Analysis of the Government of Canada's April 2007 Greenhouse Gas Policy Announcement

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Summary

- On April 26, 2007, Environment Minister John Baird announced the Government of Canada's targets for Canada's total greenhouse gas (GHG) emissions and a proposed regulatory framework for GHG emissions from heavy industry.
- The national GHG targets are for emissions to peak (at an unspecified level) during 2010–12, and then fall as follows:

	Relative to 2006	Relative to 1990	Relative to Kyoto target
2020	20% below	approx. 2% above	approx. 8% above
2050	60–70% below	approx. 49–62% below	–

  The government is expressing these targets relative to 2006, rather than to the internationally accepted base year of 1990. The table shows that this results in a misleading impression of their adequacy.
- These targets fall far short of (i) requirements based on our scientific knowledge of climate change, (ii) targets adopted by the developed countries making the strongest GHG reduction commitments, and (iiii) Canada's legal obligations under the Kyoto Protocol. The government has apparently not conducted economic modelling of a range of different targets for 2020, and has not made a case for why its 2020 target is consistent with meeting its 2050 target. Its 2020 target therefore appears to be arbitrary.
- The government has provided *no explanation* as to how it expects to meet its target for national emissions to peak during 2010–12. Without measures additional to those the government has announced to date, the short term target can only be met if there is a unexpected and dramatic slowing of the business-as-usual increase in emissions.
- The government's explanation of how it expects to meet its national target for 2020 is dubious, because (i) there are serious doubts as to whether the regulatory framework for heavy industry will actually result in industrial emissions being reduced by 2020 to the extent claimed; (ii) the government has provided *no explanation* of why it expects its other measures to generate the amounts of emission reductions claimed; and (iii) there are several ways in which double counting could cause emission reductions from the various measures to "overlap" and thereby fail to add up to the total required.
- The government expects emissions in 2020 from sources covered by its proposed regulatory framework for heavy industry to be 18% below the 2006 level but 12% above the 1990 level. These sources accounted for 45% of national emissions in 2003.
- In reality, the regulatory framework's effect on emissions cannot be known with any certainty, because (i) its targets are expressed in terms of emissions intensity, not actual

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emissions; (ii) we do not yet know how targets will be defined for new facilities; (iii) "fixed process emissions" are exempted but have not been fully defined; and (iv) some of the "compliance options" that companies can use to meet targets will not result in immediate emission reductions, and some may not result in any real emission reductions at all.

- Because of these compliance options, during 2008–12 the regulatory framework could produce as little as 27 Mt of actual reductions (5+9+13 Mt in 2010, 2011 and 2012), compared to 180 Mt (5×36 Mt) from the previous government's proposed regulatory system for heavy industry (the "Large Final Emitters" system under "Project Green"), relative to projected levels in the absence of regulations. The "backloading" of actual reductions towards the end of the period up to 2020 reduces environmental benefits and diminishes the likelihood of emissions actually being reduced in 2020 to the extent claimed, given that the framework will be subject to a review in 2012.

- The regulatory framework treats the oil and gas sector leniently relative to other industry sectors, in up to five ways:
    - Sectors with stable or slow-growing production levels will have to reduce actual emissions while the oil sands sector will be able to triple its emissions if the industry's own production projections are correct.
    - The framework largely ignores the fact that between 1990 and 2004, the energy-producing sectors substantially increased their emissions, while the energy-consuming sectors achieved a slight decrease.
    - Because of the low rate for payments into the framework's technology fund, taxpayers could end up paying about half of the cost of carbon capture and storage projects, despite the industry being able to reasonably afford close to the full cost.
    - "Unintentional fugitive emissions" from the oil and gas sector (about one-quarter of the sector's emissions) are exempted from the main regulatory framework. They are to be regulated separately, but the government has not specified how.
    - New oil sands facilities are to be treated more leniently than existing facilities, i.e., the reduction in emissions intensity for the sector as a whole is to be less than the reduction for existing facilities.

- A case can be made that the overall weakness, backloading and fairness problems of the regulatory framework will harm, not help Canadian industry, by perpetuating the policy uncertainty that makes it so difficult to make rational investment decisions on infrastructure with a lifetime of several decades.

- The regulatory framework has an extremely complicated design. In Section 4 we highlight 20 important design details that remain to be clarified. In several cases, existing loopholes risk being opened wider or new ones risk being created. For example, prevention of the double counting referred to above will require careful design of regulations relating to the technology fund and the upholding of strong "additionality" rules for offset credits. The complexity of the framework can be expected to cause delays in start-up as well as poor transparency and inefficiency when it is in force.

- The government now seems to be acknowledging that the regulatory framework can be implemented using the Canadian Environmental Protection Act, 1999. In other words, to regulate GHG emissions, there is no need for a Clean Air Act or any other new legislation.

1. Introduction

On April 26, 2007, Environment Minister John Baird released a series of documents outlining the Government of Canada's policies on

- short- (2012), medium- (2020) and long-term (2050) targets for Canada's total greenhouse gas (GHG) emissions,
- a proposed regulatory framework for GHG emissions from heavy industry, and
- combination of the regulatory framework for heavy industry with other measures to achieve the 2020 target for national emissions.

The main document to which we will refer is the *Regulatory Framework for Air Emissions* ("Regulatory Framework"). This was accompanied by a series of other documents including a backgrounder entitled *Action on Industrial Greenhouse Gas Emissions* ("Action backgrounder"), another entitled *150 Megatonnes Reduction by 2020 of Canada's Greenhouse Gases* ("150 Megatonnes backgrounder"), and a brochure entitled *Action on Climate Change and Air Pollution* ("Action brochure"). In the following days Environment Canada also published a "Technical Briefing" presentation entitled *Clean Air Regulatory Agenda—Regulatory Framework for Industrial Air Emissions*.[2] Environment Canada officials have also provided us with some additional clarifications on specific points. The scope of the present analysis is evaluation of the preceding items.

