Summary Report

From Paris to Projects

Clarifying the implications of Canada's climate change mitigation commitments for the planning and assessment of projects and strategic undertakings

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The authors are indebted to collaboration and input from many experts, practitioners and scholars in various disciplines.

Note to readers

This summary report is a highly condensed version of a much more detailed full report available online at https://uwaterloo.ca/paris-to-projects/publications-0/reports-journal-papers-and-book-chapters.

From Paris to Projects: Clarifying the implications of Canada's climate change mitigation commitments for the planning and assessment of projects and strategic undertakings

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FROM PARIS TO PROJECTS SUMMARY REPORT

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AGENDA

By signing the *Paris Agreement*, Canada made a commitment to do our fair share to limit global average temperature rise to "well below 2°C" relative to pre-industrial levels, and to pursue "efforts to limit the increase to 1.5°C."[1] The federal *Impact Assessment Act* that is now before Parliament requires consideration of whether assessed undertakings would "hinder or contribute to" meeting Canada's climate change commitments.[2]

So far, however, Canada has done little to define what the *Paris Agreement* entails for planning, assessment and decision making on projects and other undertakings with significant implications for meeting the *Paris* commitments. That leaves a serious gap in law, policy and practice between Canada's commitments and the assessment of major undertakings.

Assessments are an important venue for proactive climate change mitigation. They guide decision making on major extractive and infrastructure projects and other undertakings that will entrench existing practices or drive key transitions for many decades. If these assessments are to contribute to meeting our climate change mitigation commitments, we need to understand what meeting those commitments entails – how far we have to go and what we have to do to close the gap between our current efforts and our promised accomplishments.

To inform serious efforts to fill that gap, this paper examines

- what the *Paris Agreement*'s temperature goals imply for global and Canadian GHG reduction targets in light of "fair share" principles and feasible pathways;

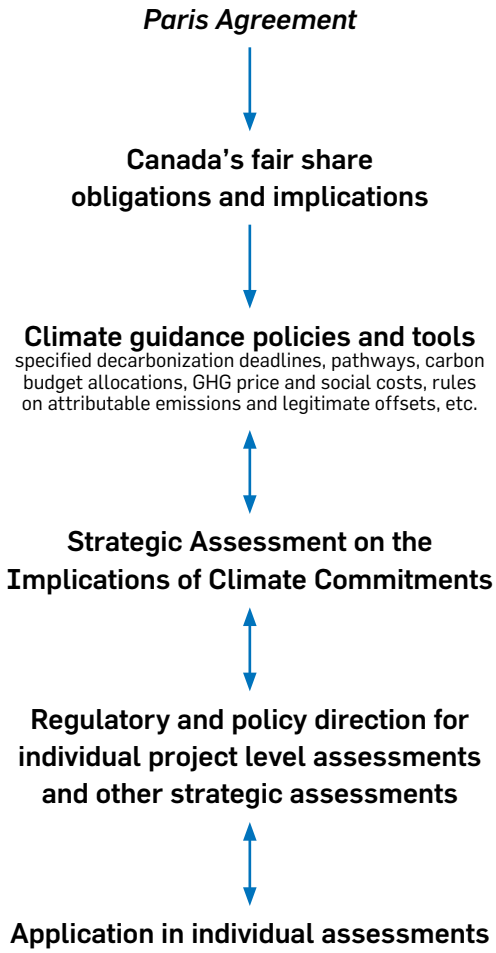
1 *The Paris Agreement*, 22 April 2016, UNTS art 2 (entered into force 4 November 2016) [*Paris Agreement*], online: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&lang=_en&clang=_en.

2 House of Commons of Canada, *Impact Assessment Act*, part 1 of Bill C-69, as passed by the House of Commons and introduced in the Senate, 20 June 2018, s.93(e), online: https://www.parl.ca/LegisInfo/BillDetails.aspx?billId=9630600&Language=E. The same requirement for considering potential for hindering or contributing to meeting commitments is now also included in the *Canadian Energy Regulator Act* [s.183(2)(j), 262 (2)(f) and s.298(3)(f)] as passed by the House of Commons on 20 June 2018. The provisions of the latter Act will apply to regulatory decision making on energy projects subject to federal regulatory authority.

- what is needed to raise Canadian climate change mitigation ambitions to the *Paris Agreement* level, and ensure sufficiently strengthened and clarified targets, frameworks and applied tools to inform evaluations of particular undertakings;[3] and
- how to translate these needs and tools into well-specified and authoritative requirements for effective application under federal assessment law.

Our intent has not been to deliver final answers but to establish a reasonably firm working base for comparing what we are doing with what is needed to meet our *Paris* commitments.

FIGURE 1: Filling the gap between Paris and projects



3 While we also recognize the imperative of climate change adaptation, and the importance of Canadian commitments to adaptation under the *Paris Agreement*, we focus here on mitigation commitments and implementation needs.

THE OVERALL IMPLICATIONS OF THE *PARIS AGREEMENT* COMMITMENTS FOR CANADA

Canada was a leader in signing and ratifying the *Paris Agreement*, and has taken other positive steps. Nevertheless, we continue to be a climate laggard, most recently ranked 54th out of 60 countries on climate action.[4] Canada's emissions are among the highest in the world on a per capita basis and despite our small population, we are one of the ten top emitters of GHGs in the world in absolute terms.[5] For Canada, clarifying and responding effectively to the practical implications of the *Paris Agreement* is both crucial and daunting.

Determining the *Paris Agreement*'s overall implications begins with the overarching principles within the Agreement, understanding what the temperature goals imply for GHG reduction targets, and evaluating different interpretations of "fair share" approaches.

The fundamental starting principle is that climate change mitigation must be pursued in ways that support and are supported by efforts to meet the suite of other sustainability imperatives. These imperatives include advancing human rights and the rights of Indigenous peoples, enhancing equity in the distribution of opportunities and risks, maintenance of biodiversity, and stewardship of other biophysical foundations for survival and wellbeing. Joint attention to these requirements is a matter of efficiency, effectiveness and fairness.

The practical implications of the *Paris Agreement*, especially the commitment to keeping the rise in average global temperature maximum to well below 2°C and aiming for 1.5°C, involve continuing scientific uncertainties as well as debatable moral choices. Nevertheless, some initial answers are possible. The following points are well supported by independent experts and/or favour a moderate to conservative position in a range of available options.

4 Jan Burck, Ursula Hagen, Franziska Marten, Niklas Höhne and Christoph Bals, "Climate Change Performance Index Results 2019," Climate Action Network, Germanwatch, New Climate Institute, December 2018, p.20, online: https://germanwatch.org/en/CCPI.

5 Mengpin Ge, Johannes Friedrich and Thomas Damassa, *6 Graphs Explain the World's Top 10 Emitters* (World Resources Institute, 25 November 2014), online: https://www.wri.org/blog/2014/11/6-graphs-explain-world-s-top-10-emitters.

