Executive Summary Table S-3, <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1>.

¹² Matt Horne, P.J. Partington and Clare Demerse, *Getting on Track for 2020: Recommendations for Greenhouse Gas Regulations in the Oil and Gas Sector* (The Pembina Institute, 2013). <http://www.pembina.org/pub/2427>

carbon price — a policy that enjoys widespread support from industry, environmentalists and economic analysts in Canada and abroad.

A number of sectors remain to be regulated under the government’s “sector-by-sector” approach. If the federal government wants to hit its target using sector-by-sector regulations, but chooses a low-ambition target for oil and gas — the largest of the sectors that have yet to be regulated — then other sectors must pick up the slack.

The oil and gas sector accounts for 23% of Canada’s total emissions today (2011) and is projected to grow to 28% of the national total by 2020. Once oil and gas regulations are announced, the sectors that remain to be regulated are:

- the emissions-intensive, trade exposed (EITE) industrial sectors: mining, smelting and refining, pulp and paper, iron and steel, cement, lime and gypsum, chemicals and fertilizers;
- buildings, both residential and commercial;
- agriculture, including emissions from on-farm fuel use, crop production and animal production; and
- “waste and others,” which includes landfills, coal production, light manufacturing, construction and forest resources.

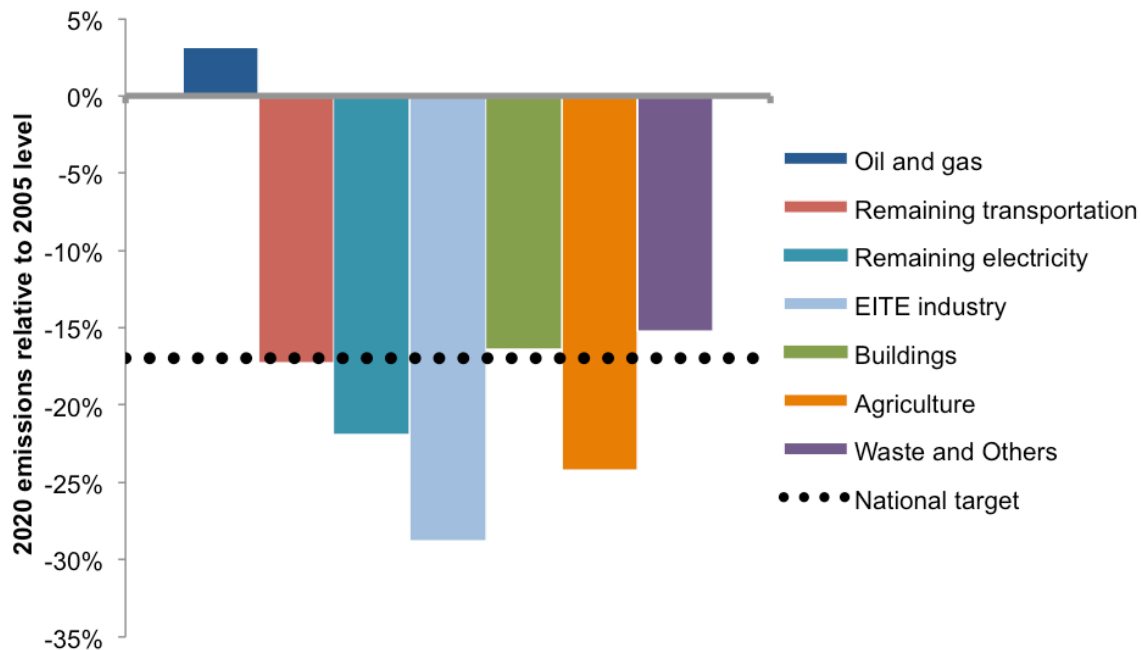
Together these sectors account for nearly 40% of Canada’s total emissions. In addition, although the federal government has adopted regulations for parts of the transportation and electricity sectors, other parts of those sectors remains to be regulated. These include:

- recreational, commercial and residential transportation; and
- electricity generation fired by natural gas and refined petroleum products.

To understand the implications of a 30/30 proposal on other sectors, we developed a scenario showing the kind of reductions that the remaining sectors would have to make in order to get Canada on track for its 2020 emissions target. Our scenario assumes that those reductions are allocated to the yet-to-be-regulated sectors on an equal basis.¹³ However, this is merely one illustration of a potential arrangement that sees other sectors “pick up the slack” from a 30/30 proposal for the oil and gas sector. The results are depicted below.

