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Challenges and Opportunities of a Forthcoming Strategic Assessment of the Implications of International Climate Change Mitigation Commitments for Individual Undertakings in Canada

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Abstract: Canada is preparing to initiate a challenging, but potentially ground-breaking, strategic assessment on the implications of its climate change mitigation commitments for project assessments. The strategic assessment is immediately needed to provide project-level guidance for decision makers who will be required under new federal legislation to consider the extent to which each assessed project “contributes to sustainability” and “hinders or contributes to” meeting Canada’s climate commitments. However, Canada, like many other countries, has not yet translated its *Paris Agreement* climate commitments into an adequate suite of specific policies, pathways, budgets, and other directives for compliance. Consequently, the climate commitments’ strategic assessment will need to play a fully strategic role—in policy development as well as policy interpretation and elaboration for assessment purposes. This paper outlines the key considerations and required steps for a strategic assessment that fills the policy gap between Paris and projects, and develops guidance centred on a suite of tests for evaluating proposed major projects that may have important effects on Canada’s prospects for meeting its climate commitments.

Keywords: climate change; mitigation; *Paris Agreement*; strategic assessment; project assessment climate policy; Canada; impact assessment; law

1. Introduction

The Government of Canada is preparing to launch a strategic assessment of the implications of its climate change commitments. The climate commitments’ strategic assessment is expected to focus on how to guide assessment decision making on individual projects to meet anticipated climate-related requirements under new federal assessment legislation. Doing so will involve facing significant policy complexities on a matter of great political delicacy.

As approved by the Canadian House of Commons (however, yet to be reviewed by the Senate), Canada’s forthcoming *Impact Assessment Act* will introduce a sustainability-based public interest test for proposed major projects that are subject to assessment. It will also oblige decision makers to consider:

the extent to which the effects of the designated project hinder or contribute to the Government of Canada’s ability to meet its environmental obligations and its commitments in respect of climate change [1] (section 63(e)).

The requirement to consider implications for meeting climate commitments will be an innovation in Canadian assessment law. The word, “climate”, does not appear in the *Canadian Environmental Assessment Act, 2012*, which the new law is to replace. The sustainability-based approach to assessment is also new, as are the law’s provisions for strategic assessments.

Recognizing that decision makers and other participants in assessment processes under the *Impact Assessment Act* will need guidance for the required climate determinations, the Minister of Environment and Climate Change has chosen to initiate a strategic assessment. How that strategic assessment will proceed is not yet known. A short “discussion paper” [2] released for public comment in July 2018 outlines some basic expectations, poses questions for public comment, and suggests a rough assessment timeline, ending with a report in 2019. The specifics of mandate, scope, process, and participant roles, however, remain to be determined. Further uncertainties surround the extent to which recommendations from the strategic assessment may be taken up in the guidance issued by the government.

Given the limitations of current Canadian climate policy and the short timeline involved, the initial guidance for project assessments is unlikely to be highly detailed. It may serve only for interim application while key elements of national climate policy are developed and their implications for project-level assessments are clarified. The discussion paper already suggests that the guidance produced through the strategic assessment will be an “evergreen document”, subject to regular revision. In any event, some years of implementation experience may be needed before we can know how well the guidance has served in ensuring that assessed and approved undertakings contribute to rather than hinder efforts to meet Canada’s climate commitments.

In that context, this paper explores the case as a particularly demanding strategic assessment challenge that may eventually be an illuminating strategic assessment experience. The paper delineates the gap between Canada’s international climate change commitments, chiefly under the *Paris Agreement*, and the need for guidance for decision making on particular projects and other undertakings. It identifies the key steps needed to bridge the Paris to projects gap. Because Canada has not yet taken many of these steps, or has yet to raise them to the level of the Paris commitments, the paper goes through the steps, identifying roughly what the substantive implications are likely to be for Canada overall, and what the strategic assessment needs to provide in the guidance it recommends for individual assessments. In particular, it outlines a suite of climate tests that will need to be elaborated for application in project assessments and assessments of other strategic undertakings (policies, plans, programs, etc.) that may have climate-significant effects. Appropriate process characteristics for the climate commitments’ strategic assessment are also considered. The focus here is on meeting Canada’s climate change mitigation commitments, recognizing that adaptation efforts are also important and are included in the *Paris Agreement*.

The paper rests on three core premises. The first is that the new assessment law will be passed and proclaimed in force and that the climate commitments’ strategic assessment will proceed within the next year. Though both seem likely, neither is certain. However, with or without the new law and the anticipated strategic assessment, the climate challenges for assessments and the response options explored in this paper will remain. Delay will only make timely action more difficult. The second premise is that the *Paris Agreement* commitments, and the pressing needs for immediate action to mitigate climate change, are the bottom line. For the purposes of this paper, the *Paris* commitments are non-negotiable and are the proper starting point for the strategic assessment. Here, again, there is no guarantee that the current federal government or its successors will retain firm commitment to effective climate mitigation, but the imperatives for climate actions will grow during any delay.

The third premise is that the climate change guidance must be situated in and serve the broader objective of contributing to sustainability. That too should not be controversial. Climate change is the quintessential challenge for long term survival and wellbeing. Moreover, both ends of the strategic assessment agenda root climate change in sustainability. The *Paris Agreement* [3] (article 2, paragraph 1) requires climate action “in the context of sustainable development” and the new *Impact Assessment Act*

establishes a sustainability-based agenda, requiring all project assessments and assessment decisions to consider “the extent to which the designated project contributes to sustainability” [1] (sections 22(1)(h) and 63(a)). We assume, therefore, that the strategic assessment will be required to consider how to meet climate change commitments in the broader context of how best to contribute to sustainability. In other words, it will be a sustainability-based assessment of the implications of Canada’s climate change commitments for project assessment applications.

