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Impact Assessment, Sustainability, and Climate Change: Lessons from Lower Churchill

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The attainment of sustainability is the overarching objective of impact assessment (IA). Over the years, IA has evolved from being a predominantly biophysical-environment assessment venture to a multicentric undertaking including hundreds of IA modes. IA's proliferation has been attributed to the inadequacy of previously dominant modes (e.g. Environmental Impact Assessment and Social Impact Assessment) to cater to other areas of humanity's concerns or recent phenomena. Climate change is one of such phenomena and the conceptualization of climate change impact assessment has been the response of the IA movement. Drawing lessons from the Lower Churchill project in Newfoundland and Labrador (Canada), this paper argues that a climate change centric IA risks overlooking, triggering or exacerbating other sustainability challenges. This possibility is even more acute in projects misconstrued as sustainable given their low emission characteristic. An integrated approach to IA with sustainability as the organizing principle is proposed as key to preventing climate change from becoming another frontier of unsustainability.

La coopération transnationale en matière d'information fiscale a pour rôle crucial de donner aux administrations fiscales les moyens de percevoir les recettes fiscales dans leur intégralité et en temps voulu, réduisant ainsi le fossé créé par la fraude et l'évasion fiscales à l'échelle internationale. Cependant, l'adéquation des systèmes d'échange d'informations fiscales transnationaux établis pour lutter contre la fraude et l'évasion fiscales internationales a été sévèrement critiquée et une nouvelle vague de progrès en matière de transparence a débuté après la crise économique mondiale de 2008. Dans cette optique, la Turquie a fait de la transparence fiscale transfrontalière une priorité de son programme politique. Cependant, la Turquie a mis en œuvre très lentement les nouveaux accords de coopération fiscale transnationale. En outre, l'approche de la Turquie en matière d'échange d'informations présente d'importantes lacunes. Dans le présent article, nous démontrons les raisons du manque d'urgence du gouvernement turc à rendre ses affaires fiscales transfrontalières plus transparentes. Nous montrons comment la transparence fiscale transfrontalière pourrait être inscrite à l'agenda politique turc. L'article conclut que la mise en œuvre universelle, rapide et cohérente d'une réponse coordonnée à la fraude et à l'évasion fiscales transfrontalières par des efforts de transparence est liée au soutien de l'opinion publique nationale et ne peut donc être obtenue par le gouvernement qu'en tandem avec un mandat populaire.

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Introduction

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Introduction

“An essential component of...commitment to sustainability and climate change management.”¹

“...meet...long-term energy needs by providing clean, renewable energy for future generations.”²

With those lofty statements, Nalcor Energy, Newfoundland and Labrador’s (NL) provincial energy corporation advertised the Muskrat Falls Project, a component of the Lower Churchill Hydroelectric Generation Project (Lower Churchill).³ What is there not to like? On the surface, the project ticks all the boxes of a climate-friendly energy source. To say the least, it carries the magic words “renewable” and “clean.” It would replace NL’s oil-burning Holyrood thermal generating facility. Neighbouring provinces like Nova Scotia and New Brunswick would also benefit from the project by moving away from coal as the primary power source. There is also the prospect of supplying American states like Massachusetts with clean, renewable energy. Not to forget that it would, prospectively, provide direct employment at 15,600 person years, generate about \$1.1 billion annual net financial benefits by 2050, and between \$500 million and \$1 billion would be spent on goods and services from the province.

The Muskrat Falls component, which Nalcor opted to start with, entails an 824 Megawatts (MW) hydroelectric facility, about 1,600 km of transmission lines across the province, a Maritime link (connecting Newfoundland to Cape Breton, Nova Scotia), and, prospectively, an

1. Nalcor Energy, “At a Glance,” online: <nalcorenergy.com/nalcor-operations/lower-churchill-project/at-a-glance/> [perma.cc/W5MD-C9PN].

2. *Ibid.*

3. The Gull Island Hydroelectricity project is the second component of the Lower Churchill project. It is projected to produce about 2,250 MW.

Atlantic link (connecting southern New England, United States to renewable energy sources in eastern Canada). The entire Lower Churchill project was, at inception, projected to cost \$6.4 billion (\$2.5 billion for Muskrat Falls and \$3.9 billion for Gull Island) over 11–12 years. Its claims to “sustainability” have, however, been impugned by stakeholders and rights-holders including Indigenous communities and environmental non-governmental organizations (ENGOs). As, finally, affirmed by the Joint Review Panel appointed to assess the project, Lower Churchill will likely have significant adverse effects on fish habitat and assemblage; terrestrial, wetland and riparian habitat; Red Wine Mountain caribou herd; fishing and seal hunting in Lake Melville; and culture and heritage.⁴ The Panel also raised questions about its projected financial return, impacts on health, and net social benefits.

Dilemmas like the one presented by Lower Churchill are proliferating as the world embarks on the quest of achieving its laudable goal of transitioning from non-renewables to renewables as its primary energy source. Bioenergy contributing to competition for land, loss of biodiversity, and food insecurity; wind turbines endangering birds, bats, and natural habitats; large solar projects leading to encroachment on carbon sequestering deserts and posing end-of-life (waste) disposal problems; and tidal and wave turbine’s adverse effects on marine life.⁵ These narratives are reminders that although strategies to mitigate against or adapt to climate change are, on the surface, sustainability-aligned, they are not, necessarily, synonymous to sustainability. Phrased differently, an initiative that is climate change friendly is not necessarily sustainability enhancing. How then can the narrow strait between climate change and sustainability in impact assessment processes be navigated? How can

4. Joint Review Panel, Department of Environment and Conservation Registration Government of Newfoundland and Labrador, *Report of the Joint Review Panel: Lower Churchill Hydroelectric Generation Project* (August 2011) at 269, online (pdf):<ceaa.gc.ca/050/documents/53120/53120E.pdf>.