¹³ Thus, the approach we illustrate here is unlikely to be the most cost-effective choice. In reality, some sectors would have more low-cost reduction opportunities available to them than others, and the federal government would likely factor those differences into its decision-making when setting sectoral targets.

Figure 1: Illustration of one set of sectoral emissions levels that achieve Canada’s emissions target if a 30/30 proposal is adopted for the oil and gas sector



As Figure 1 shows, one potential consequence of a 30/30 proposal is that several of the yet-to-be-regulated sectors could be required to reduce their emissions by more than the national target level, in order to make up for the oil and gas sector’s emission growth.¹⁴ The national target reduction is 17% below the 2005 level in 2020; the average for the yet-to-be-regulated sectors in the scenario depicted in Figure 1 is 22% below the 2005 level.¹⁵

This kind of approach raises obvious concerns about fairness and equity among Canada’s economic sectors, but asking other sectors to do more as a result of a 30/30 approach to oil and gas emissions is theoretically a potential option. Appendix A provides further detail about the emission calculations in Figure 1 and lists potential policies governments could implement to reduce emissions in the sectors that remain to be regulated.

The federal government could also choose to adopt an economy-wide carbon price. This would complement its sector-specific regulations by driving further reductions across all sectors in an economically efficient manner. The federal government has the legal authority necessary to implement a carbon tax or a cap-and-trade system, and economy-wide carbon pricing is a policy

¹⁴ It is important to note that many of the sectors that remain to be regulated — notably agriculture and waste — are also the most likely source of offset credits. (The federal government refers to offset credits as “LCDRs,” for “low-cost domestic reductions.”) For example, if a farm reduces its emissions but sells that credit to an oil and gas company, the reduction is counted toward the oil and gas sector’s target. Thus, the reductions depicted here to achieve Canada’s 2020 target would be over and above any reductions that these sectors sell to the oil and gas sector.

¹⁵ As noted above, this is an illustrative simplification and only one approach to dividing up the remaining emission reductions needed to achieve Canada’s 2020 target. However, it does highlight significant considerations about equity between sectors that would be raised if the federal government asks for relatively little from oil and gas.

that enjoys broad support from economists, industry players and environmentalists. The main barrier to adopting a federal carbon pricing system is a political one: Stephen Harper's government has repeatedly rejected economy-wide carbon pricing, referring to it as a "job-killing tax on everything."¹⁶

To summarize, adopting a 30/30 proposal (or another proposal of similarly low environmental ambition) for the oil and gas sector would leave the federal government with three choices with regard to its 2020 target:

1. Rapidly adopting stringent policies for the remaining sectors.
2. Admitting that the sector-by-sector approach, as it has been applied, will see Canada miss its 2020 target by a significant margin.
3. Reversing its position and adopting a national carbon price as a complement to the sector-by-sector regulations.

Strong regulations for the oil and gas sector would significantly bolster the federal government's case that it is making progress towards its 2020 target. Our analysis¹⁷ concluded that effective oil and gas sector regulations would cost a typical oilsands company less than \$3 per barrel after accounting for interactions with taxes and royalty payments. Moreover, the investments that companies would make in response to strong regulations would help them win increased public support for their operations and compete in a world where environmental performance matters more and more. Ambitious regulations on the oil and gas sector would also provide a template for those sectors that have yet to be regulated, while weak oil and gas regulations would embolden other industry sectors to argue that they, too, deserve leniency.

Recommendation

The federal government should adopt a regulation for the oil and gas sector that is demonstrably strong enough to get Canada on track to achieve its 2020 target. Our analysis concluded that doing so would require a sector-wide intensity target of 42% below the sector's projected intensity level, a technology fund price of at least \$100 a tonne by 2020, and limits on companies' access to offset credits. When announcing its approach to GHG regulations for the oil and gas sector, the federal government should provide a detailed estimate of the proposal's contribution towards the 113 Mt gap that Canada needs to close in order to hit its 2020 emissions target.

Key questions about the implications of the regulations on Canada's target¹⁸

1. Will this proposal get Canada on track to hit its 2020 target? If not, how does the government plan to close the gap?

¹⁶ See, for example, journalist David Akin's description at <http://blogs.canoe.ca/davidakin/politics/the-job-killing-carbon-tax-again-and-again-and-again/>

¹⁷ Matt Horne, P.J. Partington and Clare Demerse, *Getting on Track for 2020: Recommendations for Greenhouse Gas Regulations in the Oil and Gas Sector* (The Pembina Institute, 2013). <http://www.pembina.org/pub/2427>

¹⁸ Pembina's initial report on the federal government's sectoral regulations for oil and gas, *Getting on Track for 2020*, contains a fuller list of key questions to ask. This backgrounder includes only the key questions relevant to the specific issues raised in each section.