THE GLOBAL IMPLICATIONS FOR CLIMATE ACTION

Keeping overall global warming to the *Paris Agreement* limit will require immediate and sustained best efforts, especially by the most advantaged countries. The most recent publication of the Intergovernmental Panel on Climate Change (IPCC) reports that to limit global warming to 1.5°C, the aspirational goal of the *Paris Agreement*, global decarbonization to net zero would have to be achieved by 2050.[6]

A profound global transformation of energy and economic systems is needed to meet the *Paris Agreement*'s obligations. Studies that have used a carbon budget approach[7] to translate the *Paris* temperature goal into a global maximum of further GHG emissions have found that the remaining global budget for allocation among countries is much smaller than is currently acknowledged in policy making and would be exhausted within 8 to 19 years at the current emissions rate.[8] The IPCC suggests that if global emissions decline linearly starting in 2018, net zero emissions would need to be achieved somewhere between 25 and 35 years to keep global warming under 1.5°C (though considering uncertainties, this might be as little as 5 and 15 years, respectively).[9]

GHG sinks and reservoirs such as peatlands and forests are a critical component of the global GHG mitigation targets; however, policy and accounting approaches need to be improved through better understanding of anthropogenic impairments and focusing on *permanent* enhancements of sinks and reservoirs.

Reliance on large scale, risky and uncertain future negative emissions technologies cannot be justified as a factor in setting GHG mitigation targets or as a rationale for abatement delay.[10]

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6 Intergovernmental Panel on Climate Change (IPCC), *Global Warming of 1.5 °C: Summary for Policymakers* (IPCC, October 2018), p.15, online: https://www.ipcc.ch/sr15/.

7 The remaining global carbon budget is the total estimated amount of carbon dioxide (and other GHGs included as carbon dioxide equivalents) that can be emitted without pushing overall climate warning beyond the agreed international threshold. Under the *Paris Agreement* the threshold is imprecisely defined as "well under 2°C" with efforts to limit warming to 1.5°C, relative to pre-industrial levels. However, a more precise goal can be assumed and, given that goal, the remaining global carbon budget can be calculated.

8 See the full report, part 2.1.1. The figures here were calculated using data from IPCC, *Climate Change 2014: Synthesis Report*. Table 2.2, online: http://www.ipcc.ch/report/ar5/syr/, and Global Carbon Project, CO2 Emissions, online: http://www.globalcarbonatlas.org/en/CO2-emissions.

9 IPCC, "*Global Warming of 1.5°C: Summary*," chapter 2, p.2.21.

10 See, for example, Sabine Fuss, et al., "Betting on negative emissions," *Nature Climate Change* 4 (October 2014), pp.850-853, online: http://www.globalcarbonproject.org/global/pdf/Fuss_2014_Betting%20on%20negative%20emissions.NatureCC.pdf.

DECARBONIZATION

In this report we use "decarbonization" to refer to the virtual elimination of overall human contributions to atmospheric GHG loadings, globally or in a particular jurisdiction. The *Paris Agreement* (article 4, paragraph 1) refers to achieving "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases."

CANADA'S FAIR SHARE

From the start, the *United Nations Framework Convention on Climate Change* (UNFCCC) has been anchored in principles of equity and "common but differentiated responsibilities and respective capabilities," to which the *Paris Agreement* added consideration of "national circumstances."[11] The established international position is that the GHG mitigation responsibilities of the signatory states will differ on the basis of judgments about equity. Developed countries, which have benefited from historical emissions associated with past industrialization and have greater wealth and access to technologies, are expected to accept greater responsibilities. Leadership from developed countries, and corollary differential treatment of developing countries, is established as the equitable and appropriate basis on which the international response to climate change must be structured.[12]

One set of important implications concerns the expected speed of GHG emission reductions and appropriate targets for effective elimination of net human contributions to atmospheric GHG loadings. The *Paris Agreement* aims "to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity".[13] The "second half of this century" target is global. Meeting this target "on the basis for equity" involves different national "fair share" responsibilities and consequently different decarbonization targets.

Fair share considerations include both culpability (due to past and continuing GHG emissions) and capacity to decarbonize more quickly (due to greater wealth and access to technologies, etc.). Canada, like other developed countries, is expected to act with more ambition and speed than less developed countries. Clarifying those expectations is important for any determination of what Canada must do to meet its *Paris* commitments.

11 *Paris Agreement*, Article 2, paragraph 2.

12 Lavanya Rajamani and Emmanuel Guérin, "Central concepts in the *Paris Agreement* and how they evolved," in Daniel Klein et al., eds., *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford: Oxford University Press, 2017), p.81.

13 *Paris Agreement*, Article 4, paragraph 1.

Allocating responsibility for GHG reductions faces complex questions about who is responsible, which emissions are counted, over what time period emissions are counted, and how equity is considered. A bigger problem is that many signatory countries, including Canada, have yet to begin serious efforts to determine their "fair share" allocations or act on them. Like most other developed countries, Canada has proposed emissions reduction targets that would maintain our inequitable historical share of global emissions. Also, as has been the convention in international climate policy, Canada has considered domestic emissions only from recent years, neglecting previous decades of substantial GHG emissions. Moreover, our approach has done little to limit activities, such as projects to increase extraction of GHG-generating hydrocarbons, that are likely to delay global GHG emission peaking[14] and entrench GHG-generating practices more deeply.

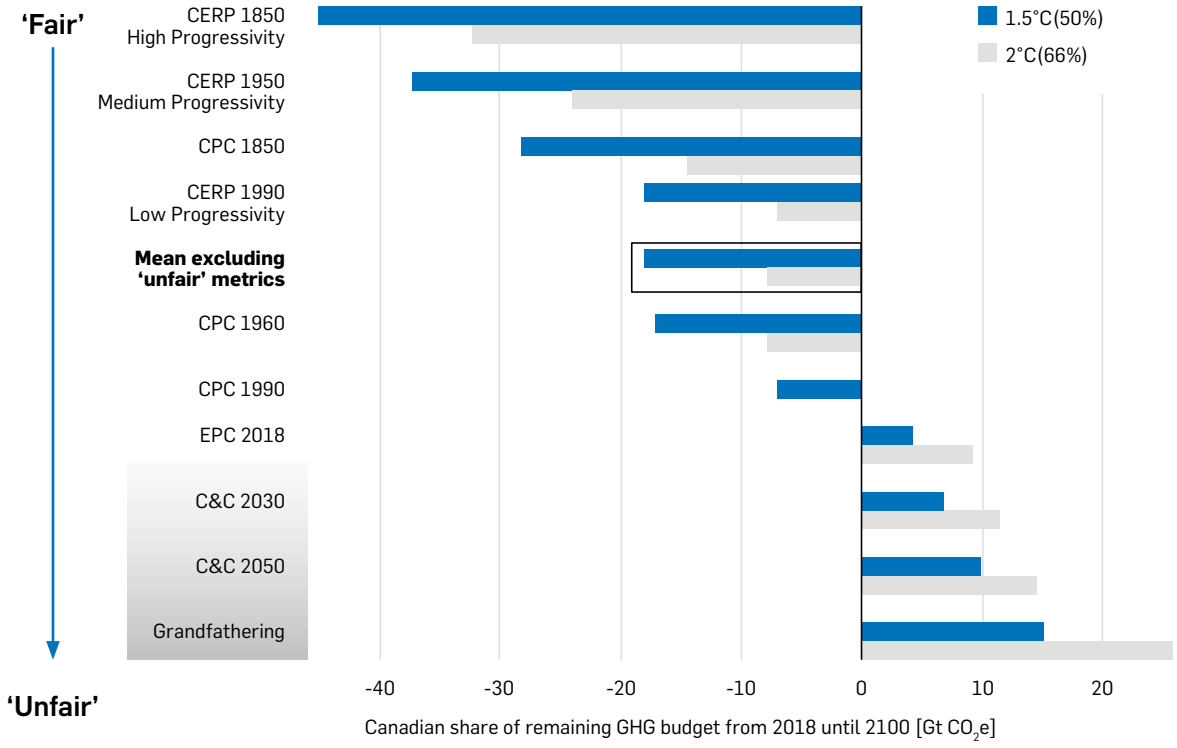
Determining Canada's fair share allocation of the remaining global carbon budget involves choices among various options reflecting a range of more and less comprehensive equity considerations. Among the many approaches to fair share calculations, equal per capita sharing of the remaining global carbon budget is a common starting point, though this neglects historical inequities, and the resultant present inequities between (and within) nations. The most comprehensive treatments of equity considerations add attention to both responsibility and capacity factors. Considering responsibility for historical emissions amounts to recognizing how much of a nation's fair share has already been used up. Historical responsibility has been taken to start at various points, including 1990 when global climate change mitigation efforts began, or 1950 when national boundaries were mostly set and much of our fossil fuel infrastructure building began, or 1850 when the era of serious industrial emissions dawned. Fairness considerations tied to capacity to act usually focus on national, corporate and/or individual wealth. Clearly unfair approaches include those that would perpetuate the inequitable status quo by allocating to all countries a share of remaining emissions matching their historic share (an approach referred to as "grandfathering"). Canada's reduction targets have so far been consistent with this inequitable approach.

