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Introduction

With the successful conclusion of the UN climate negotiations in Paris in December, 2015, and its entry into force on November 4, 2016, most UN member states have committed to making all reasonable efforts to reduce and eliminate GHG emissions and to fully decarbonize within the next few decades.[1] Impact assessment (IA) is a critical tool for meeting these commitments for a number of reasons.[2] IA has become a key decision-making tool for proposed new activities in many countries, and often provides the main public forum for dialogue seeking common ground among proponents, government, and the public on whether and under what conditions to approve proposed projects. Even though its potential as a decision making tool has yet to be fully realized, it offers perhaps the best hope of ensuring that proposed new activities are consistent with long-term biophysical, social and economic aspirations and commitments generally and those related to decarbonization specifically.[3]

Integrating climate change into IA requires consideration of both mitigation and adaptation, as well as any adverse impacts not prevented through effective mitigation and adaptation efforts (sometimes referred to as loss and damage, or impacts and vulnerability to climate change). While these areas are connected, each brings its unique challenges. The focus here is on the mitigation element (which is defined to include GHG emissions as well as impacts on natural sinks such as forests, soils, grasslands and oceans). The focus is on the consideration of the GHG emission and sinks impacts of a proposed project at five critical stages of IA: triggering, information gathering, analysis, the project decision, and post-approval follow-up.[4]

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

[2] There are a variety of terms in common use to describe assessment processes, including environmental assessment, environmental impact assessment, and impact assessment. The term Impact Assessment is used here as it is the most inclusive of the terms in common use.

[3] Robert Gibson, Meinhard Doelle, A John Sinclair, "Fulfilling the Promise: Basic Components of Next Generation Environmental Assessment" (2015) 29 J. Env. L. & Prac. 252.

[4] The term "project" is used throughout, as this is the term used in the current assessment process in Canada. Other processes use terms such as "undertaking" and "activities". These terms are defined differently in assessment processes throughout the world. Unless otherwise noted, "project" is used as a generic term to refer to a proposed initiative that is subject to an assessment process.

With respect to climate change mitigation and the decarbonization of societies around the world, the stakes are high. Many countries are in the process of making decisions, for example, about major energy, transportation and building infrastructure that is expected to serve them for decades to come. The wrong decisions on proposed infrastructure projects can lead to emissions being locked in for many decades, or alternatively to stranded assets in the billions of dollars for project proponents, and difficulties for individuals, communities and economies that become dependent on these activities. Furthermore, major changes in direction after projects are approved risk exposing countries that have entered into investor protection agreements to challenges by foreign investors affected by post-approval policy decisions that affect the viability of approved projects.[5]

Climate change is unlike other adverse environmental impacts traditionally assessed, and a challenge to incorporate into traditional IA methodologies and processes. This is due in part to three key characteristics:

i. the effects of releasing GHG emissions are felt globally, with regional variations in the nature and scale of the effects,
ii. the effects are delayed, and
iii. the emissions and effects on sinks are cumulative, with the result that a given effect cannot be traced back to a specific project.

The resulting dilemma is that the climate impacts of proposed projects are distributed globally and over time, including to future generations, while the benefits of projects tend to be more local and immediate. It is perhaps understandable that IA practitioners and project decision makers have in the past, preferred to ignore climate change altogether, or have tended to summarily dismiss the climate change effects of individual projects as insignificant. This approach, however, has contributed to the neglect of climate change, and the resulting ever-growing urgency of full decarbonization.

Canada is among the jurisdictions seeking to improve the role of IA in climate mitigation efforts. An early signal of the recognition in Canada of the importance of IA dealing effectively with climate change was the Canadian government's decision in early 2016 to implement interim requirements for the consideration of GHG emissions in IA, while more specific law and policy direction were being developed as part of the reform of the federal assessment process. The Impact Assessment Act (IAA), introduced following a two year federal IA reform process, includes a requirement to consider whether proposed projects "contribute to or hinder efforts to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change".[6] An

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[5] See, for example, *Clayton and Bilcon of Delaware Inc v Government of Canada* (2008), PCA Case No. 2009-04, 17 March 2015, and *Newfoundland and Labrador v AbitibiBowater Inc*, 2012 SCC 67, [2012] 3 SCR 443. While they don't deal directly with a change in regulatory condition post EA approval, they both serve to illustrate the risk.