2. What are the consequences of these regulations for the sectors that have yet to be regulated (including chemicals, cement, pulp and paper, natural-gas fired electricity, buildings, agriculture, forestry and landfills)? Will they be asked to take on a greater share of the effort to close the gap?
3. Will the government consider an economy-wide price on carbon to close the gap to Canada's target?
4. What does the government project oil and gas emissions will be in 2020 under
 - a. a "no government policies" scenario?
 - b. a "current government policies"¹⁹ scenario?
 - c. once these regulations go into effect?

The technology fund and the 2020 target

The federal and Alberta governments, as well as the oil and gas industry, have been using Alberta's approach as a prototype for the upcoming federal oil and gas regulation. This makes Alberta's experience to date relevant when considering the potential implications of a technology fund in future federal regulations.

As noted above, Alberta's GHG regulation allows companies to meet their targets by making payments into a technology fund rather than actually reducing the emissions intensity of their operations. There is no limit on companies' access to this option as a means of complying with their targets. As a result, the technology fund effectively caps the price that companies pay per tonne. The price serves two functions in Alberta's system: it creates an incentive (together with the target) for companies to invest in emission reduction opportunities that cost less than the technology fund price, and also generates revenue to support further emission reductions that cost more.

Alberta's system went into effect in July 2007. As of April 2012, the Government of Alberta had collected \$312 million from companies in technology fund payments at a rate of \$15 per tonne,²⁰ accounting for 42% of industry's total (cumulative) compliance with the regulations since they came into effect.²¹ The funds collected are turned over to the Climate Change and Emissions Management Corporation (CCEMC), an arms-length agency created to invest them.

In its 2011/2012 annual report, the CCEMC reported investing a total of about \$161 million to date through a series of "expressions of interest" competitions.²² As of May 2012, the CCEMC

¹⁹ In Environment Canada's Emissions Trends modelling, this scenario includes the effect of Alberta's current GHG regulations as well as B.C.'s current carbon tax. In 2012, Environment Canada projected that oil and gas sector emissions would reach 204 Mt in 2020 under this scenario.

²⁰ Government of Alberta, "Alberta's Oilsands: Greenhouse Gases." <http://www.oilsands.alberta.ca/ghg.html> (accessed June 6, 2013)

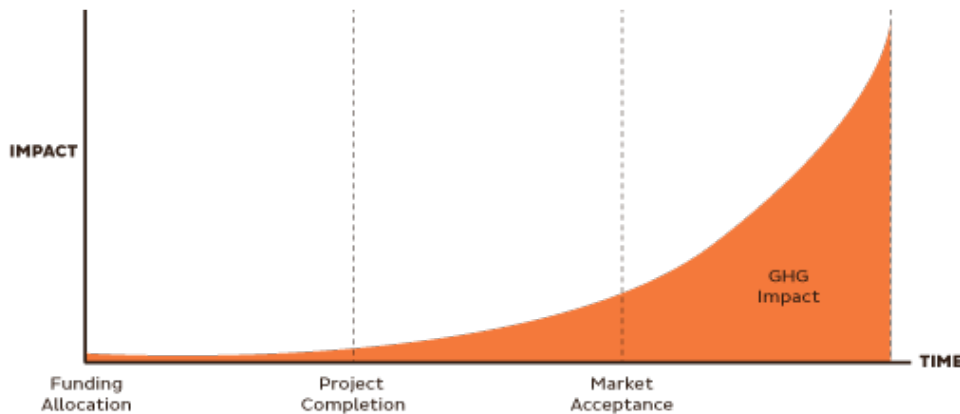
²¹ Based on cumulative SGER compliance from 2007-2011, as reported in Alberta's annual compliance results overviews. Offsets accounted for 34% of total compliance over the period, with facility improvements and use of EPCs accounting for 14% and 10%, respectively. See <http://environment.alberta.ca/01838.html>.