Independent researchers have estimated Canada's "fair share" allocation of the remaining global carbon budget using eight different sets of "fairness" assumptions. For all options except for the most marginally equitable one, the remaining Canadian "fair share" of the global carbon budget is negative, which means that Canada is already in climate debt to other nations. Even

14 *Paris Agreement*, Article 4, paragraph 1 also requires steps to ensure global peaking of GHG emissions "as soon as possible, recognizing that peaking will take longer for developing country Parties."

under the weakest option for calculating fair share allocation, Canada would exhaust its share of the global carbon budget within a decade if our GHG emissions continue at current levels. See Figure 2, below.

FIGURE 2: Canadian allocations of global carbon budget using annual shares of 1.5 and 2 degree pathways[15]



In other words, from a fair share perspective consistent with the requirements of the *Paris Agreement*, every tonne of GHG emitted today and tomorrow adds further to Canada's climate indebtedness to other nations. Also, any further delays to rapid decarbonization will make an equitable climate outcome more difficult to achieve.[16]

15 See the Full Report including the Annex for references and methods. Emissions from Land Use, Land Use Change, and Forestry (LULUCF) are included. Values are in cumulative emissions expressed in Gt CO2e, or "resource shares" of the remaining all-GHG carbon budget, and are derived by allocating annual global emissions according to various effort-sharing approaches from the literature. The most equitable sharing approaches are labelled in Figure 2 as "fairest" while those that perpetuate the current inequitable distribution of emissions among countries are labelled here as "unfair." The median allocation from the "fair" allocations for staying between 1.5°C and 2°C (i.e. excluding the Contraction and Convergence (C&C) and Grandfathering allocations, which are generally not considered to represent equitable sharing methods) in the black rectangle could be understood as a *Paris* quota representing the approximate GHG allocation if Canada aligns itself with the *Paris Agreement* goals.

16 For details on Canada's fair share see the full report, part 2.3.

DEFINING CANADA'S WORKING DECARBONIZATION DEADLINE AND OTHER CORE OBLIGATIONS

Given that our fair share decarbonization deadline has by most accounts already passed and even in the most lenient assessments is looming in the next decade, the earliest possible achievement date should be adopted as Canada's latest possible deadline for achieving decarbonization. That approach is required under the *Paris Agreement*, which states that each Party's national contributions to climate change mitigation will "reflect its highest possible ambition."[17]

Research into decarbonization pathways and earliest possible achievement dates is at an early stage. The limited number of existing exploratory studies identify different routes to and timelines for decarbonization.[18] So far, the earliest technologically feasible date identified in any of the studies for decarbonization in Canada is 2050.[19] Future work with more information on technological options, and political, cultural, and behavioural possibilities, could identify an earlier feasible decarbonization deadline and reduce the gap between mitigation efforts in Canada and our fair share under the *Paris Agreement*.

In light of the gap between what seems practical and what would be equitable, adoption of 2050 (or any earlier date) as the working deadline for decarbonization by Canada must be accompanied by

- always attempting to do better, and

17 *Paris Agreement*, Article 4, paragraph 3.

18 The key studies come from four independent modeling projects:
- Deep Decarbonization Pathways Project (DDPP) reported in C. Bataille et al., *Pathways to deep decarbonization in Canada* (Sustainable Development Solutions Network and Institute for Sustainable Development and International Relations, 2015), online: http://deepdecarbonization.org/wp-content/uploads/2015/09/DDPP_CAN.pdf;
- Solutions Project reported in Mark Z. Jacobson et al., "100% Clean and Renewable Wind, Water, and Sunlight All-Sector Energy Roadmaps for 139 Countries of the World," *Joule* 1 (September 6, 2017), pp.108–121 plus supplemental information, online: https://web.stanford.edu/group/efmh/jacobson/Articles/I/CountriesWWS.pdf;
- Energy and Materials Research Group (EMRG), Mark Jaccard, Mikela Hein and Tiffany Vass, *Is win-win possible? Can Canada's government achieve its Paris commitment ... and get re-elected?* (Burnaby: SFU EMRG, 20 September 2016), online: http://rem-main.rem.sfu.ca/papers/jaccard/Jaccard-Hein-Vass%20CdnClimatePol%20EMRG-REM-SFU%20Sep%2020%202016.pdf; and
- Trottier Energy Futures Project (TEFP) reported in Trottier Energy Futures Project Partners, *Canada's Challenge and Opportunity - Transformations for major reductions in GHG emissions: full technical report and modelling results* (April 2016), online: https://mcgill.ca/tised/files/tised/final_report_on_tefp_canadas_challenge_and_opportunity_transformations_for_major_reductions_in_ghg_emissions.pdf.

The first two are most positive about what can be accomplished. Environment and Climate Change Canada has also done in-house pathways work, including in support of the Government of Canada, *Mid-Century Long-Term Low-Greenhouse Gas Development Strategy [Mid-Century Strategy]* (2016), online: https://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf.

19 See the report of the Solutions Project, referenced in note 18, above.

- providing assistance to less advantaged nations in support of mitigation and adaptation abroad to compensate for our past inaction and continuing lateness.

Positive steps have been taken within Canada's existing climate policy landscape. Negotiation of the *Pan-Canadian Framework on Clean Growth and Climate Change*[20], and federal action to legislate carbon pricing in the face of constitutional challenges by some provinces[21], would deliver important accomplishments, if the initiatives are fully implemented. The *Mid-Century Long-Term Low-Greenhouse Gas Development Strategy* also represents an important step towards the needed long range planning.[22] At the same time, however, the ambitions of existing applied policies fall well short of what is needed to meet Canada's *Paris Agreement* commitments. For example, the federal government continues to subsidize the fossil fuel industry[23] and approve new fossil fuel infrastructure, including the controversial diluted bitumen pipelines, with lifetimes well beyond 2050. Existing regulations would allow emissions from oil extraction to remain in excess of 200 Mt CO2eq for the next several decades.[24] Canada's *Mid-Century Strategy* aims only for an 80% reduction of GHG emissions from 2005 levels by 2050, by which time Canada's cumulative emissions would be far greater than the most lenient estimate of our fair share. Also, our emissions beyond 2050 would be inconsistent with meeting the IPCC's net zero target for limiting global warming to 1.5°C.[25]

Clearly, the current policy package needs substantial upgrading to align our objectives with our commitments. It also needs extension and clarification for more specific application to all climate-significant decision making, including decision making on projects and strategic undertakings subject to assessment law.