[6] The IAA has not been passed by the Senate, so its future at the time of writing is still uncertain. See Part 1 of Bill C-69, *An Act to enact the Impact Assessment Act and the Canadian Energy Regulator Act, to amend the Navigation Protection Act and to make consequential amendments to other Acts,* 1st Sess, 42nd Parl, 2018, cls 22(1), 63. The same requirement for considering potential for hindering or

intention to carry out a strategic assessment to consider how to more effectively deal with climate change in IA has since been announced.[7] In the meantime, the inadequacies of current approaches have been highlighted repeatedly, including through ongoing battles over various pipeline proposals for transporting bitumen from the Alberta oilsands to export markets.[8]

Initial recognition of the need to consider how to integrate climate change into IA goes back two decades. In Canada, climate change was considered in some project assessments in the 1990s.[9] In 2003, the Canadian Environmental Assessment Agency initiated a multi-jurisdictional process to develop a basic guide on the consideration of climate change in IA (CEA Agency, 2003).[10] The guide has since been endorsed by a number of jurisdictions, but its use has not been widespread or effective. More recently, some provinces, particularly British Columbia, Ontario, Quebec and Nova Scotia, have initiated internal efforts to develop their own guidance on climate change in IA. These various efforts to more effectively integrate climate change into IA are very much in their infancy, but they provide an opportunity to fix a major shortcoming of IA in Canada.[11]

Of course, Canada is not alone in its struggle to integrate climate change into IA. There have been efforts in many jurisdictions around the world, with evidence of significant activity in the form of individual project assessments that have considered climate mitigation, court cases over the failure to adequately consider climate mitigation, and literature on these efforts in the United States, the EU, Australia and New Zealand.[12]

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contributing to meeting commitments is now also included in this *Act* [cls 183(2)(j), 262 (2)(f) and 298(3)(f)] as passed by the House of Commons on 20 June 2018. The provisions of the latter Act would apply to regulatory decision making on energy projects subject to federal regulatory authority.

[7] Government of Canada, 'Discussion Paper: Developing a Strategic Assessment of Climate Change' (2018) Government of Canada, <https://www.strategicassessmentclimatechange.ca/5637/documents/11224>.

[8] *Tsleil-Waututh Nation v Canada((AG)*, 2018 FCA 153; 295 ACWS (3d) 775.

[9] Canadian Environmental Assessment Agency et al, 'The Joint Public Review Panel Report: Sable Gas Projects' (1997), <http://publications.gc.ca/collections/Collection/NE23-91-1997E.pdf>.

[10] The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment, 'Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners' (2003), < http://publications.gc.ca/collections/collection_2012/acee-ceaa/En106-50-2003-eng.pdf> .

[11] Émilie Godbout-Beaulieu, 'Climate Change in Canadian Environmental Assessment Legislation: Review and Recommendations for a Further Integration' (LLM thesis, Dalhousie University 2018) discusses many provincial efforts including Quebec's *Regulation respecting environmental impact assessment and review,* CQLR c Q-2, r 23, s 2; Nova Scotia's *Environmental Assessment Regulations,* NS Reg 26/95, s2(1)(1) which require an EA on projects that are generally known to have an impact on climate change; Manitoba's definition of climate change within their EA legislation, *The Environment Act,* CCSM cE125 s 1(1).

[12] Jessica Wentz, Grant Glovin and Adrian Ang, *Survey of Climate Change Considerations in Federal Environmental Impact Statements, 2012-2014* (Sabin Center for Climate Change Law, Columbia Law School 2016); Sabin Centre for Climate Change Law, 'Non-US Litigation Cases', (2018) <http://climatecasechart.com/non-us-climate-change-litigation/>; Ministry of the Environment, *Climate Change Effects and Impact Assessments: A Guidance Manual for Local Government in New Zealand* (2nd ed, Ministry of Environment 2008), < https://web.law.columbia.edu/sites/default/files/microsites/climate-change/new_zealand.pdf>.

Many other jurisdictions have gained valuable experience with climate adaptation, but experience with climate mitigation in many jurisdictions has been limited.[13]

1. Climate Change and IA Triggers

IA processes in jurisdictions around the world use a variety of approaches to determine which types of projects require an assessment. Some include all projects unless they are specifically excluded.[14] Others only require an assessment of projects that are specifically identified, usually through a project list.[15] Others leave the decision whether to require an assessment to the discretion of either an administrator of the process or an elected official. Many use a project list in combination with some form of discretion. Regardless of the approach, the challenge from a climate mitigation perspective is to determine whether projects should be assessed because of their potential implications for efforts to decarbonize.