²² CCEMC, *Ever Expanding Innovation: 2011/2012 Annual Report*, 17. <http://ccemc.ca/wp-content/uploads/2012/11/CCEMC-1115-Annual-Report.pdf>

had funded a total of 43 clean technology projects, with “six projects in the research and development stage, 11 projects in commercialization, 20 projects in market demonstration, and six projects in technology design and development.” The projects are expected to reduce GHG emissions by a cumulative total of about 8 Mt over 10 years, meaning that the portfolio’s average annual emission reduction is less than 1 Mt per year.²³

Technology development takes time. Thus, the CCEMC acknowledges that some of the projects it funds will generate no emission reductions over the funding period, with the benefits occurring only farther into the future.²⁴ The relationship between technology investments and GHG impacts over time is illustrated in Figure 2 below, which comes from the CCEMC’s 2011/2012 annual report.

Figure 2: Alberta’s technology fund’s (CCEMC’s) timeline for GHG impacts



Investment/Benefit Relationship of Technology Applications

Source: CCEMC *Ever Expanding Innovation* (Annual Report 2011/2012)

The federal regulations are not expected to take effect until 2016.²⁵ If the federal proposal includes a technology fund like Alberta’s, it is entirely possible that the fund will not generate any significant reductions in time for Canada’s 2020 deadline. Indeed, if it takes time for the fund to be established (Alberta’s fund issued its first call for proposals over two years after its regulation came into effect) and then to decide where invest, it is possible that the federal government’s technology fund proposal would not generate a single tonne of reductions before 2020.²⁶

²³ Ibid.,16.

²⁴ Ibid., 15.

²⁵ Order/Address to the House of Commons No. Q-1155 (from Kirsty Duncan, MP; response tabled on March 18, 2013). Section (k) states that, “Oil and gas sector greenhouse gas regulations are anticipated to come into force in 2016.”

²⁶ Alberta’s technology fund timeline was likely influenced by the speed at which Alberta adopted its overall GHG policy. The Government of Alberta announced its Specified Gas Emitters Regulation early in 2007 and the

The technology fund is a popular compliance option in Alberta: in 2011, the most recent year for which data has been reported, firms used the technology fund for nearly a third (32%) of their compliance.²⁷ If we look to Alberta as a model for the federal proposal, it would be reasonable to expect a comparable level of interest from companies in taking advantage of the technology fund as a means of complying with their targets.²⁸ For example, IISD's assessment is that firms would use the technology fund for 28% of their compliance in a 30/30 scenario.²⁹

If the federal government adopts Alberta's model wholesale, companies will likely use the technology fund for a significant fraction of their efforts to meet their targets, but the fund will generate the vast majority of its emission reductions far into the future — even in a best-case scenario.³⁰ While technology investments are worthwhile, this specific model has serious implications for Canada's emissions target, making it even more difficult for Ottawa to meet its 2020 obligations.

Recommendation

To improve its chances of hitting the 2020 target, the federal government could spend some or all of the technology fund revenues on near-term, real and verifiable emission reductions. For example, the Harper government has ended its support for production incentives for new renewable energy projects and its energy efficiency retrofit programs targeting Canadian homeowners. Contributions from oil and gas companies under the sectoral regulation could support these kinds of initiatives, which, if properly designed, stand a far better chance of

regulation went into effect by July of that year. In comparison, the federal government currently plans to have its regulations go into effect in 2016, giving itself two and a half years (or more) before the regulations would go into effect. Thus, if the federal government matched Alberta's timeline, a federal technology fund could be up and running before the regulations take effect in 2016. Of course, there would still be delays before projects could be funded, because firms would not make contributions until 2016 or later.

²⁷ In 2011, firms complied with Alberta's regulations through a combination of:

- 2.5 Mt in actual emission reductions (a combination of 1.5 Mt of in-facility improvements and 1.0 Mt of emissions trading, i.e., purchasing credits from facilities that have exceeded their targets in the past);
- 5.3 Mt in offset purchases; and
- 3.7 Mt in technology fund contributions, for a total of \$55.4 million (at \$15 per tonne).

See: Government of Alberta, "2011 Greenhouse Gas Emission Reduction Program Results."

<http://environment.alberta.ca/04059.html> (accessed June 6, 2013)

²⁸ The federal GHG regulations for oil and gas will likely increase the overall pool of dollars dedicated to technology investment for two reasons: both because companies outside of Alberta will now begin contributing to a technology fund, and because the price per tonne will rise from \$15 per tonne even under the lowest-ambition (CAPP) scenario of \$20 per tonne. A recent news story estimated that Alberta would collect between \$450 million and \$1.5 billion per year by 2020 under a 40/40 proposal that covers all of Alberta's heavy industry sectors. See: Nathan Vanderklippe, "Alberta's carbon tax windfall dilemma," *The Globe and Mail*, April 9, 2013.