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20 Government of Canada, *Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy [Pan-Canadian Framework]*, December 2016, online: https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf.

21 Government of Canada, *Greenhouse Gas Pollution Pricing Act*, 21 June 2018, online: http://www.parl.ca/Content/Bills/421/Government/C-74/C-74_4/C-74_4.PDF.

22 *Mid-Century Strategy*, online: https://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf.

23 Federal and provincial investments in research, development and deployment from 2011-2015 totalled $2,261 million for the fossil fuel industry, including carbon capture and storage, and $1,394 million for renewable energy. Natural Resources Canada, *Energy Fact Books 2012–2013, 2013–2014, 2014–2015 and 2016–2017*; cited in Catherine Potvin, Sarah Burch, David Layzell, James Meadowcroft, et al., *Re-energizing Canada: Pathways to a Low-Carbon Future* (Montreal: McGill University, 2017), p.23, online: http://www.sustainablecanadadialogues.ca/en/scd/energy.

24 "According to Environment and Climate Change Canada projections as of November 2016, Canada must reduce annual emissions by 219 Mt CO2eq in order to meet its 2030 target. To put this into context, it is nearly equal to Canada's entire oil and gas industry in 2030, which is projected to be 233 Mt CO2eq." The Hon. Richard Neufeld, Chair, and The Hon. Paul J. Massicotte, Deputy Chair, *Report of the Standing Senate Committee on Energy, the Environment and Natural Resources: Positioning Canada's Electricity Sector in a Carbon Constrained Future* (March 2017), p.3 online: https://sencanada.ca/content/sen/committee/421/ENEV/reports/Electricity_e.pdf.

25 See note 6, above.

IMPLICATIONS FOR DEVELOPMENT AND APPLICATION OF PARTICULAR TOOLS AND TESTS

The effectiveness of current and proposed initiatives to meet or beat the 2050 working deadline will depend heavily on further development and consistent application of multiple particular tools and tests designed to enhance our understanding of what needs to be accomplished and strengthen our evaluations of available options and proposals.

For planning and decision making regarding particular new and existing undertakings, the current and developing package of targets, frameworks and applied tools needs extensive strengthening to provide an adequate basis for determining what activities would be consistent with meeting Canada's commitments under the *Paris Agreement*.

This strengthening will entail initiating major climate policy initiatives, specifying key tools and methods, and pursuing broader means of fostering learning and collaboration. All of these initiatives should be pursued in processes that facilitate meaningful public engagement and learning, deliver accessible information of a high standard and are directed to serve the long term public interest.

MAJOR CLIMATE POLICY INITIATIVES

Canada's current climate change mitigation commitments assume the old 2°C maximum global warming target and fail to consider Canada's fair share obligations. The most fundamental required policy response is to align our climate initiatives with our *Paris Agreement* commitments. That entails adjusting our policies and associated actions to

- respect the *Paris* objective "to limit global average temperature rise to well below 2°C above pre-industrial levels, and to pursue efforts to limit the increase to 1.5 °C";[26]
- make our fair share contributions "on the basis of equity,"[27] which means adopting the earliest potentially feasible decarbonization date for Canada (currently 2050) as our working deadline for planning and assessment purposes;

26 *Paris Agreement*, article 2, paragraph 1(a).

27 *Paris Agreement*, article 4, paragraph 1.

- pursuing openings for best efforts for deeper and faster achievements; and
- making substantial contributions to less advantaged nations.

More specific policy initiatives are needed to build the foundation for effective and coordinated use of the key planning, budgeting, motivating and accounting tools for driving and guiding a responsible and just transition to climate responsibility. Four overlapping areas are involved.

1. **Pathways:** Canada needs to delineate viable pathways to decarbonization by or before 2050.[28] The initiatives should

   - develop scenarios for possible futures related to climate-related transitions as a basis for public discussion of desirable futures that we should seek and possible but undesirable futures we should work to avoid;
   - explore the feasibility of meeting GHG neutrality deadlines before 2050;
   - compare alternative routes to meeting particular deadlines and reaching desirable futures;
   - favour options that deliver effective climate change mitigation along with other positive contributions to overall sustainability, including respect for Indigenous rights; and
   - be developed, as well as reviewed and updated regularly, with independent expertise and credible processes.

2. **Carbon budgeting:** Canada should adopt a carbon budgeting system, roughly following that of the United Kingdom, to clarify expectations and track accomplishments over time.[29] Along with delineated pathways to decarbonization, transparent, flexible and fair allocation of Canada's remaining carbon budget would provide a foundation of predictability for planning and investment, enable tracking of progress and adjustment of strategy, and inform policy and project decision making.

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28 Several key independent pathway modeling initiatives are referenced in footnote 18, above. Other pathways studies include Catherine Potvin, et al., *Re-energizing Canada: Pathways to a Low-Carbon Future*, online: http://www.sustainablecanadadialogues.ca/en/scd/energy; and Council of Canadian Academies Expert Panel on Energy Use and Climate Change, *Technology and Policy Options for a Low-Emission Energy System in Canada* (Ottawa: CCA, 2015), online: https://www.scienceadvice.ca/reports/technology-and-policy-options-for-a-low-emission-energy-system-in-canada/.

29 Andrew Gage, *A Carbon Budget for Canada: A collaborative framework for federal and provincial climate leadership* (Vancouver: WCEL, December 2015), p.iii, online: https://www.wcel.org/sites/default/files/publications/CarbonBudget%20(Web)_0.pdf.

3. **Economic and regulatory tools:** As with many other public interest governance challenges, effective steps towards meeting climate change mitigation commitments will depend heavily on pricing, rules, incentives, opportunities and penalties that combine to direct and drive appropriate action. Mutually supportive design and mobilization of economic and regulatory tools could greatly enhance guidance, understanding and motivation for progress along the identified pathways. They could also encourage innovations to expand pathway options, avoid or mitigate trade-offs, and overcome technological barriers. Crucial tools include those that would

   - require application of both carbon pricing and the social cost of carbon and clarify when and with what caveats each should be used in evaluations of policy options and other applications; and
   - strengthen financial and legal motivations (e.g., financial guaranties) to ensure that commitments to and requirements for near term and future GHG reductions and offsets are met.

4. **Long range policies:** Consistent with pathway delineation and allocation of carbon budgets, Canada should develop, review and update explicit long range policies, incorporating means of meeting the decarbonization deadline and encouraging best efforts. Such policy making should include the energy sector and its various subsets, but also cover other sectors that are or could be major players in a transition to climate-responsibility and sustainability.

SPECIFYING KEY TOOLS, METHODS AND APPLICATIONS

The four areas for major policy initiatives are very broad. All need quite detailed specification of tools, methods and applications to clarify expectations and require action. Moreover, the processes for designing the tools and rules, and for establishing subjects and procedures for application, must be rigorous and credible. The following discussion outlines major topics for attention.

All four framework areas: All four areas centre on strategic policy development, which entails clarifying purposes, identifying options and choosing among them. For consistency and defensibility, all of the evaluations and decisions should be informed by explicit criteria that are tied to the *Paris* commitments (including the one on sustainable development) and specified as needed for particular applications. Integrated applications of the climate- and sustainability-based criteria would include, for example, identifying and

assessing the relative desirability of potentially viable pathways to decarbonization by or before 2050, comparing alternative carbon budget allocation plans, and evaluating program or project options that have different implications for GHG emissions and sinks effects and different consequences for meeting the *Paris Agreement* commitments.