From a climate mitigation perspective, triggering should be designed to ensure that all proposed projects not likely to assist with full decarbonization are assessed. Arbitrary annual GHG emission thresholds alone do not serve this purpose effectively, as they ignore the duration of the activity and the alternatives its approval displaces. Life-cycle emission thresholds alone are similarly ineffective as they tend to ignore the distribution of the emissions over time, indirect emissions, cumulative impacts, and the resulting effect on decarbonization efforts. Some projects with significant short term GHG emissions may be quite compatible with a transition to GHG neutrality. Other projects, even though the direct GHG emissions are small, may nevertheless put jurisdictions on a track that is incompatible with decarbonization. This is not to suggest that annual and lifecycle thresholds cannot be used, but they are a crude tool that risks missing many important projects.[16]

The goal of ensuring that activities with the potential to hinder the decarbonization of affected jurisdictions are assessed can only be met through the use of a combination of tools. First, from a project IA perspective, a project list could be developed in each of the key sectors involved in the transition to GHG emission neutrality, including electricity, resource extraction, transportation, manufacturing, forestry, and agriculture. For each of these sectors, projects that warrant an assessment in light of their potential to hinder the

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[13] For a summary of case studies from around the world dealing mostly with adaptation, see Netherlands Commission for Environmental Assessment, ed, *Environmental Assessment for Climate Smart Decision Making: Good Practice Cases* (Netherlands Commission for Environmental Assessment 2017), <http://api.commissiemer.nl/docs/mer/diversen/2017environmental-assessment-for-climate-smart-decision-making_good-practice-cases.pdf>.

[14] *Canadian Environmental Assessment Act*, SC 1992, c 37, ss 2, 5.

[15] *Canadian Environmental Assessment Act*, SC 2012, c 19, s 52.

[16] See Robert B Gibson et al, *From Paris to Projects: Clarifying the Implications of Canada's Climate Change Mitigation Commitments for the Planning and Assessment of Projects and Strategic Undertakings – Full Report* (Metcalf Charitable Foundation 2018) at 168-169, < https://uwaterloo.ca/paris-to-projects/publications-0/reports-journal-papers-and-book-chapters> [The Metcalf Report] for a full list of factors that could be considered in determining whether the GHG emission implications of a proposed project warrant triggering the assessment process.

transition could be listed. The lists could be developed with a reverse onus approach, so that all activities in identified climate risk categories get assessed unless they are demonstrated to be consistent with the transition without the need for an IA.

Strategic impact assessments (SIAs) of the key emitting sectors can serve to offer more specific guidance to prospective proponents to encourage innovation in project selection and design to help with this transition rather than propose projects that will hinder it. With appropriate policy signals in the key sectors, project proponents will know that projects that contribute to decarbonization will be welcome. Depending on the outcome of the SIAs, they can also serve to shorten the list of activities to be assessed at the project level. SIAs should therefore be carried out in each sector identified. In some cases, where conditions within the sector warrant, they can be carried out at a national level. In other cases, a regional approach may be required in light of different regional circumstances.

Any of these approaches to triggering would be enhanced by a credibly and transparently developed (and regularly updated) national climate change mitigation policy and an implementation schedule with delineated pathways. The pathways implications could then guide sectoral or regional allocations, and implications for particular categories of projects. This, in turn, would make identification of whether projects are on or off the decarbonization path more feasible. In the absence of such a policy, or set of policies, IA should apply to all projects that on their face may not be compatible with achieving the necessary reductions overall, or not compatible with full decarbonization well before 2050. That approach would add pressures on the relevant authorities to develop the needed overall plan.

Ultimately, the key will be to develop clear criteria for when the GHG emissions associated with a proposed project warrant triggering an assessment. The overall goal should be clearly set out, to assess projects that on their face are not consistent with decarbonization. The criteria can be expected to include annual and lifetime thresholds for direct GHG emissions and for impact on natural sinks, but with more nuanced and specific criteria for each key sector, such as energy, transportation, buildings, mining and manufacturing. This means that for each sector, careful consideration will have to be given to what projects are expected to contribute to decarbonization and what projects may not. The criteria, once developed, can then be used to implement various approaches to triggering, from project lists to the exercise of discretion.