Together, the agenda and premises underline the strategic quality of strategic assessment. This case study is about an assessment at the strategic level—the resulting guidance is to be established in a government policy document or set of documents, though on some matters it may be underpinned by enforceable regulations. More importantly, however, the substantive issues and options are strategic. The assessment must help guide a major transition from a suicidal climate trajectory to one that permits lasting wellbeing. In so doing, it must help ensure that the transition is fair, minimally risky, protective of the most vulnerable, and designed to facilitate and reinforce positive steps in all the other areas of pressing concern and opportunity.

2. The Context

2.1. Global Climate Change

Climate change is a global phenomenon driven largely by historical and continuing human activities that result in emission of greenhouse gases (GHGs). Since the beginning of the industrial era, atmospheric concentrations of GHGs have risen to unprecedented levels, almost entirely because of human activities.

Atmospheric carbon dioxide concentrations, which had not exceeded 300 parts per million for 800,000 years, are now over 400 ppm [4]. In 2015, the total concentration of all the main GHGs’ expressed CO₂ equivalents was 445 ppm and still rising. At current levels of GHG concentrations, the likelihood of global warming reaching 1.5 °C above pre-industrial levels is already about 50% (as likely as not). Given current emission rates and trends, the 50% likelihood of global warming reaching 2.0 °C above pre-industrial levels will come in about 16 years [5].

Overall anthropogenic GHG emission rates are still rising. To stabilize climate chemistry, these emissions will have to be reduced to near zero. Failure to stop the build-up of atmospheric GHGs will have increasingly disastrous consequences in coming decades, but needed actions involve immediate efforts by all nations, and transformation of energy systems and associated applications that are deeply entrenched and upon which many individuals, organizations, sectors, and economies are dependent.

2.2. The Paris Agreement

The *Paris Agreement* was negotiated under the *United Nations Framework Convention on Climate Change* (UNFCCC), approved in 2015, and ratified in 2016. Recognizing deepening concerns backed by advancing climate science, the agreement centred on:

“[h]olding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels” [3] (article 2, paragraph 1(a)).

As well, the *Paris Agreement* established that GHG mitigation efforts would “reflect equity and the principle of common but differentiated responsibilities and respective capabilities,” to which the *Paris Agreement* added consideration of “national circumstances” [3] (article 2, paragraph 2). These ideas are linked to the concept of “fair share” elaborated under the UNFCCC [6]. The *Paris Agreement* also stressed that implementation would also be “in the context of sustainable development and efforts to eradicate poverty” [3] (article 2, paragraph 1; article 4, paragraph 1).

2.3. Canada and Climate Change Commitments

The *Paris Agreement* was negotiated in December 2015 by 197 parties. Canada is one of the 179 parties that had ratified the agreement at last count [7]. While Canada has long been a climate laggard [8,9], the current federal government has invested considerable political capital in improving its climate reputation and the Canadian strategic assessment on climate commitment implications represents both an opportunity and a test for the government's resolve. It is therefore reasonable to consider how the strategic assessment would proceed on the assumption that the commitments are to be taken seriously. Because many of the issues involved apply as well to other nations, examination of this case may also provide useful insights for these jurisdictions. However, the Canadian context does have peculiarities.

Canada is a wealthy developed country, overall. While not one of the earliest industrial nations, it has a long history of anthropogenic greenhouse gas (GHG) emissions. Consequently, it has sufficient culpability as well as capacity to merit responsibility for climate leadership. That leadership should have involved early and ambitious GHG mitigation action in keeping with the *Paris Agreement's* requirement for implementation that respects "equity and the principle of common but differentiated responsibilities and respective capabilities" [3] (article 2, paragraph 2). Unfortunately, Canada has so far moved very slowly. In part due to the influence of an entrenched fossil fuel industry that is economically important and has plenty of dependents, Canada consistently failed to meet previous climate commitments. Earlier Canadian governments signed the Kyoto Protocol in 1997, ratified it in 2002, missed targets, and withdrew in 2011. Canada's GHG emissions remain among the highest per capita in the world and are poised to rise further [8,9].

The current federal government, in office since 2015, has been much more visibly committed to climate change mitigation, but has been uneven in application. It signed the *Paris Agreement*, negotiated a difficult federal-provincial-territorial *Pan-Canadian Framework* [10], released a tentative, but reasonably ambitious, *Mid-Century Strategy* [11], and introduced a national carbon pricing law in the face of constitutional challenges by some provinces [12]—all of which surround the new assessment law with its potentially powerful requirements to consider climate commitments. The same government, however, has also failed to raise old national GHG mitigation targets to meet the more ambitious *Paris Agreement* objectives [13,14], has continued to subsidize the fossil fuel industry [15], and has approved and purchased major projects—including the controversial diluted bitumen pipelines and expanded bitumen production—that would add substantially to existing GHG emission levels over lifetimes beyond any justifiable date for decarbonisation of the Canadian economy. Individually and as a package, Canada's current domestic targets and initiatives reflect a level of ambition well short of what is needed to meet its Paris commitments. These inadequacies arise in part because of the difficulties most nations face in pushing a profound long term transition that entails considerable near term disturbance. In Canada, acting responsibly on climate is further complicated by the political dimensions of the overlapping powers and responsibilities of Canadian federal, provincial, territorial, and Indigenous jurisdictions, the influence of powerful sectoral interests, and the politics of immediate advantage [16].