2. Adequacy of the national GHG targets

The Regulatory Framework (p.4) lays out targets for Canada's total GHG emissions to

- peak (at an unspecified level) "as early as 2010 and no later than 2012,"
- fall to 20% below the 2006 level by 2020, and
- fall to 60–70% below the 2006 level by 2050.

These targets can be understood only approximately in absolute terms because of the vagueness of the first one and the use, for the other two, of a 2006 base year for which emissions data is not yet available. To overcome these difficulties we will assume that Canada's emissions continue to grow between 2005 (the latest year for which data is available) and 2006 at the average compound rate of growth for 1990–2005, and then peak in 2010–12 at a level reflecting a further two years' worth of growth at the same rate. This is a conservative assumption given that the policies we are discussing were only announced in mid-2007.

Using these assumptions Table 1 presents the government's targets re-expressed relative to the 1990 level and to Canada's target under the first phase of the Kyoto Protocol (a 6% reduction below the 1990 level).

[2] All of these documents are available at http://www.ec.gc.ca/ under "Regulatory Framework for Air Emissions."

Table 1. The government's national GHG emissions targets relative to the 1990 level and Canada's Kyoto target.[3]

	Relative to 2006	Relative to 1990	Relative to Kyoto target
2010–12	approx. 3% above	approx. 31% above	approx. 39% above
2020	20% below	approx. 2% above	approx. 8% above
2050	60–70% below	approx. 49–62% below	–

The government's use of a 2006 base year makes its targets for 2020 and 2050 seem superficially impressive. But 1990 is the internationally accepted base year for emission reduction commitments[4]. Table 1 shows that changing the base year from 1990 to 2006 results in a misleading impression of the adequacy of the targets; it also amounts to an attempt to relinquish responsibility for Canada's estimated 27% increase in emissions during that period. It is no doubt difficult for the present government to accept responsibility for the consequences of the inaction of its predecessors, but there is a broader national responsibility that must be shouldered.

As we will now explain, Table 1 makes clear that the government's targets fall far short of (i) requirements based on our scientific knowledge of climate change, (ii) targets adopted by the developed countries making the strongest GHG reduction commitments, and (iii) Canada's legal obligations under the Kyoto Protocol.

First, voluminous scientific research indicates that more than 2ºC of average global warming relative to the pre-industrial level would take the world into a zone of climate impacts that can only be regarded as catastrophic. Analysis of reasonable ways to share out emission reductions between developed and developing countries as part of a global effort to avoid crossing the 2ºC threshold shows that developed countries must reduce their GHG emissions by at least 25% below the 1990 level by 2020 and at least 80% below by 2050.[5] When the Government of Canada tells the world that it intends to fall far short of these requirements, it is sending one of three possible messages: either (i) we do not accept the science of climate change, or (ii) we consider the severe impacts expected with more than 2ºC of warming to be acceptable, or (iii) other countries will have to do more to make up for Canada doing less.[6]

[3] The percentages in the table are based on the following values for national GHG emissions, with the 1990 and 2005 values taken from Environment Canada, "Latest Greenhouse Gas Data Show that Canada is Still Over 32% Above Kyoto Target," news release, May 25, 2007:
1990: 596 megatonnes carbon dioxide equivalent (Mt CO_2e)
2005: 747 Mt
2006: 758.3 Mt
2010–12: 781.5 Mt.

[4] Because of its proximity to 1992, the year when the international community agreed, by adopting the United Nations Framework Convention on Climate Change, the objective of putting an end to the accumulation of GHGs in the atmosphere.

[5] Matthew Bramley, *The Case for Deep Reductions: Canada's Role in Preventing Dangerous Climate Change* (Vancouver and Drayton Valley, AB: David Suzuki Foundation and the Pembina Institute, 2005), 29, http://climate.pembina.org/pub/536.

[6] Minister Baird has made a highly misleading claim that his short-term target for Canada's emissions to peak by 2012 is better than what would be required based on science. In the House of Commons on May 4, he compared his short-term target favourably to the recommendation of the Intergovernmental Panel on Climate Change that global GHG emissions must peak by 2015 to avoid more than 2ºC of global warming. The comparison is invalid because developed countries clearly need to reduce emissions much more rapidly than the world as a whole in light of their very high emissions per capita, capacity to act and historical responsibility for most of the GHGs that have accumulated to date in the atmosphere.

Second, the European Union's heads of government have endorsed the objective of reducing the EU's GHG emissions to 30% below the 1990 level by 2020, in line with the science, "provided that other developed countries commit themselves to comparable emission reductions." Meanwhile, they have adopted a target 20% below the 1990 level irrespective of other countries' actions.[7] Germany,[8] the United Kingdom[9] and Norway[10] have already committed to stronger targets than this for 2020. For 2050, Norway is proposing to eliminate 100% of its emissions,[11] while France and California have committed to 75–80% reductions below the 1990 level.[12]

Third, under international law Canada is required to meet its Kyoto target on average during 2008–12, through some combination of reductions in domestic emissions and credits obtained through Canadian financing of emission reductions in other countries. Instead, the government is proposing that our annual emissions be approximately 39% higher than the Kyoto target in the period to which that target applies. Even in 2020, ten years after the Kyoto deadline, our emissions will remain approximately 8% higher than the target. In parliamentary testimony on May 17,[13] Environment Canada officials stated that Canada would not reach its Kyoto target until about 2025, or 15 years late.

It is legitimate to debate the economic costs of meeting a Canadian national GHG target for 2020 that is in line with the science. But such a target cannot reasonably be rejected on economic grounds without conducting adequate economic modelling, including full consideration of the use of international emissions trading (the "carbon market") to reduce the costs of reducing emissions.[14] The Regulatory Framework refers (p.26) only to a "preliminary analysis" of the costs of meeting the government's 2020 target, but the description given is vague. It appears that the government has not conducted economic modelling of a range of different targets for 2020. Its 2020 target therefore appears to be arbitrary.

3. Adequacy and achievement of the industrial GHG targets

Regulation of GHG emissions from heavy industry sectors is the single most important element of Canada's efforts to meet national GHG targets because those sectors account for close to half of national emissions.