2. Climate Mitigation Information Needs

As an underlying principle for information gathering, it is important to err on the side of gathering as much information as reasonably possible about the implications of the proposed project for decarbonization efforts. There may be a tendency to work back from the decision-making stage, to first decide how to determine whether the project is acceptable from a climate perspective, and to gather only information that is needed for that determination, however conceived. Given the seriousness and complexity of the issue, and the limited experience, it would be a

mistake to limit the information gathered. Instead, it will be important to gather and publicly share as much information as possible about the potential implications of a proposed project on decarbonization efforts in affected jurisdictions. This will offer the best opportunities for innovative approaches during the course of the assessment, and will maximize learning opportunities after the project decision.

The starting point for any assessment is that it needs to be able to quantify the direct GHG emissions and any sinks impairment of the proposed activity over its life cycle. The more difficult question becomes what else is needed to be able to properly inform the analysis of the climate mitigation implications of the project, and to ultimately inform decision makers on whether the project will contribute to or hinder decarbonization efforts. These questions in turn can help identify the minimum information needs.

Canada's new Impact Assessment Act (IAA) includes an early planning phase. This new step in the assessment process provides an opportunity to consider, in a manner appropriate for the specific proposed project, the information needs of the assessment from a GHG emissions perspective. A good starting point for this planning phase (or the more traditional scoping process in other assessment processes) is to pose key questions to guide decisions about the information needed to understand the GHG emission implications of the project. Among the key questions to consider at this stage are the following:

1. What information is needed to consider whether the proponent has made all reasonable efforts to design the project to contribute to decarbonization?
2. What information is needed to consider whether the project will contribute to or hinder efforts to decarbonize?
3. Is the proponent claiming that direct emissions associated with the project are justified because they will result in emission reductions elsewhere?
4. Is there a risk of the project serving as a catalyst for emissions beyond those included in the life cycle direct emissions analysis?
5. Are there indirect emissions, such as upstream or downstream emissions to consider?
6. Are there jurisdictional boundaries to consider, and if so, do emissions outside the core jurisdictions have to be tracked separately to allow for an assessment of whether emission reduction efforts within the jurisdiction are hindering decarbonization efforts beyond, or whether an increase of emissions within the jurisdiction would contribute to decarbonization efforts in line with the long-term goals of Paris Agreement outside the jurisdiction that would otherwise not materialize.

It would seem that a good starting point for determining information needs would be a rebuttable presumption that the GHG emissions from a proposed activity are additional. In other words, the default conclusion would be that the life cycle direct emissions from a proposed activity are solely attributable to the proposed activity as a negative environmental effect. This would then raise the question whether

there is a case to be made that the proposed activity will offset emissions under likely and reasonable alternative scenarios including the no project alternative. If the proponent intends to make the case that the project will displace emissions elsewhere, additional information would be needed on the GHG emissions associated with alternatives, and with the upstream and downstream GHG emissions associated with the proposed activity. Under this scenario a credible assessment of societal needs, alternative ways of meeting those needs and cumulative effect will be particularly critical. The burden of making the argument would be on the proponent.[17]

A project may be responsible for an increase (or decrease) in indirect (such as upstream or downstream) emissions independent of whether the proponent is claiming that the direct project emissions are warranted on the basis that they avoid emissions elsewhere. These upstream or downstream emissions may occur within the jurisdiction in which the assessment is carried out, or outside. A key question arises as to when the consideration of potential indirect emissions associated with a proposed activity should be included in the assessment. The potential for upstream or downstream GHG emissions of the project to undermine efforts to decarbonize in affected jurisdictions might serve as the ultimate test.

As a starting point, the default presumption should be that these broader implications are included in the information-gathering phase of a project IA so that appropriate determinations can be made at the assessment stage. With experience we may learn that this is not needed for certain types of activities.

IAs should, however, always remain open to intervenors making the case (at the scoping stage and beyond) that a project will have undesired consequences for efforts to decarbonize. This is a key function of IA, and one that distinguishes it from regulatory processes. To achieve this goal, it is important for the information gathering stage to err on the side of requiring more information rather than less. SIAs can sometimes serve to identify situations where this broader exploration of indirect GHG emissions associated with a proposed activity is not warranted.