3. The Strategic Assessment of Climate Commitments

As noted above, the Canadian government has not yet announced the mandate, scope, process, or participant roles for its forthcoming strategic assessment on climate commitment implications. We do know, however, that the strategic assessment is needed to develop guidance for project-level application of section 63(e) of the new federal *Impact Assessment Act* (reproduced above). Nearly identical provisions are also included in the new *Canadian Energy Regulator Act* for application to regulatory licensing of energy pipelines, power lines, and certain other energy projects under federal jurisdiction [17] (sections 183(2)(j), 262(2)(f), and 298(3)(f)).

The guidance to be developed by the strategic assessment will be crucial not only for federal decision makers, but also for other Canadian jurisdictions with overlapping responsibilities, project

proponents, affected communities, and other participants in project-level assessments. Most simply, guidance is needed because the requirement to consider a project's potential to "hinder or contribute to" meeting Canada's climate commitments is new. However, uncertainties about the requirement's implications are multiplied by the unfilled gap between the *Paris Agreement* and projects. Canada has not yet established a reasonably comprehensive and well-specified suite of policies and associated tools for meeting its climate commitments.

The strategic assessment consequently faces two challenges. Most obviously, it must provide climate assessment guidance that clarifies expectations for meeting Canada's climate commitments and provides a basis for consistency of application, fairness, effectiveness, efficiency, and credibility. However, because Canada has not yet established an adequate suite of policies and tools for meeting its climate commitments, the strategic assessment must help build the needed policies as well as clarify how they can be applied in project assessments. In the absence of a fully adequate suite of climate policies, the strategic assessment must, at minimum, provide project-level tests and other direction to ensure that project assessment decision making leads to the planning and approval only of projects that clearly contribute to meeting Canada's climate commitments.

The subject is a sensitive one in Canada because of recent and immediate tensions surrounding a series of oil and gas infrastructure project assessments under the old (and for the time being, still operative) assessment law. Most controversial have been assessments of projects to expand pipeline capacity for moving diluted bitumen (dilbit) mostly from Alberta to foreign markets. The pipelines would support important economic interests in the private sector, plus the provincial economy of Alberta continues to rely on and plan for continued expansion of bitumen extraction and needs access to markets. Opponents, however, have noted that the dilbit pipelines would facilitate increases in GHG emissions (which on the whole have not been assessed), further entrench the fossil fuel economy, likely become stranded assets, add to spill risks, compromise Indigenous lands, and promise few long-term benefits for communities on pipeline routes.

In these cases, the existing project assessment and approval processes, which were expressly designed to speed approvals despite the opponents' concerns, lost credibility. The new *Impact Assessment Act* was introduced in part to restore credibility to federal assessments. The cases also raised the profile of climate concerns, which were embraced by the new government. However, in public debates about dilbit pipelines, more immediate worries often received more public and political attention than the climate concerns. Consequently, while the pipeline project controversies enhanced awareness of the clash between the fossil economy and climate obligations, they also exposed persisting media and political inclinations to favour short-term considerations over long-term consequences.

Facing that context, the new strategic assessment needs to be credible in several ways. To the extent feasible, it must be impartial, free from political interference, and transparent. It must be sufficiently expert to help construct as well as interpret the implications of Canadian policies for meeting the *Paris* commitments. It must focus seriously on what is required to contribute to and not hinder meeting Canada's climate obligations, while also respecting the realities of difficult transitions. Finally, it must itself contribute to greater public, as well as political, understanding of climate threats and mitigation obligations, risks, and opportunities so that there is a foundation for informed and farsighted policy making that goes beyond the usual attention to immediate interests.

4. Filling the Gap between Paris and Projects

The *Paris Agreement* commitments are the starting point for any serious and potentially credible effort to determine the extent to which any undertaking will hinder or contribute to Canada meeting its commitments. Logically and practically, the strategic assessment must first determine the broad implications of Canada's international climate commitments. It can then work its way to the consequential implications for Canada generally and the specific implications for judging the extent to which individual undertakings may hinder or contribute to meeting the Paris commitments.

The three initial fundamental questions for the strategic assessment can be phrased as follows:

- what must Canada do to meet its commitments under the *Paris Agreement* (and the UNFCCC)?
- what analyses need to be done to determine to what extent an individual undertakings will contribute to, and not hinder, meeting those commitments? and
- how can the broad commitment implications and more specific climate effects analyses be combined to establish a practical set of tests to ensure climate-responsible decisions on designated projects under federal assessment law?

With answers to these fundamental questions in hand, the strategic assessment can then proceed to guidance for decision making on a variety of other matters, including the following:

- what individual projects and categories of projects should be designated for assessment under the *Impact Assessment Act*?
- what information should be required of proponents, government bodies, and other assessment participants to facilitate the needed analyses and tests? and
- what climate-related priorities should be addressed in the case-specific scoping of individual assessments, in conditions of approval, and in monitoring and enforcement planning?

4.1. What Paris Entails for Canada

Clarifying what Canada must do to meet its commitments under the *Paris Agreement* begins with the core components set out in Section 2.2, above. These are, essentially, to do Canada's fair share to keep overall global warming "well below 2 °C" relative to preindustrial levels, plus efforts to keep warming below 1.5 °C [3].