Unfortunately, the effect on emissions of the government's proposed regulatory framework for heavy industry cannot be known with any certainty for several reasons. First, the industrial GHG targets are expressed in terms of emissions intensity (emissions divided by production). This means that if future production is higher than expected, the targets can be met at a higher level of actual emissions. Second, new facilities will have special targets, but we do not yet know how these will be defined, or how many new facilities there will be in each sector. Third, "fixed process emissions" are exempted, but we do not know precisely what proportion of emissions

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[7] Presidency Conclusions of the European Council (8–9 March, 2007), http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf.
[8] "Germany to Become World's Most Energy-Efficient Country," *Deutsche Welle*, April 29, 2007, http://www.dw-world.de/dw/article/0,2144,2459564,00.html.
[9] Department for Environment, Food and Rural Affairs, "New Bill and strategy lay foundations for tackling climate change — Miliband," news release, March 13, 2007, http://www.defra.gov.uk/news/2007/070313a.htm.
[10] "Norway aims to be 'zero-emission' state by 2050," *AFP*, April 19, 2007, http://www.physorg.com/news96222529.html.
[11] Ibid.
[12] Bramley, *The Case for Deep Reductions*, 30–31.
[13] To the House of Commons Standing Committee on Environment and Sustainable Development.
[14] For 2050, economic modelling will be more speculative, because of the difficulty of modelling technological innovation far into the future.

will fall into this category in each sector. Fourth, some of the "compliance options" that companies can use to meet targets will not result in immediate emission reductions, and some compliance options may not result in any real emission reductions at all. (These uncertainties are discussed in more detail in Section 4.)

Table 2 presents the government's estimates of the level of industrial emissions that it expects to result from the regulatory framework.[15]

Table 2. Levels of annual GHG emissions from regulated sources that the government expects to result from the proposed regulatory framework for heavy industry.

	1990	2003	2006	2020 (without regulations)	2020 (with regulations)
Emissions (Mt)	253	341	345	372	284

Table 2 shows that the government expects emissions from regulated sources in 2020 to be 18% below the 2006 level but 12% above the 1990 level. (It also confirms that emissions from regulated sources were 45% of national emissions in 2003.[16])

What this means is that even if industrial production in 2020 is no higher than the government projects, and if all compliance options used by industry in 2020 correspond to immediate emission reductions, industry will be responsible for a slightly smaller percentage reduction in its emissions below the 2006 level (17%) than Canada is to achieve as a whole (20%).

We must make a caveat to this statement. One of the compliance options available to industry before 2018 is payment into a technology fund. If investments by the technology fund result in significant emission reductions by 2020, then if industry is prevented from counting such reductions for compliance purposes (which would be a form of double counting), the regulatory framework for heavy industry will result in larger reductions by 2020 than those presented above. (We will return to this issue in Section 5.)

A further assessment of the credibility of the numbers in Table 2 will depend on the government publishing the details of its projections of future industrial production (and, for 2006, emissions intensity).

Both the environmental benefits of the regulatory framework, and the likelihood of industrial emissions actually being reduced by 2020 to the extent claimed by the government, are further weakened by some of the compliance options that industry will be allowed to use in the first several years after the framework enters into force (2010). These options — notably, payments into the technology fund and an early action credit — will allow industry to achieve "paper reductions" that will not correspond to immediate reductions in actual emissions. This is illustrated below in Table 3.

[15] The values for 1990, 2003 and 2006 have been obtained to the best of our ability from a graphic in the Action brochure (p.6). The value for 2020 (without regulations) has been taken from the Technical Briefing, p.28; and the value for 2020 (with regulations) has been obtained from it by subtracting 88 Mt, the estimated total impact of the regulatory framework (Technical Briefing, p.10). The two values for 2020 are in close agreement with the graphic in the Action brochure and also with the 150 Megatonnes backgrounder, which states that the framework is expected to reduce industrial emissions by 60 Mt from the 2006 level by 2020.

[16] Based on a value of 754 Mt for national GHG emissions in 2003, taken from Environment Canada's *National Inventory Report, 1990–2004* (http://www.ec.gc.ca/pdb/ghg/inventory_report/2004_report/ts_1_e.cfm)

Table 3. Reductions in actual annual GHG emissions (Mt), *relative to projected levels in the absence of regulations*, that could be expected to result from the proposed regulatory framework for heavy industry.

Year	2010	2011	2012	2015	2020
Total required reductions[17]	49	54	58	72	88
Of which paper reductions…					
Technology fund payments[18]	–34 (70%) –5	–35 (65%) –5	–35 (60%) –5	–29 (40%) –5	0
Early action credit[19]	–5	–5	–5	0	0
Resulting actual reductions	5	9	13	38	88

In reality the actual reductions could be somewhat greater in the earlier years because industry will have some opportunities to reduce emissions at a cost that is less than the rate for payments into the technology fund. However, these opportunities will be limited given that the payment rate is set at a low level of \$15/tonne CO_2e for 2010–12, and \$20/tonne (adjusted for inflation) in 2015. The actual reductions could also be slightly greater if the percentage limits on use of the technology fund were interpreted more strictly (see Section 4.) On the other hand, actual reductions could be reduced if offset credits are issued for business-as-usual activities (see Section 4.)

Table 3 shows that the regulatory framework "backloads" the bulk of actual reductions in industrial GHG emissions towards the end of the period up to 2020. This backloading has two important consequences. First, it reduces the environmental benefits of the regulatory framework, because substantially more GHGs will be emitted in total during 2010–20 than would have been the case if required reductions increased linearly over the period. Second, backloading diminishes the likelihood of emissions actually being reduced in 2020 to the extent shown in Table 3 because the regulatory framework will be subject to a review in 2012 (Regulatory Framework, p.12). Backloading can be expected to tempt some in industry into doing little or nothing to prepare to reduce emissions before 2012, and to bet instead that the framework can be substantially weakened for subsequent years by applying political pressure in the 2012 review.