Trade-offs also need to be addressed openly and rigorously in all four areas. Climate-related trade-offs include those that would compromise climate objectives in the interest of serving other sustainability objectives (e.g., human rights, poverty reduction and biodiversity stewardship), and those that would compromise other sustainability objectives in the interest of climate change mitigation. Best ways to avoid or mitigate climate-related trade-offs are likely to be identified through comparative analysis of alternatives to initially proposed initiatives.

In addition, consistent work in all framework areas will require details on expectations and approaches to climate-related information and standards for evaluations. Some key details centre on basic emission and sink effects accounting. Framework elaboration will need to recognize the differences among greenhouse gases, as well as black carbon, including their different severity and timescales of impacts. It will also need means of determining

- which GHG emissions are properly attributed to particular sectors, activities and undertakings, including attention to lifecycle and lifespan direct, indirect, imbedded and cumulative emissions, upstream and downstream, in Canada and beyond;[30]

30 Attention to downstream emissions, especially out-of-country downstream emissions is likely to be resisted by some interests. It is, however, consistent with international judicially mandated best practices and with recent federal intent in the National Energy Board review of the proposed Energy East project, prior to its cancellation. See M. Burger and S. Wentz, "Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review", *Harvard Environmental Law Review*, 41:1 (2016), p.28; *Gray* v. *Minister of Planning* (2006) New South Wales Law and Environment Court 720, paragraph 124; See the full report, part 3.4.1. Canada's GHG footprint roughly doubles with inclusion of emissions associated with the foreign combustion of oil produced in Canada and exported abroad. See Marc Lee, *Extracted Carbon: Re-examining Canada's Contribution to Climate Change through Fossil Fuel Exports* (Canadian Centre for Policy Alternatives, 2017) p.5, online: https://www.policyalternatives.ca/publications/reports/extracted-carbon.

- how to account for and attribute positive and adverse effects of land disturbances and other anthropogenic disruptions on carbon (GHG) sinks and reservoirs such as soils, peatlands and forests, with particular attention to lasting damages and permanent enhancements of sinks and reservoirs;[31] and
- how to identify legitimate offsets for GHG emissions or sink impairment.

Details for evaluation of policy options include best ways to integrate climate- and sustainability-based criteria, specify them for particular applications and use them to identify and compare alternatives. Particularly important are means to address unfamiliar tasks including evaluation of effects on intergenerational equity and the extent of contributions to the major transformations needed to achieve GHG neutrality, including means of ensuring just transition.

Also crucial are details on matters of process. These include how to design credible climate policy development processes that mobilize best expertise and encourage broader engagement and learning; how to foster and facilitate interjurisdictional collaboration (including with Indigenous authorities); and how to extend opportunities for learning, including for adjustments to climate assessment guidance.

1. **Pathways:** Specification needs for pathways development include identification of best means for delineating suitable future scenarios, evaluating technological possibilities (desirability, likelihood, uncertainties and risks, etc.), respecting interactions among pathways and other change factors, integrating attention to other sustainability objectives, and ensuring reasonable predictability for long term planning and investments while encouraging innovation and retaining flexibility for adjustments in light of experience and new possibilities. Pathways work also needs direction on how to ensure pathways are designed to direct change to meet climate commitments in ways that protect the most vulnerable, contribute to just transitions, and help deliver other sustainability benefits.

31 A study conducted on Alberta's bitumen extraction operations in 2015 concluded that an "additional 500 km2 and 2,400 km2 of boreal forest including carbon-rich peatlands would be disturbed from surface mining and in-situ production, respectively, between 2012 and 2030; releasing an additional 107–182 million tonnes of GHG from land use alone." Sonia Yeh, Anqi Zhao, Sean D. Hogan, Adam R. Brandt, Jacob, G. Englander, David W. Beilman, Michael Q. Wang, "Past and Future Land Use Impacts of Canadian Oil Sands and Greenhouse Gas Emissions," (University of California Davis Institute of Transportation Studies, January 2015), p.2, online: https://its.ucdavis.edu/research/publications/?frame=https%3A%2F%2Fitspubs.ucdavis.edu%2Findex.php%2Fresearch%2Fpublications%2Fpublication-detail%2F%3Fpub_id%3D2412.

2. **Carbon budgeting:** Determining the overall carbon (GHGs) budget for Canada and allocating that budget are the core challenges for carbon budgeting. Specific needs centre on best means of budget allocation (among sectors and regions, big and smaller players, and/or other categories of effects on GHG emissions, sinks and reservoirs), with provisions for exchange and adjustment, and means of monitoring and encouraging and enforcing compliance. Carbon budgeting also needs consistent means of distributing attribution of "responsibility" for cumulative effects of multiple undertakings on sinks and emissions. Issues such the entrenchment of dependencies and other barriers to transition will have to be addressed through other mechanisms.

3. **Economic and regulatory tools:** The most important needs for specification of climate-related economic and regulatory tools would centre on approaches to analyses of the viability of policy options and other undertakings recognizing the full costs associated with GHG emissions and sink effects. Important specifics include how to

   - establish a base carbon price and a schedule for incremental increases consistent with what is needed to meet or beat a 2050 decarbonization deadline;[32]
   - adopt, update and expand standard methods for transparent use of the social cost of carbon to estimate the global damage associated with unabated GHG emissions in evaluations of climate-significant activities and proposals;[33]
   - evaluate entrenchment effects, where an undertaking does or would hinder meeting climate commitments by increasing or lengthening dependencies on GHG-emitting activities or systems;
   - calculate the costs of anticipated emissions beyond the working deadline for decarbonization and calculate the costs of stranded assets;

32 Under new legislation, a carbon price of $10/tonne CO2 equivalent will be implemented in 2018, rising to $50/tonne CO2 equivalent in 2022. See Government of Canada, *Greenhouse Gas Pollution Pricing Act*, 21 June 2018, online: https://laws-lois.justice.gc.ca/eng/acts/G-11.55/page-1.html. Some analysts anticipate that the price will prove to be too low, that it is not established for a long enough period to provide for investment certainty, and that it is not broad enough in its application. Concerning the needed price, see D. Sawyer and C. Bataille, "Taking Stock: Opportunities for Collaborative Climate Action to 2030, Policy Brief 2: The Pan-Canadian Framework on Clean Growth and Climate Change" (Decarbonization Pathways Canada, March 2017), especially pp. 1 and 5, online: https://drive.google.com/file/d/0B9FT5KrVwYmwOThZYUh2WlpKTWc/view.

33 Calculating the social cost of carbon can be highly informative in evaluations, including of climate-significant policies and regulatory initiatives. However, it also involves complexities in ensuring fair representation and valuing of future costs. All existing values derived for the social cost of carbon are considered by experts to be underestimated. See National Academies of Sciences, Engineering, and Medicine, *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide* (Washington, DC: The National Academies Press, 2017), pp.1 and 6, online: https://www.nap.edu/catalog/24651/valuing-climate-damages-updating-estimation-of-the-social-cost-of.

- strengthen financial and legal motivations (e.g., financial guaranties) to meet climate change mitigation commitments and requirements;
- identify and assess the equity effects of existing and new undertakings and their alternatives, and ensure emphasis on just transition imperatives in planning and decision making climate-significant undertakings;
- combine all these considerations along other more established economic considerations in the evaluation of broad policy options and particular undertakings and alternatives.