While the temperature maxima are somewhat imprecise, they represent a workably quantified temperature stability target for the world. They imply global limits on how many more tonnes of anthropogenic GHGs in CO₂ equivalents can be emitted (also considering effects that enhance or degrade GHG sinks) with minimal risk of crossing the temperature threshold. The equity or "fair share" requirements mean that in the allocation of GHG abatement responsibilities among nations, developed countries face higher expectations, including expectations for assistance to less advantaged countries [18].

The agreement also stresses that implementation must be "in the context of sustainable development and efforts to eradicate poverty" [3] (article 2, paragraph 1 and article 4, paragraph 1). In other words, action on climate change mitigation commitments 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, facilitating lasting livelihoods, enhancing equity in the distribution of opportunities and risks, maintaining biodiversity, and encouraging stewardship of other biophysical foundations for survival and wellbeing. Joint attention to these requirements is a matter of efficiency, effectiveness, and fairness and is likely to deliver multiple benefits in other areas of sustainability enhancement [19] (p.27).

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. They provide important underpinnings for the climate commitments strategic assessment.

4.1.1. 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 needed immediate efforts include initiation of a profound global transformation of energy and economic systems. The goal is the virtual elimination of overall human contributions to atmospheric GHG loadings, globally and in particular jurisdictions. The *Paris Agreement* refers to the goal of achieving "a balance between

anthropogenic emissions by sources and removals by sinks of greenhouse gases” [3] (article 4, paragraph 1). The commonly-used concise term adopted here is “decarbonisation.”

One approach to translating the Paris temperature goals into a global maximum for further emissions uses carbon budgets. The planet’s 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 global threshold. Researchers have used a carbon budget approach to translate the *Paris* temperature goal into a global maximum of further GHG emissions. They have found that the remaining global budget for allocation among countries is much smaller than is currently acknowledged in policy making and in the *Paris Agreement* itself. Recent calculations suggest the budget would be exhausted within eight to 19 years at the current emissions rate ([20] (Table 2.2) [21,22]). The higher initial calculations resulted from two factors: Use of numbers based on 2 °C warming, rather re-calculations for the Paris target of well below 2 °C and efforts for 1.5 °C, and heavy reliance on large-scale negative emission technologies in future scenarios. More recent work questions the incorporation of large scale, risky, and uncertain future negative emissions technologies as factors in setting GHG mitigation targets or as a rationale for abatement delay [23].

4.1.2. Canada’s Fair Share

One set of important *Paris Agreement* 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*” [3] (article 4, paragraph 1, emphasis added). The “second half of this century” target is global and more pressing if the desired *Paris Agreement* maximum of 1.5 °C warming is pursued [19]. Meeting this target “on the basis for equity” involves different national “fair share” responsibilities, including earlier decarbonisation targets for the more advantaged nations.

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, including application of the *Paris* principle of common, but differentiated responsibilities [3] (article 2).

The established international position on the GHG mitigation responsibilities of the signatory states is that how these responsibilities will differ depends on choice among various possible bases for 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 differential treatment of developing countries, is established as the equitable and appropriate basis on which the international response to climate change must be structured [24] (p. 81). Unfortunately, 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. Many signatory countries, including Canada, have yet to begin serious efforts to determine their “fair share” allocations or act on them.

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. 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 Canada's fossil 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 allocation to all countries a share of remaining emissions matching their historic share (an approach referred to as "grandfathering").

Like those of most other developed countries, Canada's currently proposed emissions reduction targets would maintain the country's 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, Canada's 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 and entrench GHG-generating practices more deeply. This too is inconsistent with the *Paris Agreement* [3] (article 4, paragraph 1), which requires steps to ensure global peaking of GHG emissions "as soon as possible, recognizing that peaking will take longer for developing country Parties."

Determining Canada's fair share allocation of the remaining global carbon budget involves choices among various options reflecting the range of the more and less demanding equity considerations outlined above. 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 under the weakest option for calculating fair share allocation, Canada would exhaust its share of the global carbon budget within a decade if Canadian GHG emissions continue at current levels [20] (parts 2.2 and 2.3).

In other words, Canada can no longer meet its fair share *Paris Agreement* commitments through domestic actions alone and will need to provide climate change mitigation and adaptation assistance to less advantaged countries to complete its fair share contributions. From a fair share perspective consistent with the requirements of the *Paris Agreement*, every tonne of GHG emitted today and tomorrow adds to Canada's climate indebtedness to other nations. Moreover, any further delays to rapid decarbonization will make an equitable climate outcome more difficult to achieve.

4.1.3. Implications for the Climate Commitments Strategic Assessment

The main overall *Paris Agreement* implications for Canada are that domestic climate policy making should adopt the earliest possible achievement date as Canada's working deadline for decarbonisation, and consistently seek opportunities to do better as technologies and other tools advance. That conclusion is entailed by the *Paris Agreement's* provisions for equitable (fair share) allocation of responsibilities for keeping global warming within the "well below 2 °C" and efforts for the 1.5 °C maxima. It is also consistent with the *Paris Agreement* expectations that each Party's national contributions to climate change mitigation will "reflect its highest possible ambition" [3] (article 4, paragraph 3).

For the strategic assessment, the earliest possible achievement date establishes the foundation for the next steps in filling the policy gap between the *Paris Agreement* commitments and implications for project assessments. Broadly, those steps involve two key components:

- defining Canada's working decarbonization deadline and the pathways and other means of moving towards it; and
- establishing analytical tools and tests for determining the extent to which individual projects will hinder or contribute to meeting or beating the deadline.