Table 3 also shows that the regulatory framework is far weaker even than the previous government's proposed regulatory system for heavy industry (the "Large Final Emitters" system under "Project Green"), which was widely criticized as inadequate when it was announced in April 2005. The previous government's system was designed to achieve a 36 Mt reduction in actual annual industrial emissions, relative to projected levels in the absence of regulations, for each year of the period 2008–12.[20] This adds up to a total of 180 Mt of actual reductions over that five-year period. In contrast, the present government's regulatory framework could produce

[17] Values for 2010, 2015 and 2020 have been taken from the Technical Briefing (p.8–10), and the values for 2011 and 2012 have been derived from them by linear interpolation.

[18] The percentages refer to proportions of the "total regulatory obligation" that companies can meet with payments into the deployment and infrastructure component of the technology fund, while the additional 5Mt per year correspond to payments into the research and development component of the fund (Regulatory Framework, p.13).

[19] The Regulatory Framework specifies (p.16) that no more than 5 Mt of the total early action credit of 15 Mt can be used in any one year. We have therefore assumed that the credit will be used in three 5 Mt tranches over the first three years.

[20] *Moving Forward on Climate Change — A Plan for Honouring our Kyoto Commitment* (Ottawa, ON: Government of Canada, 2005), 38.

as little as 27 Mt of actual reductions during the same period (5+9+13 Mt in 2010, 2011 and 2012).[21]

There are two important additional problems with the fairness of the proposed regulatory framework. Both can be illustrated by considering the case of the oil sands, the Canadian industry sector with the most rapid projected production growth. The first problem results from setting targets for an x% reduction in emissions intensity with the same value of x for every sector. The problem is worsened by setting special targets, including a three-year grace period, for new facilities (which are most common in fast-growing sectors). In these circumstances, a sector with stable or slow-growing production levels will have to reduce actual emissions substantially below current levels in order to meet its target. But a sector such as oil sands, where production is skyrocketing, will be able to meet its target while dramatically increasing its actual emissions. According to the Technical Briefing (p.10), the oil sands sector will have to reduce its emissions intensity by 23% overall between 2006 and 2020. But according to the industry's own projections, production will approximately quadruple during that period.[22] The net result will be an approximate tripling of actual emissions in the sector.

A fair way to set targets for different industry sectors would be to combine the principles of polluter-pays and ability-to-pay.[23] But the approach just described violates the polluter-pays principle while taking no account of ability-to-pay.

The second fairness problem stems from the low level of the rate for payments into the technology fund. A rate of $15–20/tonne is too low to make it economically attractive for the oil sands industry to invest in large-scale carbon capture and storage (CCS), the principal technology option for major emission reductions in the sector, because large-scale CCS has an expected cost of upwards of $30/tonne.[24] If the regulatory framework actually produces any significant deployment of CCS, it is most likely to occur as a result of investments by the technology fund. Indeed, the Regulatory Framework (p.13) singles out CCS projects as likely beneficiaries of the fund's support. But if the technology fund is required to produce emission reductions from CCS on a "tonne-for-tonne" basis (i.e., each tonne's worth of payment into the fund must produce a future one tonne reduction in emissions — see Section 4), taxpayers will have to pay about half the cost, because the cost of CCS will be about twice the rate for payments into the fund.[25] Given that the industry could reasonably afford to pay $30/tonne unaided,[26] this is a taxpayer subsidy that again fails to take account of both polluter-pays and ability-to-pay.

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[21] This is a fair comparison because for both regulatory proposals we are (i) using estimated actual reductions, relative to business-as-usual emission levels, resulting from emissions intensity targets; (ii) eliminating "paper reductions" from maximum allowed payments into a technology fund; and (iii) considering the same years. In addition, several of the loopholes discussed in Section 4 are common to both proposals. The business-as-usual projections used in each case may differ, but the difference will not be more than a few megatonnes each year.

[22] *Canadian Crude Oil Production and Supply Forecast 2006–2020* (Calgary, AB: Canadian Association of Petroleum Producers, 2006), 3, http://www.capp.ca/raw.asp?x=1&dt=NTV&e=PDF&dn=103586.

[23] See, for example, Matthew Bramley, *Fair Share, Green Share: A proposal for regulating greenhouse gases from Canadian industry* (Drayton Valley, AB: The Pembina Institute, 2007), http://climate.pembina.org/pub/1372.

[24] According to the Intergovernmental Panel on Climate Change's Special Report on Carbon Dioxide Capture and Storage (*Summary for Policymakers*, 2005), "CCS systems begin to deploy at a significant level when CO_2 prices begin to reach approximately 25–30 US$/t$CO_2$". This has been confirmed in discussions between the author and Canadian oil sands industry representatives.

[25] Environment Canada officials have confirmed to us that the technology fund "may need to partner with other sources of funding".

[26] Bramley, *Fair Share, Green Share*, 6.

A third fairness problem is the failure of the regulatory framework to adequately recognize emission reductions achieved prior to 2006 — a further violation of polluter-pays. The framework provides for a one-time 15 Mt credit for reductions occurring between 1992 and 2006. But between 1990 and 2004, the energy-producing sectors (upstream oil and gas and electricity generation) increased their annual GHG emissions by 82 Mt, while the energy-consuming heavy industry sectors achieved an estimated decrease of 6 Mt.[27] A one-time 15 Mt credit is clearly very far from addressing this discrepancy. (We do not, however, support an increase in the size of this credit, because that would further reduce the environmental benefit of the regulatory framework. We believe that the principle of credit for early action should instead be implemented by using an earlier base year for target-setting.)

It should be noted that the first, third and possibly all three of the fairness problems just identified result in lenient treatment of the oil and gas sector relative to other industry sectors.

A case can be nonetheless made that the overall weakness, backloading and fairness problems of the government's proposed regulatory framework will harm, not help Canadian industry. Scientific, public and political appreciation of the seriousness of the threat of climate change are likely to continue to deepen in the coming years, as they have been doing for the past several years. It is therefore likely that the framework's weaknesses will require it to be substantially redesigned and strengthened after at most a few years. The result for industry will be perpetuation of the policy uncertainty that makes it so difficult to make rational investment decisions on infrastructure with a lifetime of several decades. Industry — especially the most innovative parts of it — would be quite likely better off with a stronger system now that would be more likely to stand the test of time.