Finally, it is important to design the information gathering stage of IA with a full range of possible projects in mind. There has been a tendency, at least in Canada, to view the integration of climate change into IA largely through the lens of fossil fuel exploration and infrastructure projects. While this is an important sector, not all of its challenges are applicable to other sectors. The approach, therefore, needs to be designed with all key sectors in mind, including transportation, buildings, mining, manufacturing, agriculture, and forestry.

[17] Of course, this is not to suggest that alternatives should only be considered in these circumstances, but rather to simplify the GHG emissions analysis to the direct emissions of the project, unless the proponent claims that the project will displace or reduce emissions that will occur if the project is not approved.

Ultimately, a key will be to ensure that the scope of the information gathering component of the assessment process adequately informs the analysis needed to ensure the process offers a sound basis for decision making, and offers flexibility to do the analysis needed to answer the basic question posed: Does the project contribute to or hinder efforts to meet climate commitments of affected jurisdictions? In the following section, the analysis component is considered in more detail.

3. Climate Mitigation Analysis

As already explored in a preliminary way in the previous section, the analysis needed will depend, at least to some extent, on the climate mitigation claims made by proponents. They will also depend on national and subnational policies and commitments to reduce emissions. Canada's current policy context is used to illustrate possible approaches to the analysis, but the questions posed and the underlying principles should have resonance more broadly.

To carry out the analysis needed to understand the project's impact on efforts to decarbonize, the following information will have to be available:

- The project's direct life cycle GHG emissions including emissions embedded in the goods and services used for the project along with any emissions due to impairment of sinks
- The project's indirect emissions in Canada
- The project's broader impact on emissions in Canada and beyond
- The emissions of a range of alternatives (including 'best' climate/sustainability options and the no project option) estimated in a manner that make them comparable to the predicted project emissions.

With this information in hand, the analysis can then focus on answering the following questions:

- Is the project consistent with targets set in Canada's current Nationally Determined Contribution (NDC), and its current long-term climate strategy?[18]
- Will the project contribute to or hinder efforts to increase ambition of the current NDC in response to the Global Stocktake every five years under the

[18] Government of Canada, *Canada's Mid-Century Long-Term Low-Greenhouse Gas Development Strategy* (Environment and Climate Change Canada 2016), < https://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf> [Canada's Long-Term Strategy].

Paris Agreement (PA) and in light of the Gap between NDCs and the LTG [spell out] of the PA as it is currently understood?[19]

- Is the project consistent with efforts to achieve enhanced GHG emission reduction targets for 2030 and 2040 that are consistent with Canada's commitments under the PA?[20]
- Would the life cycle project emissions help or hinder efforts to reach full decarbonization before 2050?[21]
- Does the project contribute to or hinder efforts to decarbonize asap?
- Does the project achieve emission reductions in Canada in the short term?
- Does the project achieve emission reductions outside Canada in the short term?
- Does the project contribute to global efforts to decarbonize asap in line with the long-term goals of the Paris Agreement?
- Do affected jurisdictions have a clear GHG emission reduction plan to stay within carbon budgets grounded in (global and/or intergenerational) equity, and does the project fit within those plans?[22]
- Would the project be economically viable if it had to pay the social cost of carbon, estimated based on a discount rate that is appropriate to the climate crisis and the concept of intergenerational equity?[23]
- Would the project be economically viable in the face of carbon pricing at a scale identified in the literature as appropriate (or necessary) to meet the long-term goals of the PA?[24]
- Given Canada's commitments and resulting carbon budgets or emission reduction targets, what implications would project approval have for future development opportunities that are not carbon neutral?[25]

In this section, some of the key issues that arise in carrying out this analysis are briefly highlighted and discussed below. All, of course, warrant more detailed consideration than is possible here.[26]

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[19] See UNFCCC Secretariat, 'Interim NDC Registry' (*All NDCs, 2018*) <http://www4.unfccc.int/ndcregistry/Pages/All.aspx> accessed 22 October 2018 to find that Canada is committed to reduce GHG emissions by 30% below the 2005 levels by 2030 and to reduce black carbon; Paris Agreement (n 1) at art 14.

[20] Paris Agreement (n 1) at art 4, ss 3, 5, 11.

[21] *The Metcalf Report* (n 15) at 54-59.

[22] *The Metcalf Report* (n 15) at 42-53.