4.2. Defining Canada's Working Decarbonization Deadline and How to Meet It

The strategic assessment will not have the luxury of highly advanced elaboration and deliberative agreement on the earliest possible Canadian decarbonisation dates and most feasible pathways.

Research on these matters is at an early stage. Existing exploratory studies identify different routes to and timelines for decarbonisation [25–31]. So far, the earliest technologically feasible date identified in any of the studies for decarbonization by Canada is 2050 [26]. 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 the country's fair share under the *Paris Agreement*.

Considering the gap between what seems practical and what would be equitable, the strategic assessment could take 2050 (or an earlier date) as the working deadline for decarbonization by Canada and accompanied by always attempting to do better, and providing climate assistance to less advantaged nations.

An important challenge for the strategic assessment is that decarbonization by 2050, and meeting the *Paris Agreement* commitments more generally, is more ambitious than current Canadian climate policy targets and practices. The positive steps that have been taken—including negotiation of the *Pan-Canadian Framework on Clean Growth and Climate Change* [10] and introduction of a national carbon pricing law—would deliver important accomplishments if fully implemented. However, as noted above, ambitions of existing applied policies and practices, such as fossil fuel industry subsidies and approvals for long-lasting new fossil fuel infrastructure, compromise what is needed to meet Canada's *Paris Agreement* commitments. Existing regulations would allow emissions from oil extraction to remain in excess of 200 Mt CO₂eq for the next several decades [32] (p. 3). For the longer term, the *Mid-Century Long-Term Low-Greenhouse Gas Development Strategy* represents a promising step towards the needed long range planning [11], but it 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 Canada's fair share.

Canada's current policy package needs substantial upgrading to align the policy objectives with the Paris commitments. It also needs extension and clarification for more specific application in all climate-significant decision making, including decision making on projects and strategic undertakings subject to assessment law. While the strategic assessment cannot be expected to identify and respond to all of the needs for Canadian climate policy advancement, it will not be able to provide guidance on project alignment with the Paris commitments unless it establishes and applies a defensible working framework of core Canadian climate policy that is consistent with the *Paris Agreement* commitments and specific enough to guide decision making at the project level.

Many of the needs for upgrading of Canadian climate policy should be addressed through policy development work serving broader purposes than guidance development for project assessment. At least some of that broader policy development may in fact happen through processes that overlap with the strategic assessment. If so, the role of the strategic assessment will be to review that work and specify its implications for and application to project assessments. However, the climate commitments strategic assessment faces a tight timeline and cannot wait for more deliberative policy development. Accordingly, for the purposes of illustrating what is required of the strategic assessment, the following discussion will assume that all the key requirements for closing the gap between the Paris commitments and guidance for climate-related project assessment decision making will be addressed in the strategic assessment. If the strategic assessment is established with sufficient expertise and suitably rigorous, open, and credible processes, it could be a suitable vehicle for such policy development.

4.2.1. Four Key Climate Policy Framework Areas for the Strategic Assessment

The strategic assessment's basic needs centre on policy initiatives and adjustments that raise ambitions to the *Paris Agreement* levels by establishing targets, frameworks, and applied tools designed to ensure Canada meets or beats the 2050 working deadline. More specific policy elaboration is needed to build the foundation for effective and coordinated use of the key planning, budgeting, motivating, guiding, and accounting tools for driving and guiding a responsible and just transition

to climate responsibility. Four overlapping areas are central to the work of the climate commitments strategic assessment:

Pathways: One feasible way to judge the extent to which an individual project will hinder or contribute to meeting Canada's commitments would involve determining whether the project and its effects fit on a viable pathway to decarbonization by or before 2050. For that to be possible, the strategic assessment would need to delineate these viable pathways to decarbonization, building on existing efforts [25–31] and any further efforts that could be completed within the strategic assessment's timeline. Climate change mitigation pathway modeling may be largely focused on climate-significant sectors, but can also include regional approaches. Initial pathways' delineation and associated guidance would likely be rough and would in any event need to be reviewed and revised over time, with independent expertise and credible processes.

Pathway delineation should begin with the desired decarbonisation deadline (the earliest possible decarbonisation deadlines and potential deadlines before 2050) and develop scenarios for possible futures related to climate-related transitions as a basis for public discussion of desirable futures to pursue and possible, but undesirable, futures to avoid. It would identify and compare alternative routes to meeting the deadline as an aspect of a broadly desirable future. Throughout, pathway delineation would favour options that deliver effective climate change mitigation along with other positive contributions to overall sustainability.

Carbon budgeting: A second, complementary approach would apply a carbon budgeting system (based on the remaining room for GHG emissions, including sink and reservoir effects, stated as carbon equivalents). As used in the United Kingdom, carbon budgeting is a means of allocating a nation's (or region's, sector's or institution's) remaining emissions budget, to clarify emission reduction expectations and track accomplishments over time [33] (p. iii). 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. Applied at the project level, carbon budgeting could show whether there would be room for a proposed project's GHGs.

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.

While the full suite of climate-related economic and regulatory tools would affect the planning and assessment of new undertakings, the most important ones for the strategic assessment's purposes include those that would allow determination of whether a proposed project (or its alternatives) would be viable if its economic evaluation included the full costs of its GHG emissions. Options include calculating GHG emissions costs using a carbon price sufficient to drive the necessary transition to decarbonisation (recognizing that current carbon pricing is mostly too low and used to drive initial GHG emission reduction rather than evaluate project effects). A different, but potentially complementary, option is calculation of the social cost of a project's properly attributable carbon (GHG) emissions as its fraction of the actual global cost of climate-related damages over time [34]. Also to be included among economic tools are ones focused on identifying and assessing the equity effects of existing and new undertakings and their alternatives, and ensuring an emphasis on just transition imperatives in planning and decision making climate-significant undertakings.