In contrast to the government's proposal, the Pembina Institute recently showed that much stronger regulated GHG emissions targets for Canadian heavy industry could be set in a way that is fair, economically feasible and consistent with Canada's Kyoto obligation while providing the necessary certainty to industry.[28]

4. Design of the regulatory framework for heavy industry

The government's proposed regulatory framework for heavy industry has an extremely complicated design, with multiple compliance options and special exemptions. Many design details remain murky, and the government has had to give itself a year or more to clarify them (draft GHG regulations are to be published "starting in Spring 2008", although they will require later revision to incorporate provisions for regional air pollutants[29]). As noted in Section 3, the combination of these uncertainties with intensity targets prevents us from knowing the framework's effect on emissions with any certainty. As long as they remain unresolved, the design uncertainties exacerbate the difficulty for industry of making rational, long-term investment decisions. More generally, the complexity of the framework can be expected to cause delays in start-up as well as poor transparency and inefficiency when it is in force. Indeed, questions must be asked about the size of the bureaucracy needed to fully elaborate and then enforce it.[30] In comparison, the EU's Emissions Trading Scheme (currently the world's most extensive regulatory system for industrial GHG emissions) is much simpler, with targets in terms of actual emissions, not intensity; translation of overall targets to the facility level devolved to

[27] Ibid., 2.
[28] Bramley, *Fair Share, Green Share*.
[29] Regulatory Framework, p.8.
[30] In Budget 2007, the government allocated "up to $339 million for the development and implementation of the new clean air regulatory agenda" (*The Budget Plan 2007*, 63).

member states; no technology fund; and no offset credits system beyond the international one already provided by the Kyoto Protocol.

One noteworthy point is that the government now seems to be acknowledging that there is no need for a Clean Air Act or any other new legislation to implement the regulatory framework. The Regulatory Framework (p.8–9, 20–21) discusses enforcement and equivalency agreements uniquely in terms of regulations under the Canadian Environmental Protection Act, 1999 (CEPA 1999), and makes no reference to any other legislative authority for limiting industrial GHG emissions.

In what follows we briefly discuss 20 important design details that remain to be clarified (the number illustrates the complexity of the framework!), in the order in which the issues are treated in the Regulatory Framework document. There are several cases where existing loopholes risk being opened wider or new ones risk being created.

1. **Base year data**. Since targets for existing facilities will be based on emissions intensity in the base year of 2006, the government will be requiring companies to report the necessary base year data (Regulatory Framework, p.7). Officials have indicated to us that (i) the data will be required to be reported by the end of 2007, but (ii) the protocols for quantifying emissions intensity for the purpose of assessing compliance with regulated targets will not be finalized within that timeframe. This means that the comparison between base year data and data used for assessing compliance from 2010 onwards could be a case of apples and oranges: some companies might exaggerate their base year emissions to try to effectively weaken their targets.[31] It will therefore be essential for the government to reserve the right to adjust reported base year data to ensure its comparability with data to be reported when regulations are in force.
2. **Equivalency agreements**. These would allow for federal regulations to be suspended where "equivalent" provincial provisions are in place, as allowed under CEPA 1999. Before they are finalized, it will be important to open any proposed equivalency agreements to full public scrutiny to ensure that the proposed provincial provisions are genuinely equivalent. In particular, the government is suggesting that provincial permitting or licensing systems can be considered equivalent to federal regulations (Regulatory Framework, p.9). Our view is that the ad hoc nature of such systems does not provide sufficient confidence that provinces will provide fully equivalent GHG targets and enforcement in all cases. It is difficult to understand why adoption of provincial regulations should be unduly onerous for provinces that wish to conclude equivalency agreements.
3. **Date of entry into force**. The Regulatory Framework (p.9) states that GHG targets will come into force "in 2010," but does not specify whether that means January 1, December 31 or some date in between. Officials have stated to us that the "intent" is that it should be January 1. In the absence of a clear public commitment from the Minister, however, there remains the possibility of an additional delay of up to one year in the application of targets.
4. **Translation of sector targets into company targets**. The Regulatory Framework (p.10–11) specifies targets for existing facilities at the sector level, but does not say how sector

[31] This exact problem was the cause of the over-allocation of emissions allowances in the first phase of the EU's Emissions Trading Scheme that led to the much-publicized collapse in prices of allowances for the first phase since October 2006.

targets will be translated into company- or facility-level targets. Different ways of doing this can have different outcomes for GHG emissions. This is because there can be multiple processes within a sector for producing a given product (e.g., using coal or natural gas to produce electricity). If the same intensity target is applied to all processes, there is an incentive to shift production towards the least GHG-intense process. But if different targets are applied to different processes, this incentive is weakened or removed. In addition, there will need to be an opportunity for public scrutiny to ensure that company- or facility-level targets do fully add up to the proposed sector-level target.

5. **Exemption of small facilities**. The Regulatory Framework document is silent on the question of whether all facilities in regulated sectors will be subject to targets, or whether facilities smaller than a certain threshold will be exempted. Officials have stated to us that this question will be resolved in sectoral consultations. This issue will be especially important in the oil and gas sector, where a significant proportion of emissions come from small facilities.[32] Use of thresholds that are too high will result in too high a proportion of emissions being exempted.

6. **Definition of fixed process emissions**. "Fixed process emissions… for which there is no alternative technology that will reduce them" will be exempt from any requirement to reduce emissions intensity (Regulatory Framework, p.11). In general the availability of "alternative technologies" is a matter of dispute. Some in industry may be expected to advocate for an unduly broad interpretation of fixed process emissions, thereby reducing the environmental effectiveness of the framework.[33]

7. **Treatment of fugitive emissions**. Although the Regulatory Framework document is surprisingly silent on this point, officials have stated to us that "unintentional fugitive emissions" from the oil and gas sector will be exempted from the main regulatory framework, because they cannot be measured accurately, but that they will be regulated separately. It is very important to ensure that unintentional fugitive emissions are regulated at least as strongly as other emissions, because the former are estimated to be 23% of projected GHG emissions from the oil and gas sector and 11% of total projected emissions from heavy industry in 2010.[34] We believe that the decision to treat unintentional fugitive emissions separately must be opened to consultation and possible re-evaluation to ensure that it does not represent a further weakening of the framework in favour of the oil and gas industry.