4. **Long range policies:** As the roof of the framework, long range policy development should connect and cover the pathways, budgeting, mobilization of economic and regulatory tools, and key other components and initiatives. Long range policies need to be flexible and adjustable but also sufficiently clear and firm to provide reliable grounds for investors and others to plan ahead in the desired direction. The relevant specifics for long range policy development include those identified above plus details on how to determine the extent to which current and new undertakings are consistent with the long range intentions.

Taken together, the considerations above point to a daunting list of basic needs for framework elaboration. However, these steps are needed to fill the gap between the *Paris Agreement* and assessments of particular undertakings.

CLIMATE-RESPONSIBLE GOVERNANCE

Good governance is central to a successful low-carbon energy transition. While technology plays a vital role, the most important barriers to accelerating the low-carbon transition are social, political and organizational.[34] Governance for climate change mitigation is, however, a major challenge. Climate change is a long term global problem with devastating but mostly delayed effects. It can be mitigated only through bold anticipatory actions in a world where the main powerholders have reason to be more concerned about re-election, shareholder return and other immediate imperatives than about climate change victims, most of whom have not yet been born. The voting public's role is often similarly compromised by limited understanding of climate change science and consequences. The results include vulnerability to opportunistic

34 Catherine Potvin, et al., *Re-energizing Canada: Pathways to a Low-Carbon Future*, p.23, online: http://www.sustainablecanadadialogues.ca/en/scd/energy.

political campaigns playing on the immediate costs of carbon pricing and energy transition, and greater difficulties in building agreement among the many political jurisdictions that need to collaborate in climate change mitigation efforts.

Governments and other key players have long demonstrated reluctance to face future costs or to disrupt deeply entrenched sectors, institutions and interests. A quarter century after signing the Kyoto Protocol,[35] Canada is just now beginning to take some the major climate policy steps, and to apply some of tools and methods, summarized above. Signing the *Paris Agreement*, introducing an associated climate test for major project decision making,[36] and legislating carbon pricing[37] have been welcome if belated and inadequate moves. All remain vulnerable to near term political pressures, including the effects of heavy influence exercised by the fossil fuel sector,[38] as demonstrated for example by federal steps weakening its methane reduction initiative and exempting important emitters from carbon pricing.[39]

Serious efforts to meet our *Paris Agreement* commitments therefore depend on climate-responsible governance featuring

- clear, comprehensive and firmly specified requirements that are protected, to the extent possible, from temptations to favour immediate political advantage;
- open and participative deliberative and decision making processes that are designed to foster broad public as well as professional learning about climate change realities, perils and opportunities; and
- enhancement of willingness and capacity for informed collaboration among the many Canadian jurisdictions with roles in climate change mitigation.

Regulatory requirements will need to ensure that decision making on individual projects, policies, plans and programs is clearly tied to meeting our *Paris Agreement* commitments, and minimize openings for political discretion that could favour short term ends. That will involve setting out the implications of the *Paris Agreement* as clearly and specifically as possible,

35 United Nations, *Kyoto Protocol to the United Nations Framework Convention on Climate Change* (1998), online: https://unfccc.int/sites/default/files/kpeng.pdf.

36 *Impact Assessment Act*, s.63(e).

37 Government of Canada, *Greenhouse Gas Pollution Pricing Act* (2018), online: https://laws-lois.justice.gc.ca/eng/acts/G-11.55/page-1.html.

38 Jason MacLean, "Striking at the Root Problem of Canadian Environmental Law: Identifying and Escaping Regulatory Capture", *Journal of Environmental Law and Practice*, 29 (2016).

39 Meinhard Doelle, "Decades of climate policy failure in Canada: can we break the vicious cycle?" *Environmental Law News*, online: https://blogs.dal.ca/melaw/2018/08/08/break-the-vicious-cycle/.

entrenching attention to these implications in expectations for information provision and analyses as well as decision making, setting up independent bodies for reliable and accessible climate information, and establishing open processes with independent reviews, accountable decision making, and public rights of appeal.

The new *Impact Assessment Act* with its climate test for assessed undertakings[40] is just one important venue for such requirements. However, it can play a key role in climate-responsible transition. A project approval or refusal could have a climate impact vastly exceeding its associated emissions if it catalyzes large-scale changes, spill-over effects or other systemic change to the country's economy.[41] Major fossil fuel extraction and infrastructure projects, for example, expand and lengthen dependencies, and entrench economic and political interests that are understandably inclined to pursue further similar developments in the future and to oppose the needed energy transition.[42]

Impact assessment processes are also often high profile and reasonably accessible vehicles for learning.[43] To deepen understanding of climate change mitigation needs and possibilities, assessment processes can be especially effective if designed to facilitate meaningful public participation.[44] That depends on open and participative proceedings, decision making transparency, broad engagement in building and evaluating future scenarios and examining pathways to desirable futures, and emphasis on public discussion of fair transitions and equitable distribution of the risks and opportunities. Also important is convenient public and professional access to climate-relevant information (publication of important data and assumptions for climate-related studies, and open sharing of modelling of alternative climate change policy options).[45]

40 *Impact Assessment Act*, s.63(e).

41 P. Erickson and M. Lazarus, *Assessing the Greenhouse Gas Emissions Impact of New Fossil Fuel Infrastructure*. SEI Discussion Brief (Seattle: Stockholm Environment Institute, 2013), p.7, online: https://www.sei.org/publications/assessing-the-greenhouse-gas-emissions-impact-of-new-fossil-fuel-infrastructure/. For an analysis of the Canadian situation, see P. Erickson, M. Palazrus and K. Tempest, *Carbon Lock-in from Fossil Fuel Supply Infrastructure*. SEI Discussion Brief (Seattle: Stockholm Environment Institute, 2015), p.5.

42 Stefan Bößner, *Turning energy around: Coal and the German Energieweden* (Stockholm Environment Institute, 2016), online: https://mediamanager.sei.org/documents/Publications/Climate/SEI-DB-2016-Energiewende-and-coal.pdf.

43 A. John Sinclair, Alan Diduck, and Patricia Fitzpatrick, "Conceptualizing learning for sustainability through environmental assessment: critical reflections on 15 years of research," *Environmental Impact Assessment Review* 28:7 (2008), pp.415-428.

44 Jennifer M.P. Stewart and A. John Sinclair, "Meaningful public participation in environmental assessment: perspectives from Canadian participants, proponents and government," *Journal of Environmental Assessment Policy and Management* 9:2 (2007), pp.161-183.

45 Useful examples include the United Kingdom, which pioneered an integrated framework of climate modeling, law and policy. See, for example, UK Department for Business, Energy and Industrial Strategy, Guidance on Carbon Budgets, online: https://www.gov.uk/guidance/carbon-budgets; and University College London Energy Institute Models, online: https://www.ucl.ac.uk/energy-models/models. California also bases its policies on open source models.

Enhanced public and professional understanding should lead to a higher degree of cooperation and coordination between and among the federal, provincial, territorial, Indigenous and municipal authorities as well as other key participants in the needed transitions.[46]

Together, these advances would provide a far better foundation for clear, rigorous and consistent decision making including in the planning and implementation of policies, plans, programs and projects. For applications under assessment law, the next step is to ensure that these foundations and gap-filling approaches are specified, translated into clear and authoritative requirements, and applied effectively.

46 For further recommendations, see Catherine Potvin, et al., *Re-energizing Canada: Pathways to a Low-Carbon Future*, p.32, online: http://www.sustainablecanadadialogues.ca/en/scd/energy.