[23] David Wright, "Carbonated Fodder: The Social Cost of Carbon in Canadian and US Regulatory Decision-Making" (2017) 29:3 Geo Intl Envtl L Rev 513.

[24] Environment and Climate Change Canada, *Technical Update to Environment and Climate Change Canada's Social Cost of Greenhouse Gas Estimates* (Environment and Climate Change Canada 2016) states the central value should be $40.7 per tonne.

[25] A John Sinclair, Meinhard Doelle, and Peter N Duinker, "Looking Up, Down, and Sideways: Reconceiving Cumulative Effects Assessment as a Mindset" (2017) 62 Environmental Assessment Review 183 at 185.

[26] *The Metcalf Report* (n 15).

If the proponent accepts that the life cycle direct emissions are additional and constitute a negative effect of the project, then the GHG emissions analysis beyond the prediction of the direct emissions associated with the project may be limited to considering whether the project should be held responsible as a catalyst for indirect emissions. If, however, the proponent takes the position that some or all of the project emissions are justified on the basis that they will result in emission reductions elsewhere, then a comprehensive analysis on the overall GHG emissions impact of the proposed project will have to be carried out.

For example, a proponent of a hydro-electric project may accept the GHG emissions from the construction and operation of its project as additional. In this case, no detailed analysis of the impact of the additional hydro power into existing markets may be required. However, the proponent may argue that the GHG emissions from the construction of the dam and the flooding of the reservoir are offset by the coal burning power plants that currently generate the power to be provided by the dam once in operating. In this case, a detailed analysis to determine whether the power from the dam will displace coal, gas, wind, solar, or conservation and efficiency measures in the markets it will enter will have to be carried out to determine to what extent the GHG emissions from the construction and operation of the dam are in fact offset by the displacement of higher emitting sources of electricity.

An important design question is how the information gathered about the proposed activity's GHG emissions is to be used during the assessment phase of the IA. The default assumption should be that GHG emission levels that would hinder the transition to full decarbonization would preclude approval of a proposed project, and the burden should be on the proponent to demonstrate that the proposed activity actually contributes to this transition in spite of its life cycle emissions.

Such justification could be made in a number of ways, such as:

- The proposed activity (or the GHG emissions associated with the activity) has a short life span and is compatible with Canada's obligations to reduce emissions during the short life span of the project.
- The emissions are necessary to build infrastructure to assist with decarbonization efforts.
- The emissions are necessary to replace activities whose emissions are even higher, the proposed activity is the lowest emissions replacement, and it does not lock Canada into unnecessary future emissions.
- The emissions are being offset by investing in credible transformational emissions reductions elsewhere in Canada that would not be achieved without the project induced investment.

A related issue that will require more work is the methodology for determining whether the proposed initiative will have a positive, negative or neutral effect on a jurisdiction's global commitments. So far, I have expressed this determination in terms of Canada's transition to full decarbonization. Of course, there is no clear date

for full decarbonization in the Paris Agreement itself or in Canada's nationally determined contributions (NDCs). What we do have are Canada's emission reduction targets for 2020 and 2030 in combination with the quantified 2030 global emissions gap of upward of 15 Gt and the long-term temperature and GHG neutrality goals in the Paris Agreement.[27] We also have Canada's mid-century strategy submitted under Article 4.19 of the Paris Agreement.[28]

What all this means for Canada is unclear. What we do know is that Canada's 2020 and 2030 targets are a floor, not a ceiling, and that Canada will have to contribute much more. We also know that Canada is among the Parties to the UN climate regime with the highest capacity, the highest per capita emissions, the highest historical emissions and the highest potential to reduce emissions. Under any measure of equity, Canada will be expected to lead the effort to bridge the 2030 emissions gap and the global effort to reach GHG emissions neutrality. All this points to the importance of a sound policy context for GHG emissions, one that recognizes that current provincial, national and international commitments are a significant but inadequate first step. Whatever the approach, it needs to recognize that Canada's commitment under the Paris Agreement includes a progression of ambition from Canada beyond its current NDC towards a fair contribution to the global goals.[29]