8. **New facilities — targets**. Targets applying to new facilities once their three-year grace period has expired are to be based on "cleaner fuel standards" (Regulatory Framework, p.11). This term is open to a range of interpretations, although in some cases the meaning seems clear. For coal-fired electricity, for instance, the obvious interpretation is that

[32] For example, it has been estimated that a 100 kilotonne CO_2e threshold would exempt 23% of CO_2e emissions from gas plants and heavy oil plants in Alberta. See *Framework Proposal For an Alberta Greenhouse Gas Reporting Program* (Draft for Discussion) (Edmonton, AB: Alberta Environment, 2002), 27.

[33] Combustion emissions cannot qualify for this exemption (Regulatory Framework, p.11). However, gasification of coal or coke is an alternative to combusion using a two-step process in which all the carbon dioxide emissions occur in the first step, where some might argue that they be considered fixed process emissions. (The second step is combustion of hydrogen, with no GHG emissions.) Gasification is expected to be increasingly used in the future. To avoid a further weakening of the framework, the Government will need to make clear that emissions from gasification are not considered to be fixed process emissions when it is used as an alternative to combustion.

[34] According to the Technical Briefing (p.28), projected unintentional fugitive emissions in 2010 are 45 Mt, compared to 150 Mt of remaining emissions from the oil and gas sector, and 352 Mt of remaining emissions from regulated heavy industry sources in total.

targets be set at the emissions intensity level of natural gas-fired electricity. It is quite unclear, however, how targets will be set for non-fixed process emissions from new facilities. Such emissions are clearly not exempt, but since they are not fuel-related, it is difficult to understand the applicability of "cleaner fuel standards."

9. **New facilities — "flexible approach"**. "A flexible approach" is to be taken to target-setting for new facilities "where the equipment used in a plant facilitates carbon capture and storage or another technology offering significant and imminent potential for emission reductions" (Regulatory Framework, p.11). No clarification is provided as to whether the "flexible approach" might include prolonging the grace period for such facilities or some other concession that could further weaken the regulatory framework. An obvious example to which this might apply is gasification of coke in the oil sands sector, a process that has a high GHG intensity but that lends itself to CCS. A gasification facility that was "CCS-ready" but not actually applying CCS would be far from compliance with a target based on combustion of natural gas (a "cleaner fuel"). Removing this possible disincentive to CCS is the likely rationale for the "flexible approach". In our view, the solution to this conundrum is not to create special exemptions but rather to strengthen the overall regulatory framework — notably, by increasing the rate for payments into the technology fund — so that it is economically attractive for new facilities in the oil sands to implement CCS immediately.

10. **New facilities — definition**. The Regulatory Framework document does not provide a full definition of new facilities. In sectors where new facilities are expected to be treated more leniently than existing facilities (notably, the oil sands sector[35]), companies can be expected to lobby for the broadest possible interpretation of "new facilities," which would have the effect of further weakening the framework. For example, under the previous government it was proposed that "existing facilities undergoing major transformations or expansions" be treated as new facilities.

11. **Technology fund — criteria for disbursement**. In Section 3 (see especially Table 3), payments into the technology fund were identified, for the early years of the regulatory framework, as the largest source of "paper reductions" that will not correspond to immediate reductions in actual emissions. Prevention of further weakening of the framework therefore depends critically on rigorous implementation of this compliance option. Maximizing the emission reductions resulting from investments by the fund will require that regulations provide sufficient clarity on the following points (rather than leaving them to the fund's directors):
    a. upholding the government's commitment (Regulatory Framework, p.12) to use the fund "principally to fund investments that have a high likelihood of yielding greenhouse gas emission reductions in the near term" — and on interpreting "near term" as, for example, one–five years rather than 10–15;
    b. transparently applying cost-effectiveness and other clear criteria to ensure that investments are made on merit, not for political reasons; and
    c. ensuring that investments made by the fund add to, rather than simply displace, existing funding commitments.

[35] The Technical Briefing (p.10) shows that the reduction in emissions intensity for each of three sectors (oil sands; iron, steel and titanium; and chemicals) is less for the sector as a whole than for existing facilities within the sector. This indicates that new facilities in these sectors are proposed to be treated more leniently than existing facilities. The situation is the opposite in the electricity sector, where it appears that new facilities are to be treated less leniently than existing facilities.

12. **Technology fund — emissions accounting**. Officials have stated to us that the technology fund will be required to produce emission reductions on a "tonne-for-tonne" basis (i.e., each tonne's worth of payment into the fund must produce a future one tonne reduction in emissions). This is an important principle that could help to significantly strengthen the regulatory framework, and we look forward to the government confirming it formally and publicly. It will, however, be essential to specify that the future reductions resulting from investments by the fund are measured relative to a credible, not an inflated business-as-usual baseline. Another key accounting issue related to the technology fund is the need to prevent the double counting that would arise if industry could count for compliance purposes reductions resulting from money that had been paid into the technology fund for compliance in an earlier year (we will discuss this further in Section 5.)

13. **Technology fund — interpretation of percentage limits**. Officials have stated to us that the percentage limits on use of the technology fund were applied, in the Technical Briefing, to the gap between projected emissions (without regulations) and target emissions (i.e., intensity targets multiplied by projected production levels). This approach has the major disadvantage of being tied to a particular business-as-usual projection, which will always be subject to uncertainty and dispute. It would be much more straightforward in practice — and more in keeping with the language in the Regulatory Framework (p.13) — to apply the percentage limits to the gap between actual emissions in the year in question and target emissions. In this case, the volume of "paper reductions" from technology fund payments would be expected to be slightly smaller than shown in Table 3.