<http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/albertas-carbon-tax-windfall-dilemma/article10959863/#dashboard/follows/>

²⁹ Sawyer and Beugin, 2013, Table 2. In a 30/30+60 scenario, firms use the technology fund for 9 Mt of a total of 32 Mt of their total compliance, making it the second-most popular compliance choice (behind offset, or LCCR, credits).

³⁰ Of course, some of the fund's investments may deliver fewer reductions than projected, or may fail altogether. This is not a critique of the CCEMF in particular; rather, it is a reality when anyone invests in new technologies.

generating emission reductions before 2020 than an investment fund akin to Alberta's current approach.

Key questions about a potential technology fund

1. Will companies have access to a technology fund?
 - a. If so, what will the rate be for payments, and how will the funds raised be spent?
 - b. Will access to the technology fund be capped or unlimited?
 - c. Will access to the fund ramp down over time?³¹
2. Do you expect the technology fund to generate any emission reductions by 2020? If so, how many?
3. When do you expect the first technology fund projects to start reducing emissions?
4. Will any technology fund dollars be set aside for near-term emission reduction programs? If so, what fraction of the funds will be spent in this way, and on what categories of emission reductions?

Oil and gas subsectors and the proposed targets

The oilsands are Canada's fastest-growing source of GHG pollution, and a subsector that often finds itself under the spotlight — even more so in recent months, as jurisdictions consider a series of controversial pipeline proposals that would transport oilsands bitumen. In many ways, the oilsands are a litmus test for the upcoming federal regulations.

When proposals like 40/40 and 20/20 are discussed, it's clear that those targets and prices are expected to apply to the oilsands. What's not clear from media reports is whether the rest of the oil and gas sector will be treated the same way.

There is a risk that the approach to the oilsands represents the high-water mark for the regulations, and that other oil and gas subsectors may face even less stringent targets, weaker prices, or both.

For example, the refining subsector has been raising concerns about the potential effect of GHG regulations on their operations in Canada.³² The refining industry association's website states that because refining is an "energy intensive trade exposed sector," maintaining its competitiveness relative to other jurisdictions "must be a key principle underpinning any GHG emissions reduction policy."³³ In other words, refiners say that they cannot be asked to do more than their peers outside Canada.

³¹ In the federal government's 2007–2008 Turning the Corner proposal, companies' access to the technology fund compliance option was scheduled to be reduced year over year, so that the option was phased out entirely before 2020. The Turning the Corner proposal was shelved in favour of "harmonizing" with the United States after President Obama's election.

³² Shawn McCarthy, "Oil industry warns of refinery closings over environmental rules," *The Globe and Mail*, February 27, 2013. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/oil-industry-warns-of-refinery-closings-over-environmental-rules/article9133032/#dashboard/follows/>

³³ Canadian Fuels Association, "Industry Policy Positions." http://canadianfuels.ca/index_e.php?p=4 (accessed June 6, 2013)

If their lobbying is successful, the “headline” target and price combination that the government publishes when the regulations are announced may not apply in full to Canada’s refineries. The same could be true of other subsectors, some of which — such as proposals for new shale gas development and liquefied natural gas export terminals in British Columbia — could represent significant sources of growth in Canada’s emissions.