In short, more work is needed to turn these basic elements into a standard against which the GHG emission implications of individual projects can be measured. Federal-provincial negotiations can assist with this process, as can SIAs of key sectors that need to lead the transition to GHG emissions neutrality. In the end, there will be some basic options on how to develop the standard against which projects can be measured. One approach would be to develop national, provincial and sectoral carbon budgets (possibly with a domestic trading mechanism for provinces and sectors) for key stages in the transition, such as 2020, 2030, and 2040. Projects would then essentially have to compete against other existing and possible future activities for the limited carbon budget, and should be expected to pay for the privilege of having some of that budget allocated to them.[30]

An alternative or complement to a carbon budget approach would be to use best available information to set prices for a ton of GHG emissions at 5 or ten year intervals for the life of the project that would include the social cost of carbon, and require projects to internalize this cost in demonstrating the project's economic viability. A third option would be to require project proponents to purchase offsets from sources that are transformational in their contribution to full decarbonization (within Canada, on the assumption that the goal is still to achieve GHG emission

[27] Paris Agreement (n 1)
[28] Canada's Long-Term Strategy (n 18).
[29] *The Metcalf Report* (n 15) at 60.
[30] Of course, this approach will unduly favour existing facilities unless the cost of their GHG emissions are gradually internalized to level the playing field, and there are adequate efforts to facilitate the innovation needed for full decarbonization.

neutrality in Canada), either for all emissions, or for any that are deemed to be in excess of the budget allocation granted. Performance standards for sectors, or based on the social need being served would be further alternatives to explore.[31]

4. Decision-making in Light of Climate Mitigation Analysis

The next stage of the IA process is the decision-making process. It is here that the information gathered and the analysis carried out is translated into decisions about whether specific proposed activities are permitted to proceed, and, if so, under what conditions. The focus remains on project IA, as the general assumption is that regional and strategic assessments serve to inform project IAs, and that while certain types of activities might get eliminated by policies and plans adopted on the basis of regional or strategic assessments (which should include early policy decisions not to proceed with categories of projects that are clearly not consistent with Canada's climate goals), it is at the project IA stage that project decisions ultimately are made.

To make a project decision in light of the analysis carried out in accordance with the approach discussed in the previous section, a number of key choices and determinations will have to be made:

- What emissions will be attributed to the proposed project for purposes of the project decision based on a clear and defensible rationale?
- Which alternatives to the project factor into the project decision based on a clear and defensible rationale, and how will decision makers determine whether they are better or worse from a climate mitigation perspective?
- Have all reasonable efforts have been made to avoid negative climate impacts and contribute to decarbonization?
- Does the project help or hinder Canada's climate mitigation efforts in light of its Paris commitments?
- How should any remaining climate impacts be weighed against other adverse impacts, benefits, risks and uncertainties to determine whether the impacts are justified, whether the project makes an overall contribution to sustainability and whether the project is in the public interest?

Of course, these questions can only be adequately addressed at the decision making stage if the information gathering and analysis provides an appropriate basis for their consideration. To be clear, all questions would have to be answered before a project decisions is made. The result would be a range of possible scenarios at the decision making stage of the project IA, resulting in a range of possible conclusions about the proposed project's contribution to Canada's climate mitigation, such as:

- The project does not involve GHG emissions.

[31] Any carbon pricing option would have to equally apply to existing facilities to avoid unduly favouring existing facilities over new projects.

- The project involves GHG emissions that are lower than those of all viable alternatives.
- The project will assist Canada in meeting its climate mitigation commitments and goals without undermining other Nations' efforts.
- The project hinders efforts to meet or exceed Canada's 2020 and 2030 targets.
- The project hinders efforts for Canada to achieve GHG emission neutrality before 2050.
- The project involves GHG emissions that are higher than viable alternatives, but it also involves greater net benefits in other areas.
- The project is/is not economically viable once it has fully internalized the cost of its GHG emissions over the life cycle of the project.

In addition to identifying whether the project is predicted to help or hinder Canada's efforts to mitigate climate change, it will be important to quantify the positive or negative contribution the project is predicted to make, and the risks and uncertainties associated with the predictions made in the IA. Regardless of the ultimate approach adopted, some basic principles for sound decision-making can be identified. They include the following:

- Full transparency about the project's impact on Canada's commitment to work with other Nations towards the long term goal of keeping global temperatures to well below 2 degrees and striving for 1.5 degrees, including:
    - Canada's 2020 commitment under the UNFCCC.
    - Canada's 2030 NDC under the Paris Agreement.
    - Canada's contribution to the global 2030 emission reduction gap of 15 GT.
    - Canada's contribution to full decarbonization in Canada and globally in light of the aspiration to keep temperatures to well below 2 degrees while striving to keep them below 1.5 degrees.
- Clear rules and accountability (for applying the decision making rules) for decisions to approve projects that represent something less than Canada's best efforts to reach its global commitments and make an equitable contribution to the global goals in the Paris Agreement, and opportunity to approve such projects only under very clearly defined and very limited circumstances.
- Decision-making criteria and full transparency about choices to allocate limited carbon budgets to approved projects while preserving the ultimate accountability for making the decision at a political level.
- Decision-making criteria to encourage principled decision making in case of conflict between climate change mitigation goals and other societal values and benefits of proposed activities, and accountability in cases where decisions are demonstrably inconsistent with decision-making principles and criteria.
- Careful and thorough consideration of all viable alternatives to any project that hinders Canada's transition to GHG emission neutrality, and a clear and

demonstrable preference for alternative ways to meet societal needs, with approval only on strict conditions that ensure minimal adverse impact and only as a last resort under clearly defined circumstances.
- Full transparency about the GHG emissions performance of approved projects during the full life cycle of the project.
- Clear rules that hold proponents accountable for any negative GHG emission consequences of approved projects that are beyond those predicted during the course of the IA.
- Conditions for approval that preserve the rights of governments to impose more strict limits on GHG emissions of the project in the future, to require full offsetting, and to hold the proponent liable for the life cycle emissions of the project, with a view to preserving the flexibility for approved projects to contribute to the progression of ambition required under the Paris Agreement, and to prepare for possible investor challenges in case of more stringent future requirements.[32]

5. Post Approval Considerations

For approved projects, the post approval (or follow-up) phase is critical for a number of reasons. It provides an opportunity to learn, particularly with respect to the accuracy of the predictions made about the GHG emissions of the project. This will be important for future assessments, so that prediction errors can be reduced over time. The follow-up phase is also important for compliance and adaptive management purposes. The relevant issues are briefly highlighted here, separated into what needs to be tracked and monitored, and what actions may need to be taken in response to the information gathered during the follow-up phase.

With respect to tracking, the focus from a GHG emission perspective will be on tracking direct emissions as well as any indirect emissions that were considered relevant in approving the project. In addition, it will be important to track compliance with any terms or conditions that relate to GHG emissions, such as mitigation measures, efforts to protect or enhance sinks, and promised offsets.

The response to the information tracked that follow-up programs is critical. It will be important to be as clear as possible about the consequences of non-compliance with terms and conditions as well as the consequence of predictions during the assessment having underestimated emissions from the project or underestimated harm to sinks. A good starting point would be to require proponents to pay the equivalent of the social cost of carbon as compensation for any emissions over what was predicted during the assessment. Furthermore, to the extent possible, the adaptability of the approved project in light of concerns over its GHG emissions or impact on sinks should be clearly identified as part of the information, analysis and

[32] *The Metcalf Report* (n 15).

decision making phases of the process, so that opportunities to adapt to the information gathered during the follow-up stage are clear and are pursued.

Finally, in order to facilitate the growth in ambition of Canada's mitigation effort over time in line with its commitments under the Paris Agreement, the post approval process should include a specific mechanism to tighten the terms and conditions regarding the reduction of GHG emissions and the protection of sinks. This would make it clear to proponents of approved projects that there is no legal right to continue to emit at the rates permitted as part of the original approval, and it would provide a clear mechanism to adjust terms and conditions as Canada increases its ambition under its NDC.

Conclusion

Ultimately, there are many difficult choices that will have to be made at a political level, and for which decision makers will have to be accountable as part of the democratic process. The role of IA is to minimize the need for political choices by seeking mutually supportive solutions. Where difficult choices are unavoidable, assessments must identify these political choices clearly and provide transparency and clarity about the decisions being made and the implications for climate change commitments and for a jurisdiction's contribution to the global effort.

More thought will have to be given to how best to guide those responsible for the process and ultimate project decisions to ensure progress towards climate commitments is facilitated and not hindered. Sound climate policy, rigorous and transparent SIAs and project IAs with clear guidance for decision makers are all critical elements in this regard. Only through a coordinated approach can we hope to redirect innovation towards integrated solutions that meet societal needs for energy, employment, health, education, and general wellbeing, while accelerating our transition to GHG neutrality.