SPECIFYING REQUIREMENTS FOR ASSESSMENTS OF CLIMATE-SIGNIFICANT UNDERTAKINGS

The federal *Impact Assessment Act* that is currently before Parliament has considerable potential as a vehicle for progress on climate change mitigation. As noted above, assessment decisions on individual projects and other undertakings can do much to facilitate or frustrate progress towards climate responsibility. The forthcoming law's sustainability-based design and climate test (whether proposed undertakings would "hinder or contribute to" meeting Canada's climate change commitments), give it a strong foundation for climate-responsible results. However, the Act's promising basic requirements are unlikely to be understood reliably or applied predictably unless accompanied by specific regulatory directions and policy guidance for application and compliance.

For assessment applications, the central requirement is for a clear and explicit set of climate-centred tests in decision making. Elaboration and application of these tests are needed to clarify how to evaluate the extent to which assessed undertakings would "hinder or contribute to" meeting Canada's climate change commitments, as required under section 63(e) of the new law.[47] While that clarification is most obviously needed for decision makers, the rules for decision makers will also guide proponents, assessment reviewers and other participants in assessment deliberations.

The major basic tests are summarized below in Box 1. The tests mobilize the several categories of tools outlined above to meet Canada's *Paris Agreement* commitments. Because those tools have different strengths and roles, the tests should be taken as a package of requirements, each of which should be met. All of the tests need some elaboration for practical application. Many specifics are open to debate and initial applications are likely to be primitive. However, the details are likely to be best informed by experience and, in any event, the tests will have to be adjusted as pathways, pricing and carbon budget allocations evolve, and as global requirements are tightened and climate science evolves.

47 As noted above, this requirement is now included in both the *Impact Assessment Act* and the *Canadian Energy Regulator Act*, as passed by the House of Commons.

BOX 1. Tests to be applied to determine whether a proposed undertaking would or would not contribute to meeting Canada's international climate change mitigation commitments

The core test is that all projects and other proposed undertakings that may be GHG significant over their lifetime must

- contribute to meeting Canada's international climate change mitigation commitments, and not hinder Canada's transition to GHG neutrality in time to meet those commitments.[48]

The international commitments currently established chiefly under the *Paris Agreement* require Canada to do its fair share

- to keep overall climate warming "well below 2°C" and to pursue efforts to limit the increase to 1.5°C above pre-industrial levels" (Article 2.1);
- to achieve global peaking of GHG emissions as soon as possible and to reach GHG neutrality in the second half of this century at the latest, "on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty" (Article 4.1.); and
- to anticipate regular review and revision of signatories' commitments to reflect progressively increasing nationally determined contributions that represent each signatory's "highest possible ambition" (Article 4.3, Article 14).

These commitments are to be met while also ensuring respect for human rights, including Indigenous rights, and pursuing other sustainability objectives such as biodiversity.

More specific tests that elaborate on the core test can be based on analyses using a suite of complementary available tools for determining whether a proposed undertaking will contribute to or hinder meeting our international commitments. The following list includes analyses that can be used in an elementary way now but need be developed and specified further for Canadian application.

Tests based on particular analyses using a range of tools would, for example, require a proposed undertaking

- to contribute to the major transformations that are needed in key sectors – including energy, transportation, buildings, manufacturing, resources, agriculture, and possibly forestry – to achieve GHG neutrality in Canada in time to meet our international commitments;
- to avoid any direct or indirect effects that would hinder timely transition to GHG neutrality;
- to fit on a credible sectoral or regional pathway to meeting Canada's international commitments;
- to be consistent with staying within an equitable GHG budget for

48 This is a restatement of s.63(e) of the *Impact Assessment Act*, as proposed, as it apples to climate change mitigation.

Canada (and within the global GHG budget consistent with meeting international objectives), as further specified for a sector or region;

- to be viable if the proponents of the undertaking had to pay the full costs associated with all GHG emissions and sink impairments properly attributable to the undertaking over its lifespan and lifecycle, with these full costs determined by the GHG price needed to achieve timely transition to a GHG-neutral economy or the full social cost of associated climate change (the share of overall anticipated global damages attributable to the undertaking's GHGs);
- to avoid, or compensate for, any addition to the costs of making a timely transition to GHG neutrality;
- to avoid any properly attributable GHG emissions and sink impairments past the Canadian deadline for GHG neutrality entailed by Canada's current international commitments, or provide legitimate new domestic offsets[49] to neutralize any such emissions or sink impairments; and
- to be consistent with ensuring that Canadian GHG mitigation and sink enhancement initiatives reflect "highest possible ambition" and best efforts, while not impeding or delaying more promising options.

Tests based on existing domestic policy guidance can also be used, if that guidance is adjusted to reflect our current and anticipated international commitments. Such tests would need to favour transparently developed and credible policies. In every case, the guidance would have to be consistent with meeting Canada's international commitments.

For illustration, given current domestic policy guidance, a proposed undertaking would be required

- to be consistent with meeting Canada's current Nationally Determined Contribution (NDC), plus additional requirements to address the gap between the current NDC and the more demanding commitments of the *Paris Agreement*, and to anticipate needs for increasing ambitions in future national commitments under that Agreement; and
- to be consistent with the requirements implied by the *Pan-Canadian Framework on Clean Growth and Climate Change* and its implementing legislation, plus additional requirements to address the gap between the Framework components and the current NDC, as well as the gap between the current NDC and the *Paris Agreement*.

Specifying these tests through open and meaningfully participative strategic policy making, including application of legislated strategic assessment requirements, would be preferable to relying on case-by-case debates on the test requirements and implications. Also, these tests would need to be applied to all existing and proposed activities and undertakings affecting prospects for meeting Canada's climate change mitigation commitments, including those that would not be subject to legislated assessment requirements.

All climate tests will need to be updated regularly in light of tightening international commitments, the evolution of climate science and learning from application experience.

49 The *Paris Agreement* allows for internationally transferred mitigation outcomes through cooperation but international offsets should be considered only after robust methodologies and governance systems have been developed.

These tests, simply stated, will not be sufficient by themselves. As discussed above, the tests need to be based in a broader policy framework of pathways, budgeting, use of economic and regulatory tools and long range planning. In addition, to ensure clear expectations and common understandings for applying the tests, the new *Impact Assessment Act* will have to be accompanied by regulatory and policy guidance on how to integrate use of the climate tests and climate policy framework components with other requirements of the Act and the *Paris Agreement* in assessments of individual projects and strategic undertakings.

If the government moves to address the many gap-filling requirements listed above for broad application in decision making under federal authority, developing guidance for assessments will be much easier. If not, all of these matters will be left for at least interim attention in regulations and policies under the new Act.

Among the priorities for specified requirements and guidance are initiatives in the following four areas:

1. **Climate-related undertakings to be subject to assessment requirements:** Most of the *Impact Assessment Act* is devoted to assessment of projects, but the Act also provides for strategic and regional assessments that would address national and regional issues relevant to project planning and assessment.[50] For application to proposed projects, a Project List will delineate categories of projects to which the law-based assessment requirements apply. Surrounding guidance will need to ensure the list covers all categories of projects that could fail any of the Box 1 tests or have other important consequences for meeting Canadian climate change mitigation commitments. Listed categories should include projects that may

   - have annual and cumulative attributable lifespan and lifecycle (direct and indirect) GHG emissions and/or sink impairments that are over a certain threshold[51] or extend beyond the deadline for GHG neutrality;
   - be inconsistent with remaining on a viable pathway to timely decarbonization, or within a viable carbon budget, or not economically justifiable in light of effective GHG pricing or social costing calculations;
   - contribute to cumulatively significant GHG emissions or sink impairments that make specific mitigation commitments more difficult to meet;

50 *Impact Assessment Act*, sections 92-103.