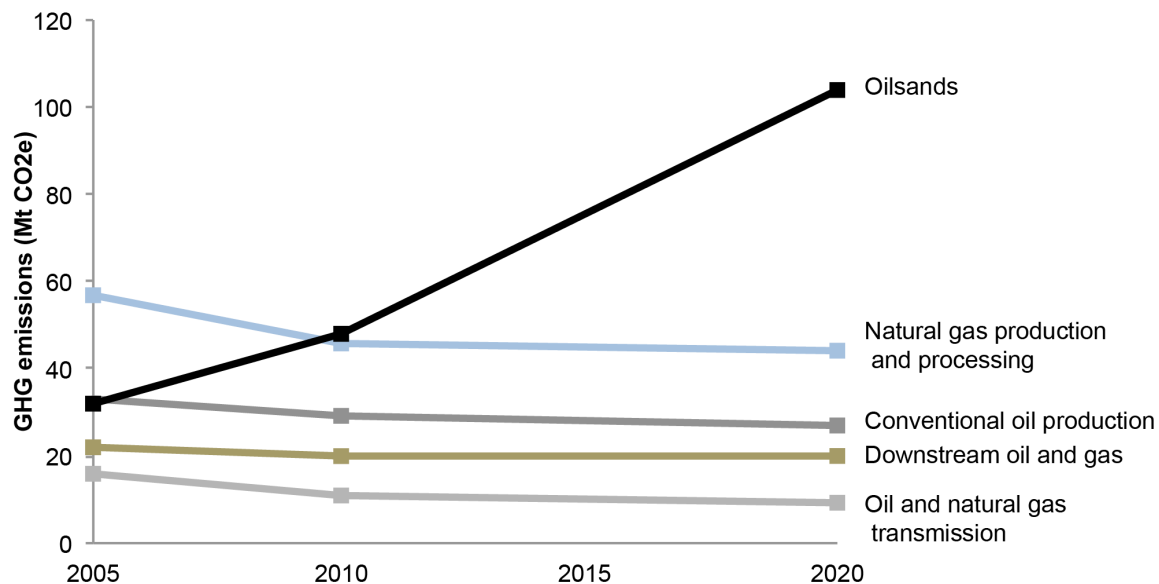
In addition to the oilsands subsector — which encompasses in situ operations, oilsands mining, and upgrading — Canada’s oil and gas sector as defined in Environment Canada’s GHG projections includes

- natural gas processing and production
- conventional oil production (light, heavy and frontier)
- oil and natural gas transmission (i.e. pipelines)
- refining to produce “petroleum products” and natural gas distribution (which together make up the “downstream oil and gas” subsector).

Subsectors other than the oilsands currently make up the majority (66%) of Canada’s oil and gas emissions, although that percentage is projected to fall to just under half of the sector’s total emissions by 2020 as oilsands emissions grow. It is not yet clear whether all of the Canadian oil and gas industry’s subsectors will be included in the final federal sectoral regulation for oil and gas.

The projected growth of oil and gas subsectors in Canada is illustrated in Figure 3, based on Environment Canada’s *Emissions Trends* projections.

Figure 3: Projected GHG emissions growth in oil and gas subsectors, 2005 to 2020



Diluting a 30/30 regulation for some subsectors would make an already weak approach even less effective: the sector as a whole needs to make a fair contribution to Canada’s target. In addition, the range of options offered by Alberta’s model — such as trading between companies, access to offset credits and access to a technology fund — mean that all firms have more than enough

choices available to meet their targets, regardless of their physical opportunities to reduce emissions in their operations.

Emissions trading works best between firms with varied characteristics, because such companies are likely to find ways to reduce their emissions at a variety of different prices. This creates the conditions needed for some firms to generate credits by going beyond their targets, while other firms will find it in their interest to buy those credits. In general, economic theory suggests that broad-based carbon pricing systems with simple and clear rules are the most economically efficient way to reduce emissions.

Recommendation

In our view, the best approach for the federal oil and gas sector regulations would be to keep things simple and apply a single, ambitious standard across the sector, while giving companies the flexibility to trade amongst themselves. Indeed, this is the approach that Alberta's regulation, the model for the federal effort, opted to take when its system went into effect. The province set a price and target that apply to heavy industry as a whole while giving companies unlimited access to trading amongst heavy industry firms (as well as to the technology fund and to offset credits generated in Alberta).³⁴

Key questions about the treatment of oil and gas subsectors

1. Do the regulations distinguish between various subsectors of oil and gas? If so, how were the different subsectors' targets derived?
2. Do the regulations cover
 - a. bitumen production (in situ and mining)?
 - b. bitumen upgrading?
 - c. natural gas production (including unconventional gas)?
 - d. natural gas processing?
 - e. liquefied natural gas terminals?
 - f. conventional oil production (light, heavy)?
 - g. offshore or frontier oil production?
 - h. refineries?
 - i. pipelines (oil, natural gas)?
3. If certain subsectors are not covered, what is the government's plan to address their emissions?

³⁴ Although the SGER applies in the same way to all facilities emitting over 100 kilotonnes per year, several facilities have been allowed to apply alternate production methods such as Solomon Refinery Activity Index (RAI) to calculate production in their compliance submissions. This is currently under review. See: Government of Alberta, *Technical Guidance for Completing Specified Gas Baseline Emission Intensity Applications* (2012). <http://environment.alberta.ca/documents/Technical-Guidance-for-Completing-Specified-Gas-Baseline-Emission-Intensity-Applications.pdf>

Conclusion

The oil and gas sector regulations are a make-or-break moment for Canada's national emissions target.