Long range policies: Consistent with pathway delineation and allocation of carbon budgets, the strategic assessment should upgrade and establish for working purposes in assessments, 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 and that may develop proposals for projects subject to assessment under the new law. These policy upgrades too would need regular review and revision.

4.2.2. Specifying Tools, Methods, and Applications for the Four Key Framework Areas

The four key areas for policy initiatives are very broad and would be needed for purposes well beyond project assessments. Even only for project assessment purposes, each framework area would need quite detailed specification of tools, methods, and applications to clarify expectations and use. The core initial goal of the strategic assessment would be to set out defensible working positions and establish clear requirements and processes for continued improvement. However, the development of basic working positions will demand expertise on many difficult matters.

For the four key framework areas, the complex specification needs are illustrated by the following examples:

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 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. 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.

Along with the core climate- and sustainability-based criteria, the four framework areas would also benefit from basic guidance on handling trade-offs. 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. Where climate obligations should not prevail over other sustainability objectives, guidance would be needed for determination of how a specific climate sacrifice would be offset elsewhere. The strategic assessment would also need to provide direction on how to mitigate and avoid climate-related trade-offs to the extent possible, including through identification of preferable alternatives to initially proposed approaches to framework components.

In addition, consistent work in all framework areas will require details on expectations and approaches to climate-related information and standards for evaluations, including best means for determining:

- which GHG emissions are properly attributed to particular undertakings, including attention to lifecycle and lifespan direct, indirect, and cumulative effects;
- how to account for positive and adverse effects on carbon (GHG) sinks and reservoirs, such as soils, peatlands, and forests, with particular attention to lasting anthropogenic damages and permanent enhancements of sinks and reservoirs;
- what achievements qualify as lasting positive effects on anthropogenic GHG sink enhancement;
- legitimate offsets for GHG emissions or sink impairment;
- how to identify and compare the climate implications of alternatives;
- contributions to the major transformations needed to achieve GHG neutrality, including means of ensuring just transition;
- effects on intergenerational equity;
- how to design credible climate policy development processes that mobilize best expertise and encourage broader engagement and learning;

- how best to foster and facilitate 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
- how to extend opportunities for learning and adjusting climate assessment directions and guidance.

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.

Particular details would be needed to clarify best means for:

- applying alternative future scenario methods in building pathways and making other decisions that could have significant adverse effects on meeting climate commitments and/or other key sustainability considerations;
- establishing and using linked pathways to decarbonisation for particular sectors and regions; and
- determining whether and to what extent a particular undertaking or group of undertakings would contribute to or hinder progress along a viable pathway to decarbonization by or before 2050.

Carbon budgeting: Determining the overall carbon (GHGs) budget and allocating that budget are the core challenges for carbon budgeting. Specific needs centre on the 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), provisions for exchange and adjustment, and means of monitoring and encouraging and enforcing compliance. Fundamental to that work is the establishment of best means to account for GHG emissions and sinks, and effects on them, including consistent means of:

- recognizing the differences among greenhouse gases, as well as black carbon, including their different severity and timescales of impacts, and their implications for decision making;
- attributing emissions and sink effects to particular sectors, activities, and undertakings, recognizing different categories of potentially attributable emissions, including direct and indirect, upstream and downstream, imbedded, lifecycle and lifespan emissions, and sink effects;
- evaluating and determining how to distribute attribution of the cumulative effects of multiple undertakings on sinks, emissions, and entrenchment dependencies;
- determining how and when to attribute to a domestic undertaking consequential (e.g., upstream and downstream) emissions that result from or are predicated on that undertaking, but occur outside Canada;
- recognizing and valuing GHG reservoirs and sinks (e.g., unmanaged forests and peatlands), evaluating and attributing effects of land disturbances, and determining what credit should be assigned to the protection and enhancement of existing sinks and reservoirs; and
- evaluating the legitimacy of proposed offsets.

Economic and regulatory tools: The strategic assessment would need an overview of all climate-related economic and regulatory tools and their likely implications for project assessments. However, the most important needs for specification would centre on potential applications of analyses of project viability recognizing carbon pricing and/or the social cost of carbon (in both cases incorporating all GHG, not just carbon) along with attention to other economic considerations. Such specifications would set out core guidance and methodological details on how to establish and use the most promising tools for illuminating the economic implications of climate-important undertakings. Particular examples include best means of addressing the following needs:

- determining what cases require carbon pricing and/or calculation of the social cost of carbon in evaluations of the economic viability of a proposed project or other undertaking;
- establishing a base carbon price and a schedule for incremental increases consistent with what is needed to meet or beat a 2050 decarbonization deadline;
- establishing 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;
- evaluating entrenchment effects, where an undertaking does or would hinder meeting climate commitments by increasing or lengthening dependencies on GHG-emitting activities or systems;
- evaluating emissions beyond the working deadline for decarbonization and how to calculate the costs of stranded assets;
- identifying and assessing both intra- and inter-generational equity effects of existing and new undertakings and their alternatives, and ensuring emphasis on just transition imperatives in planning and decision making climate-significant undertakings; and
- identifying and applying effective tools to strengthen financial and legal motivations (e.g., financial guaranties) to increase the likelihood that commitments to and requirements for near term and future GHG reductions and offsets will be met;

Long range policies: Functioning roughly as the roof of the framework, long range policy development should connect and cover the pathways, budgeting, mobilization of economic and regulatory tools, and other key components and initiatives. The long-range policies would need to be flexible and adjustable. However, they should also be sufficiently clear and firm to provide reliable grounds for investors and others to plan ahead in the desired direction. For the strategic assessment, the long-range policies complement the pathways in providing a depiction of the Paris-compliant trajectory to which assessed projects would need to contribute. The relevant specifics for long range policy development include those identified above. Further needs would depend on the particulars of the policies, but would include details on how to determine the extent to which current and new undertakings were consistent with the long-range intentions.