14. **Technology fund — "equivalent" funds**. Payments into other funds "that meet all necessary requirements… [i]n particular, provincial funds" could be accepted for compliance with targets as an alternative to payments into the main federal technology fund (Regulatory Framework, p.12). The acceptance of multiple funds is a source of major concern given, as noted above, that prevention of further weakening of the regulatory framework depends critically on rigorous implementation of this compliance option, and that there are multiple unresolved implementation issues. The existence of multiple funds would make adequate public monitoring of these issues more much difficult, with negative and possibly dire consequences for accountability and transparency.

15. **Credits for certified project investments**. "The government will also explore the option of providing credits to individual companies for government pre-certified investments in specific projects" (Regulatory Framework, p.13). This would be a compliance option equivalent to payments into the technology fund, except that a company would bypass the fund by making the payments directly into its own projects. We urge the government to reject this option because it further exacerbates the accountability concerns raised for multiple technology funds (previous point), and would be especially vulnerable to the risk that payments would simply be a re-labelling of technology spending that a company had already planned to make in the absence of the regulatory framework. Officials have stated to us that this option would be covered under the percentage limits on use of the technology fund, despite the silence of the Regulatory Framework document on this point. We look forward to the government confirming this formally and publicly.

16. **Offsets system, especially additionality**. Companies will be able to use for compliance "offset credits" issued in respect of reductions in emissions from sources not covered by

the regulatory framework "that were incremental to what would have happened without the regulatory system or other government programs" (Regulatory Framework, p.14). An offsets system is a complex undertaking, and needs to apply rules that carefully address several issues to ensure that credits represent, and do not exaggerate, genuine, environmentally acceptable, immediate emission reductions. Readers are referred to the detailed submission on these issues made to the previous government by the Pembina Institute and other environmental organizations.[36] The most fundamental criterion for offset credits is that they be "additional," i.e., that they be issued only in respect of emission reductions that go beyond what would have occurred in the absence of the possibility of earning (and selling) offset credits. Issuing non-additional credits will cause an increase in emissions because they will be used by industry to emit more than otherwise, without a compensating reduction in emissions outside the regulatory framework. Strong political will is needed to uphold additionality because there is an obvious financial incentive for both prospective sellers and buyers of offset credits to oppose strong additionality rules. Unfortunately the language just quoted from the Regulatory Framework violates the additionality criterion by implying that credits would be issued in respect of emission reductions that are already fully required or made possible by government programs. This creates a double counting problem that we will explain in detail in Section 5.

17. **Clean Development Mechanism (CDM) — types of eligible credits**. A company will be allowed to make use of CDM credits (offset credits from projects in developing countries, certified under the Kyoto Protocol) for up to 10% of its compliance requirement (Regulatory Framework, p.15). It is doubtful whether there will be significant demand for this option given the very limited regulatory requirement in 2010–12 once the technology fund and early action credit have been utilized (see Table 3), and the current uncertainty over the fate of the CDM after 2012. The government is to "determine which types" of CDM credits will be eligible (Regulatory Framework, p.15).[37]
18. **Linkage to US and Mexican emissions trading systems**. The government will "explore opportunities" for linking the regulatory framework to regional, state-level and federal-level GHG emissions trading systems in the US, and "actively explore cooperation on emissions trading with Mexico" (Regulatory Framework, p.15). For the moment this is somewhat speculative, since the details of GHG emissions trading systems in the US are still emerging. Any future linkage between Canadian and foreign GHG emissions trading systems must be conditional on (i) the foreign system being at least as stringent in all respects as the Canadian system, so that the environmental value of the latter does not suffer; and (ii) limits to ensure that the Canadian price of emissions remains high enough to drive desirable domestic investments in low-GHG infrastructure.
19. **Eligibility for early action credit**. The government needs to develop "eligibility criteria" to determine how to allocate the one-time 15 Mt early action credit discussed in Section 3 (Regulatory Framework, p.16). This credit is certain to be much over-subscribed, and the government will need to be firm in refusing an increase its size, because that would

[36] Johanne Whitmore, Roger Peters and Matthew Bramley, *The Climate Action Network Canada Comments on Environment Canada's Offset System for Greenhouse Gases Overview Paper and Technical Background Document* (Ottawa, ON: Climate Action Network Canada, 2005), http://climate.pembina.org/pub/590.

[37] We note that these tight limits on use of the CDM will tend to further reduce Canada's compliance with the Kyoto Protocol.

further reduce the environmental benefit of the regulatory framework.[38] Allocation of the credit will need to be limited to a small number of compelling cases.

20. **Public demonstration of compliance**. The Regulatory Framework document is silent as to whether companies will be required to disclose publicly the emissions intensity of their operations, as well as the details of their use of the various compliance options. This disclosure is essential to allow citizens, journalists and others to have confidence that regulated targets are being properly met and to evaluate the credibility of the performance improvements that will be claimed. Unfortunately, under the previous government Environment Canada officials were opposed to the publication of emissions intensity information at the company level, on the grounds that it would reveal production data that some industry representatives would like to keep confidential. It is to be hoped that the present government will uphold a better standard of accountability by committing to publish company-level compliance information in sufficient detail.

5. Achievement of the national GHG targets

Having reviewed in detail the proposed regulatory framework for heavy industry, covering 45% of national emissions (see Section 3), we are now in a position to assess the likelihood of the government's national GHG targets being met.

The government has provided *no explanation* as to how it expects to meet its **short-term target** for national emissions to peak "as early as 2010 and no later than 2012." It has simply asserted that the target is "expected" to be met (Regulatory Framework, p.4). But Table 3 shows that between 2010 and 2012, the amount by which annual industrial GHG emissions will deviate below business-as-usual levels could increase by as little as 4 Mt each year. If Canada's total annual emissions continue to grow at the average compound rate of growth for 1990–2005, they will increase by 12 Mt each year between 2010 and 2012.[39,40] For national emissions to peak, therefore, government policies outside heavy industry will need to be generating as much as an extra 8 Mt reduction in annual emissions every year during that period. For example, if such policies succeed in reducing annual emissions by 5 Mt below business-as-usual in 2010, they will have to achieve a 13 Mt reduction in 2011 and a 21 Mt reduction in 2012. This would be equivalent to taking an extra 1.6 million cars off the road, or eliminating one additional 1000 megawatt coal-fired power station, every year (i.e., 1.6 million cars the first year, 3.2 million the second year, etc.).[41] The government has not announced measures capable of producing this result. In the absence of additional measures, therefore, the short term target can only be met if there is an unexpected and dramatic slowing of the business-as-usual increase in emissions.