Credible and effective regulations would be good news for the oil and gas sector, improving the sector's efficiency and allowing it to compete in a world where environmental performance matters more and more. A typical oilsands facility could comply with a regulation strong enough to get Canada on track for its 2020 target — and thus, a regulation far stronger than any of the proposals reportedly on the table today — at a cost of well under \$3 per barrel.

Appendix A: Options for GHG reductions in sectors that have yet to be regulated

Table 1 provides details of the emission calculations illustrated in Figure 1, which illustrates the level of emission reductions other sectors could be asked to make to hit Canada's target if a 30/30 proposal is adopted for the oil and gas sector. As noted above, a 30/30 proposal would see oil and gas emissions grow slightly from today's levels, leaving other sectors to make the reductions needed to get Canada on track for its 2020 target. Table 2 lists potential policy options available to federal and provincial governments for making reductions in the sectors that remain to be regulated.

Table 1: An illustration of reductions required from other currently-unregulated sectors if a 30/30 proposal is adopted for the oil and gas sector

Sector	Description	Required reduction below 2005 levels	Required reduction below 2005 levels (per cent)
Remaining Transportation	Recreational, commercial and residential transportation	3 Mt	17%
Remaining Electricity	Electricity generation fired by natural gas and refined petroleum products	5 Mt	22%
Emissions-intensive, trade-exposed (EITE) industry	Mining, smelting and refining, pulp and paper, iron and steel, cement, lime and gypsum, chemicals and fertilizers	26 Mt	29%
Buildings	Residential and commercial buildings	14 Mt	16%
Agriculture	On-farm fuel use, crop production and animal production	16 Mt	24%
Waste and Others	Waste, coal production, light manufacturing, construction and forest resources	7 Mt	15%
Total		71 Mt	22%

In the scenario depicted in Table 1, the emission reductions required to hit Canada's 2020 target are allocated to the yet-to-be-regulated sectors based on an equal share of reductions below business as usual. This is merely one illustration of a potential arrangement that sees other sectors "pick up the slack" from a 30/30 proposal for the oil and gas sector, and is unlikely to be the most cost-effective one.

Table 2: Policy options for further GHG reductions in sectors that have yet to be regulated³⁵

Sector	Description	Projected 2020 emissions with current policy (Mt CO ₂ e)	Projected change in emissions with current policy (2005-2020)	Sectoral Policies available to reduce emissions
Remaining Transportation	Recreational, commercial and residential transportation	18 Mt	6%	<p>Additional fuel economy standards could be implemented covering these vehicle/engine types. (Final regulations have already been adopted covering all light and heavy-duty on-road vehicles, as well as most heavy-duty off-road engines. The federal government has also adopted minimum renewable content for liquid fuels.)</p> <p>Additional or expanded provincial carbon pricing (beyond B.C., Alberta and Quebec), stronger carbon pricing policies in those jurisdictions, low-carbon fuel standards (beyond B.C.) or major transit investments could also spur additional reductions.</p>
Remaining Electricity	Electricity generation from natural gas and refined petroleum products	22 Mt	0%	<p>Federal performance standards are likely to be adopted in these areas, following the federal government's performance standard for coal-fired electricity generation. Further provincial policies addressing generation mix (beyond B.C., Ontario and Nova Scotia), additional provincial carbon pricing (beyond B.C., Alberta and Quebec) or stronger carbon pricing policies in those jurisdictions could also drive additional reductions.</p>

³⁵ In addition to the sector-specific policies outlined here, the federal government could choose to adopt economy-wide carbon pricing.

Emissions-intensive, trade-exposed (EITE) industry	Mining, smelting and refining, pulp and paper, iron and steel, cement, lime and gypsum, chemicals and fertilizers	82 Mt	-9%	Sectoral performance standards are likely at the federal level. Additional provincial carbon pricing systems (beyond B.C., Alberta and Quebec) or stronger carbon pricing policies in those jurisdictions could also drive reductions.
Buildings	Residential and commercial buildings	91 Mt	7%	Strengthened energy efficiency standards and renewed programs to support retrofits of existing buildings are possible at federal and provincial levels. Additional or expanded provincial carbon pricing (beyond B.C. and Quebec), or stronger carbon pricing policies in those jurisdictions, could also drive reductions.
Agriculture	On-farm fuel use, crop production and animal production	65 Mt	-3%	Opportunities exist to reduce emissions through energy efficiency; improved soil, livestock, and manure management; and increased use of renewable fuels. However, these types of reductions are typically captured through offset markets.
Waste and Others	Waste, coal production, light manufacturing, construction and forest resources	51 Mt	9%	Additional regulation of the waste sector could drive further reductions. However, the sector is already regulated or participating in offset markets in most major provinces. Other sectors can achieve reductions through additional conservation and efficiency programs as well as additional provincial carbon pricing.
Total		329 Mt	0%	