Taken together, the considerations above point to a daunting list of basic needs for framework elaboration to provide a solid basis for guidance from the strategic assessment. However, these regulatory and policy steps are needed to fill the gap between the *Paris Agreement* and assessments of particular undertakings. If the government moves quickly to address at least some of the many gap-filling requirements listed above, the work of the climate commitments strategic assessment will be much easier. If not, these matters will be left for at least initial resolution by the strategic assessment.

Inevitably, there will be practical limits to how much the strategic assessment can accomplish. Only a modest level of possible detail on these matters is feasible within the time likely available for the strategic assessment if its guidance for project assessments is to be ready for application when the new law comes into force. Consequently, it will be important to focus on the most crucial needed specifics. Among the most important specifics will be those that inform interpretation and application of the core set of tests for determining the extent of projects' contributions to, or potential to hinder, meeting Canada's climate commitments.

4.3. Establishing a Practical Set of Climate-Centred Tests for Application to Designated Projects under Federal Assessment Law

The new federal *Impact Assessment Act's* sustainability-based design and mandatory attention to climate change commitments provide 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 guidance for application and compliance.

Preparing that guidance is logically the main task for the climate commitments' strategic assessment. For assessment applications, the central guidance need is for a clear and explicit set

of climate-centred tests. While the tests are 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 that the strategic assessment should clarify and specify for immediate guidance 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 the tests need some elaboration for practical application. Many specifics are open to debate and even with best efforts, the strategic assessment's initial versions are likely to be primitive. However, even primitive guidance covering all the tests would be a suitable beginning. 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.

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.

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 the 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 the 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 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 carbon/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 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 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 an open and meaningfully participative strategic assessment and associated policy making 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, not just those that would be subject to legislated assessment requirements.

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

4.4. Additional Guidance Needed from the Strategic Assessment

The Box 1 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 under the new Act, the strategic assessment will have to provide guidance on how to integrate use of the climate tests and climate policy framework components with other requirements of the *Paris Agreement* and the *Impact Assessment Act* in project-level assessments.

Among the priorities for the strategic assessment's attention are the following topics for specified requirements and guidance for project assessments. They are organized here in categories based on the usual major components of assessment law and process application.

4.4.1. Guidance on Climate-Related Undertakings to Be Subject to Assessment Requirements

The climate commitments' strategic assessment is expected to focus on guidance for project assessments, which are the main focus of the new *Impact Assessment Act*. In addition to guidance for individual project assessments, the strategic assessment could and should provide recommendations on the use of climate-related criteria in determining what categories of projects ought to be subject to assessment requirements.

The strategic assessment's guidance should ensure that the Project List, which identifies and delineates categories of projects to which the law-based assessment requirements apply [3] (section 109(b)), covers all projects that could have important consequences for meeting Canadian climate change mitigation commitments, including incompatibility with the decarbonisation agenda. The core climate criterion for inclusion on the Project List, and used in individual project designations [1] (section 9), would be potential for hindering and not contributing to meeting Canada's climate commitments, as indicated by potential for:

- not passing one or more of the Box 1 tests;
- having annual and cumulative attributable lifespan and lifecycle (direct and indirect) GHG emissions and/or sink impairments over a certain threshold (which would go down over time as the deadline for decarbonization nears);
- causing or facilitating GHG emissions and/or sink impairments that extend beyond the deadline for GHG neutrality;

- further entrenching fossil fuel dependency or hindering needed transformations in climate-important sectors; and/or
- contributing to cumulatively significant GHG emissions or sink impairments that would make specific mitigation commitments more difficult to meet.

Similar criteria could also be applied to subsequent strategic assessments. The *Impact Assessment Act* introduces provisions for strategic assessments, including strategic-level regional assessments that would address national and regional issues relevant to project planning and assessment. The climate considerations above should be included in criteria used to identify strategic and regional undertakings worthy of assessment under the new law.

4.4.2. Guidance on Climate-Related Aspects through the Steps of Project Assessments

As is common in assessment processes, the *Impact Assessment Act* provides for initial project planning and information provision, evaluations and decision making, and, for approved projects, follow-up effects and compliance monitoring. As well, it provides for public information and participation in assessment proceedings. Climate-related guidance from the strategic assessment is required for these components. The following discussion provides illustrative examples of the main areas of needed guidance.

Information requirements: The assessment process under the new law begins with a planning phase [1] (sections 10–15) 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:

GHG emissions and sink effects that are properly attributed to the project and alternatives, including attention to lifecycle and lifespan direct, indirect, and cumulative effects;

- incorporation of climate commitments' considerations in identifying reasonable alternatives, including a null option, to examine 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;
- potential effects of climate change and climate significant undertakings on Indigenous rights and interests;
- how to identify and compare the climate implications of alternatives;
- information needed for determining whether the proposed project and alternatives would pass the Box 1 tests and hinder or contribute to the major transformations needed to achieve GHG neutrality; and
- information on related sustainability considerations, including effects on ensuring just transition and intergenerational equity.