51 The GHG emissions threshold would need to go down over time as the deadline for decarbonization nears.

- contribute to further entrenching fossil fuel dependency; or
- play significant roles in sectors that require transformation to ensure climate commitments are met.

For strategic and regional assessments, guidance with similar contents will be needed to set out categories of policies, plans, programs and strategic issues that require assessment because, they could have important individual or cumulative consequences for meeting Canadian climate change mitigation commitments.

2. **Information requirements for individual assessments:** The assessment process under the new law begins with a planning phase[52] that will involve delineating the character of the project and alternatives, anticipated issues, assessment needs and process specifics. Guidance will be needed on expectations for and approaches to climate-related information, including best means for determining and reporting
   - what GHG emissions and sink effects are properly attributed to the project and alternatives, including attention to lifecycle and lifespan direct, indirect and cumulative effects;
   - how climate commitments considerations have been incorporated in identifying and comparing potentially reasonable alternatives, including the null option, in selecting the best option as the proposed project;
   - the extent of any positive effects on anthropogenic GHG sink enhancement;
   - legitimate offsets for GHG emissions or sink degradation; and
   - potential for the proposed project and alternatives to pass the Box 1 tests and hinder or contribute to the major transformations needed to achieve GHG neutrality (e.g., considering consistency with viable pathways, fit in carbon budget allocations, viability in light of carbon pricing and social costs, contribution to just transition and intergenerational equity, incorporation of "best efforts" and capacity to meet increasingly ambitious future national commitments).
3. **Evaluations and decision making:** Evaluations of various kinds will need to be provided and/or reviewed by proponents, government authorities and public participants as well as decision makers. Guidance for these evaluations and associated decisions, should cover means of and standards for
   - applying each of the Box 1 tests;

52 *Impact Assessment Act*, section 10-15.

- comparatively evaluating the proposed undertaking and reasonable alternatives, with particular attention to requirements and methods for comparisons to identify options most likely to contribute to meeting Canada's climate commitments;
- combining findings from all the climate commitments tests with other sustainability considerations in overall project evaluations (e.g., through integration of climate-centred criteria in a more comprehensive set of sustainability-based criteria for application throughout the assessment process);
- establishing and applying trade-off rules and processes affecting climate commitments, ensuring that climate trade-offs are avoided to the extent possible, subject to explicit limitations, supported by explicit public justification and, where unavoidable, mitigated and offset to the extent possible; and
- determining appropriate climate-related conditions of approval (e.g., concerning further mitigation of emissions and sink impairment, legitimate offsets and provision of security bonds).

4. **Follow-up:** Guidance will be needed for climate-related aspects of establishing implementation plans and requirements, and assigning responsibilities for monitoring, enforcement, and determining needed adjustments during the life of the undertaking. Needed guidance for climate-specific monitoring will involve the checking on actual versus predicted results under the Box 1 tests (e.g., determining actual emissions and sink impairments or enhancements and actual adherence to the relevant pathways).
5. **Deliberative processes:** For rigour and credibility, all assessment processes must be transparent, meaningfully participative, well focused on key issues and opportunities, and reasonably efficient. As well they must mobilize and challenge the best experts and be venues for learning. The most important assessments will typically also involve multiple jurisdictions and do better when means are found to foster and facilitate interjurisdictional collaboration.

Guidance will need to

- clarify means of fostering and facilitating interjurisdictional collaboration, including in joint climate-related strategic undertakings, joint assessments of climate-related undertakings, and joint monitoring, as well as government-to-government collaboration with Indigenous authorities; and
- identify opportunities for using both expertise and broad engagement to enhance learning and ensure informed adjustments to climate assessment directions and guidance.

Elaborating the climate tests and the associated regulatory and policy guidance involves a host of technical, analytical and political complexities. In many cases, addressing them credibly is certain to be difficult and time consuming. The federal government has indicated that it will be initiating a strategic assessment to examine how best to specify the implications of Canada's climate change commitments for assessment of individual undertakings.[53] If this strategic assessment is given a suitably broad scope, independent expertise and an open and transparent process, the results could contribute significantly to the clarity of climate-related assessment obligations at the project level and encourage important climate policy advances for broader application.

Meanwhile, the *Paris Agreement* commitments stand. Once the new *Impact Assessment Act* is proclaimed in force, its section 63(e) requirement will also stand. With or without detailed regulatory and policy guidance, decision makers will need to evaluate whether proposed undertakings will hinder or contribute to meeting Canada's climate commitments.

For the interim period, basic initial working policy direction for climate-related evaluations and rationales should be in place. If credibly prepared, such interim guidance would make early application of the climate assessment requirements more consistent and predictable, less onerous, and less vulnerable to challenge. However, any interim working guidance would need to be built credibly on a rigorously developed foundation and provide clear basic guidance for evaluating a proposed undertaking's contributions to meeting Canada's international commitments. Working specifications of the Box 1 tests would be a good start.

53 Government of Canada, "Discussion paper: Developing a Strategic Assessment of Climate Change," (Ottawa: Government of Canada, July 2018), online: https://www.strategicassessmentclimatechange.ca/discussion-paper (accessed 10 August 2018).

Application of the climate tests, increasingly elaborated in regulations and policy guidance under the new *Impact Assessment Act*, could play a major role in ensuring that assessment practice, including decision making, makes positive contributions to meeting our *Paris Agreement* commitments.

CONCLUSIONS

Keeping overall global warming within the *Paris Agreement* limit of well below 2°C and aiming for 1.5°C will require immediate and sustained best efforts, especially by the most advantaged countries, including Canada. To guide and drive these efforts, the federal government and other key players need to fill the wide gap between the Paris commitments and their implications for specific initiatives and proposals, including those subject to assessment law.

A first step is to recognize that Canada should adopt 2050 as our latest possible deadline for achieving decarbonization, while also encouraging best efforts for deeper and faster achievements and making substantial contributions to less advantaged nations to meet international commitments.

To clarify what needs to be accomplished before the deadline, to assign responsibilities and to guide action, Canada needs to specify and mobilize a substantial package of targets, frameworks and applied tools. The package components are numerous and complex. They include delineating viable pathways to decarbonization, allocating carbon budgets, linking regulatory and economic tools, establishing best methods for GHG accounting and attribution, specifying criteria for evaluating existing and proposed activities, developing longer range policies, strengthening means of building deeper understanding and better coordination, and ensuring a just transition. Moreover, these are only the main categories of needed steps.

All of the package components would be best addressed in comprehensive, broadly applied climate law and policy for broad application. Initial regulatory and policy guidance for meeting our climate commitments is needed very soon to direct deliberations and decision making on major projects and other undertakings subject to the new *Impact Assessment Act*. That law, which is

expected to come into effect in 2019, specifically requires consideration of whether proposed projects will hinder or contribute to meeting Canada's climate commitments. Particular needs for regulations and policies under the new law are outlined above, including in the core tests listed in Box 1.

While significant political as well as substantive challenges must be faced, taking effective action to mitigate climate change is much more attractive than the consequences of failure to do so. Moreover, the challenges are matched by a host of opportunities to enhance prosperity, including for those now least advantaged, while also building the foundations for lasting wellbeing.

From Paris to Projects

Clarifying the implications of Canada's climate change mitigation commitments for the planning and assessment of projects and strategic undertakings

Summary Report

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