Appendix B: Comparison of oil and gas sectoral proposals

The tables below examine some of the emissions and economic implications of the three proposals that have been described in media reports: CAPP’s 20/20 proposal, the federal two-tier technology fund proposal with a 30% target and Alberta’s 40/40 proposal.

Table 3: Costs and compliance choice projections under various oil and gas regulatory proposals³⁶

Proposal	Details of proposal			Compliance in 2020		
	Intensity target for covered sectors in 2020	Technology fund price in 2020 (per tonne)	Average cost (per tonne)	Estimated average cost per unit of compliance (per tonne)	Per barrel costs for oil producers (before royalty and tax interaction) ³⁷	Portion of compliance from GHG reductions in the oil and gas sector ³⁸
CAPP (20/20)	-20%	\$20	\$3.40	\$17	\$0.12	19%
Environment Canada (30/30+60)	-30%	First 30% at \$30, remainder at \$60	\$8.40	\$28	\$0.42	21%
Alberta (40/40)	-40%	\$40	\$13.20	\$33	\$0.49	16%

³⁶ Based on Sawyer and Beugin.

³⁷ For example, Andre Plourde’s *Carbon Taxes and Financial Incentives for Greenhouse Gas Emission Reductions in Alberta’s Oil Sands* concludes that the interaction with taxes and royalties cuts the effective cost to firms approximately in half. Thus, the three prices cited here would be closer to six cents per barrel, 21 cents per barrel and 25 cents per barrel for producers.

³⁸ This is as opposed to payments to the Technology Fund or purchases of emission reductions from outside the oil and gas sector (i.e., low-cost domestic reductions or “offset” credits). Companies’ ability to hit their targets by purchasing credits outside the oil and gas sector explains why the projected price per tonne is below the “ceiling” technology fund price in each of the cases depicted in Table 3.

Table 4: “Best-case scenario”³⁹ effect of various proposals on 2020 GHG emissions

Proposal	Emissions in 2020		
	Oil and gas emissions relative to 2005, assuming that companies meet 100% of their targets by improving emissions intensity in their facilities	Total oil and gas compliance obligation relative to business-as-usual	Remaining emissions gap to Canada’s target ⁴⁰
CAPP (20/20)	+12%	-25 Mt	~88Mt
Environment Canada (30/30+60)	+3%	-39 Mt	~74 Mt
Alberta (40/40)	-4%	-51 Mt	~62 Mt

Our starting point for the results presented in Tables 3 and 4 is the economic modelling by Sawyer and Beugin in their May 2013 policy brief entitled *Oil and Gas Greenhouse Gas Regulations: The implications of alternative proposals*. Table 3 presents details of the scenarios along with IISD’s estimates of average direct compliance and per-barrel costs, as well as proportion of total compliance expected from in-sector reductions.

Table 4 adjusts the compliance obligation estimates presented in IISD’s modelling to allow for a more direct comparison with Environment Canada’s projections in *Canada’s Emissions Trends 2012*. This was done by applying the percentage reductions modelled in IISD’s scenarios to Environment Canada’s projections after adjusting for differing assumptions about coverage and endogenous improvement.

The 2005 emissions levels used in this analysis are those presented in *Emissions Trends*. Updated numbers have since been published in Environment Canada’s 2013 *National Emissions Inventory* and may vary slightly from those used here.

³⁹ In other words, Table 4 assumes that companies meet their targets entirely by improving the emission intensity of their facilities, not by taking advantage of flexible compliance options like the technology fund and offset credits. As Table 3 illustrates, economic modelling of firms’ likely compliance choices show that this is a very unrealistic assumption, as firms are likely to meet less than a quarter of their regulatory obligation by actually improving performance within their operations.

⁴⁰ Environment Canada’s 2012 estimate is that Canada needs to close a 113 Mt gap in 2020. We subtracted projected oil and gas sector regulations from that starting point to arrive at the remaining gap depicted in Table 4.