Evaluations and decision making: Evaluations of various kinds will be required for decision making and will need to be provided and/or reviewed by proponents, government authorities, and public participants as well as decision makers. For these evaluations and associated decisions, guidance from the strategic assessment should cover means of and standards for:

- comparative evaluation of 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;
- how to apply each of the Box 1 tests (e.g., how to determine a project's consistency with viable pathways towards GHG neutrality, compatibility with a defensibly allocated carbon budget, and viability with application of an adequate carbon price and social cost calculation);
- combining findings from all the climate commitments tests in overall project evaluations;
- integrating climate mitigation and other sustainability objectives in project evaluation and decision making (e.g., through integration of climate-centred criteria in a more comprehensive

set of sustainability-based criteria for application throughout the assessment process from initial identification of project alternatives to determination of approval conditions and monitoring priorities);

- 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, and supported by explicit public justification and, where unavoidable, mitigated and offset to the extent possible in suitable conditions of approval; 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).

Follow-up: Strategic guidance will be needed for climate-related aspects of establishing plans and requirements, and assigning responsibilities for monitoring, enforcement, and determining needed adjustments during project implementation. Common follow-up concerns (e.g., ensuring adequate reliable information for comparing predicted and actual effects) are likely to require special approaches for predicted climate effects (emissions and sink impairments or enhancements). Needed guidance for climate-specific monitoring will involve the checking on actual versus predicted results under the Box 1 tests (e.g., determining actual adherence to the relevant pathways).

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. In Canada, the most important assessments typically also involve multiple jurisdictions and do better when means are found to foster and facilitate interjurisdictional collaboration.

To strengthen assessment process implementation for climate purposes, the strategic assessment will need to deliver recommendations and propose guidance that builds the capacities of assessments, and assessment participants and observers, to look well ahead—to ensure a more positive legacy for future generations. That will likely entail an emphasis on:

- how best to focus both expertise and broad engagement on what is required to meet Canada's climate commitments;
- why as well as how to ensure projects contribute to meeting the commitments; and
- means of encouraging interjurisdictional collaboration, not only through joint assessments of individual climate-related undertakings, but also as co-proponents of joint climate-related strategic undertakings and joint monitoring.

5. The Process for the Climate Commitments' Strategic Assessment

The climate commitments' strategic assessment itself needs a process suited to its task. Four process design considerations are especially important. They involve the substantive complexity and political delicacy of the issues involved; the disastrous, but mostly distant, nature of the effects to be mitigated; the size of the gap to be filled between the Paris commitments and the assessment of individual projects; and the limited time available to prepare adequate initial guidance for projects when the new *Impact Assessment Act* comes into effect.

Together, these considerations suggest that the strategic assessment's process—broadly conceived to include its mandate, appointees, authority, and structure as well as its procedures for engaging others—must be characterized by independence, impartiality, openness, and rigour.

The assessment must focus on the core matter of how to meet the legislated requirement to consider the extent to which particular undertakings will hinder or contribute to the country's climate commitments. That entails an emphasis on expertise and open, well-tested analysis of what is needed. An expertise-centred approach would differ from a stakeholder-centred process. While expertise subject to open presentation and public review could be expected to focus on what is actually needed to meet the climate commitments, reliance on presentations of current stakeholder preferences favours

compromise-seeking in the absence of future generations who have the most at stake and at the cost of serious efforts to delineate and meet the climate commitments.

A special challenge for the climate commitments' strategic assessment will be to recognize the overlapping multi-jurisdictional assignment of responsibility and authority for action on climate imperatives in Canada. In addition to the federal government, the jurisdictions include Indigenous as well as provincial and territorial authorities, plus many active municipalities. Especially with regard for the interests of future generations, collaboration with and learning from Indigenous legal and decision-making traditions may be especially valuable.

Along with the emphasis on expertise and meeting the commitments, the strategic assessment process must facilitate meaningful public engagement and learning, deliver accessible information of a high standard, and aim to serve the long term public interest. These are highly compatible objectives, and while accomplishing all of them in one process may require modest innovation, good models abound. For example, a highly successful approach to combining expert insights with stakeholder engagement was illustrated in the strategic assessment of aquaculture regulatory options in the Canadian province of Nova Scotia, which set up both stakeholder and expert advisory bodies to inform the assessment [35].

Elaborating the climate tests and the further regulatory and policy guidance involves a host of technical, analytical, and political complexities. Addressing them credibly and quickly may be the greatest challenge. As suggested above, the best solution may be to establish the climate commitments' strategic assessment as a staged exercise, with a first round aiming to provide reasonable comprehensive, but basic initial, working guidance, to be followed by one or more rounds of more detailed work, informed by further deliberations and early experience with applications.

6. Conclusions

Whatever the Canadian climate commitments' strategic assessment may deliver as guidance for project assessments under the new *Impact Assessment Act*, the *Paris Agreement* commitments stand. Once the new law 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.

At a minimum, the strategic assessment should be able to outline basic initial working policy direction for climate-related evaluations, decisions, and rationales. 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 suite of complementary tests set out in Box 1, above, would be a good start.

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 Canada's *Paris Agreement* commitments. 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 in Canada.

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