The 150 Megatonnes backgrounder provides a cursory (one-page) explanation of how the government expects its regulatory framework for heavy industry to combine with other measures to meet its **medium-term target** for national GHG emissions to fall to 20% below the 2006 level by 2020. The explanation is summarized in Table 4.

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[38] We believe that the principle of credit for early action should instead be implemented by using an earlier base year for target-setting.

[39] The footnote to Table 1 provides the source data for this calculation.

[40] The Government itself projects average business-as-usual growth in Canada's total annual emissions of 12.4 Mt per year between 2005 and 2015. See *Canada's Energy Outlook: The Reference Case 2006* (Ottawa, ON: Natural Resources Canada, 2006), 141; http://www.nrcan-rncan.gc.ca/com/resoress/publications/peo/peo-eng.php.

[41] We have assumed that an average car emits 5 tonnes CO_2e per year, and that a coal-fired power station emits 1 kg CO_2e per kWh and operates at 95% capacity.

Table 4. The government's explanation of how it expects to meet its medium-term target for national GHG emissions.

		(Mt)
	Reductions in annual emissions in 2020 below the 2006 level:	
1.	Regulatory framework for heavy industry	60
2.	Regulations on vehicle fuel efficiency, energy efficiency of energy-using products, biofuels and unintentional fugitive emissions	40
3.	Financial incentive programs for renewable energy, technology development and energy efficiency in buildings and transportation	10
4.	Actions by provinces/territories supported by the federal government, plus actions by industry supported by the technology fund included in the regulatory framework for heavy industry	40
	Total reductions	150
	Comparison with what is needed:	
	Estimated emissions in 2006[42]	758
	Target emissions in 2020 (20% below 2006)	607
	Required reductions (after rounding)	152

The explanation presented in the table is dubious for three reasons.

First, while the 60 Mt reduction from the regulatory framework for heavy industry is consistent with the government's expectations as summarized in Table 2, we showed in Sections 2 and 4 that there are serious doubts as to whether the framework will actually result in industrial emissions being reduced by 2020 to the extent claimed.

Second, the government has provided *no explanation* of why it expects the other three sets of measures listed in the top half of Table 4 to generate the amounts of emission reductions shown in the table. For those numbers to be credible, the government would need to provide a quantified performance target for each individual measure, and a calculation of the emission reductions corresponding to each performance target. In other words, the government would need to publish a credible, comprehensive GHG-reduction plan — something that it has still not done.

There is a particular question mark over the timing of emission reductions resulting from the technology fund, included on line 4 of the table. It is certain that a proportion of these reductions will not occur until after 2020[43] and, depending on the fund's disbursement criteria (see Section 4), this proportion could be large.

Third, and perhaps most seriously, there are several ways in which double counting could cause the items in the top half of Table 4 to "overlap" and thereby fail to add up to the total required to meet the national GHG target.

Double counting would, for example, occur if, by 2020, investments by the technology fund resulted in significant reductions in the emissions intensity of processes used in heavy industry, and if companies were not prevented from counting such reductions for purposes of compliance with their regulated intensity targets. For example, the technology fund might invest in a retrofit of existing oil sands facilities with new technology — thereby reducing the emissions intensity of those facilities. If the emission reductions resulting from the investment were not subtracted from the emissions level used for assessing compliance with regulated targets, then those reductions would be counted under the regulatory framework on line 1 of Table 4 and could not

[42] See the text preceding Table1 as well as the footnote to Table 1.

[43] This is clearly the case for payments made into the research and development component of the fund at dates too close to 2020 for there to be time for that research to be converted into emission reductions.

honestly be counted a second time under the technology fund line 4. A similar overlap could occur between lines 2 and 4, or between lines 3 and 4, depending on the investments made by the technology fund. Regulations will need to be carefully designed to prevent this double counting.

Double counting would also occur if offset credits (see Section 4) were issued in respect of emission reductions occurring as a result of government measures included on lines 2, 3 and 4 of Table 4. This is because those credits would be used by heavy industry to meet targets under the regulatory framework, and would therefore be counted on line 1 of the Table. They could not be honestly counted a second time on lines 2, 3 or 4. If, for example, offset credits were issued to wind farms that depended for their existence on the programs included on line 3 of Table 4, the associated emission reductions could not honestly be counted on that line. Unfortunately, as noted in Section 4, the language on offsets in the Regulatory Framework (p.14) implies that such wind farms would, in fact, be eligible for credits because they would be "incremental to what would have happened without the regulatory system or other government programs." To prevent this double counting, the government will need to adopt and enforce stronger "additionality" rules that allow credits to be issued only in respect of emission reductions that go beyond what would have occurred in the absence of the possibility of earning (and selling) credits.

Table 4 also shows that if our estimate of Canada's national emissions in 2006 used in Section 2 is correct, then the 150 Mt of reductions that the government expects to obtain falls slightly short of the 152 Mt of reductions needed to meet its medium-term target of bringing national GHG emissions to 20% below the 2006 level by 2020.

Finally, we do not at this stage expect the government to have developed a full plan to meet its **long-term target** for national GHG emissions to fall to 60–70% below the 2006 level by 2050. But for the long-term target to be credible, the government does need to make a convincing case that its 2020 target is consistent with meeting its 2050 target. This would require economic modelling work to increase confidence that the 2020 target lies on an economically optimal (least-cost) path between the present day and 2050. If the modelling showed that the 2020 target is too weak, we would have another example of "backloading" undermining the credibility of the more distant target. As noted in Section 2, the government does not appear to have conducted economic modelling of targets for 2020.