5. In *Korean Biomass Plaintiffs v South Korea* filed on 28 September 2020, the plaintiffs, owners of solar power plant and residents near biomass plants, argued that the South Korean government’s support for biomass violates the South Korean constitutional environmental rights as it leads to deforestation, high emissions, and air pollution. See Sabin Center for Climate Change Law, *Korean Biomass Plaintiffs v South Korea*, (2020) <climatecasechart.com/non-us-case/korean-biomass-plaintiffs-v-south-korea/?cn-reloaded=1>. See also Elizabeth Cushion et al, *Bioenergy Development: Issues and Impacts for Poverty and Natural Resource Management* (Washington: The World Bank, 2010); Suaad Jaber, “Environmental Impacts of Wind Energy” (2013) 3:1 J of Clean Energy Technologies 251-254; Ewa Klugmann-Radziemska, “Environmental Impacts of Renewable Energy Technologies” (2014) 69 IPCBEE <www.ipcbee.com/vol69/021-ICEST2014-A1026.pdf> [perma.cc/LX42-KJBL]; Viktor Kouloumpis et al, “Environmental Impacts of Renewable Energy: Gone with the Wind?” in Evanthis Michalena & Jeremy Maxwell Hills, eds, *Renewable Energy Governance: Complexities and Challenges* (London: Springer, 2013) at 203-215.

climate change mitigation and/or adaptation measures serve the broader goal of sustainability? Can the different modes of impact assessment be integrated and applied in ensuring that assessments for climate change satisfy the requirements of sustainability? In the event of differences between sustainability and climate change considerations and outcomes, how should trade-off situations be dealt with?

Using Lower Churchill as a case study, I reflect on these questions. The focus of this article is not a critique of hydropower dams as a source of renewable energy.⁶ I have also not engaged with the political economy of Lower Churchill.⁷ Instead, while recognizing that renewable energy sources are different in their benefits and risks, I have used the Lower Churchill project to exemplify the sustainability-climate change tensions that could arise in impact assessment (IA) processes. I begin with the conceptualization of impact assessment as an integrated framework premised on sustainability in part I. Considering the centrality of “sustainability” to the arguments in this article, I also explore the contested nature of the term, proposing a workable conceptualization of “sustainability” in IA processes. In part II, I join ongoing scholarly discourse on the incorporation of climate change into impact assessment processes, reviewing scholarship and the implications of the inclusion of climate change in the recently enacted Canadian *Impact Assessment Act* (IAA). Importantly, I redirect the conversation from the more common focus on the climate change effects of non-renewable energy sources to the assessment of renewable energy projects under the IAA. I turn to the Lower Churchill case study in part III by reviewing its assessment process, recommendations, implementation, and results. Further, while

6. The adverse effects of major hydropower projects have been listed to include downstream changes in agro-production systems, population displacement/involuntary resettlement, substantial variation between projected and actual costs of projects, and ecological and climate change effects (as per the emission of methane). See generally Michael Cernea, “Hydropower Dams and Social Impacts: A Sociological Perspective” (1997) Paper No 16 Social Development Papers, online (pdf): *World Bank* <documents1.worldbank.org/curated/en/446311468761673943/585559324_20040283053533/additional/multi-page.pdf> [perma.cc/ZZ5W-VU4A]; Philip Fearnside, “Greenhouse Gas Emissions from Hydroelectric Dams: Controversies Provide a Springboard for Rethinking a Supposedly ‘Clean’ Energy Source—An Editorial Comment” (2004) 66 *Climatic Change* 1-8; R. Sternberg, “Hydropower: Dimensions of Social and Environmental Coexistence” (2008) 12 *Renewable and Sustainable Energy Reviews* 1588-1621; Atif Ansar, “Should We Build More Large Dams? The Actual Costs of Hydropower Megaproject Development” (2014) 69 *Energy Policy* 43-56.

7. Historian Jason Churchill has been reported stating that the two issues key to the lower Churchill project are the need for market access for Labrador power which bypasses Quebec and the lopsided 1969 contract deemed unfairly favourable to Quebec. See Terry Roberts, “A History Lesson on the River: Muskrat Falls Inquiry Looks to the Past, and into the Future” (19 September 2018), online: *CBC News* <www.cbc.ca/news/canada/newfoundland-labrador/muskrat-churchill-history-1.4830683> [perma.cc/26BU-X2LD].

Lower Churchill was conducted under the 1995 *Canadian Environment Assessment Act* (CEAA), I consider if Lower Churchill would have taken a different turn under the 2019 IAA.⁸ The article concludes with a summary of lessons from Lower Churchill and how the lessons can be operationalized in improving IA processes of renewable energy projects under the IAA.

I. *Impact assessment and sustainability*

The 1969 United States' *National Environmental Policy Act* (NEPA) is commonly referenced as the origin of impact assessment (IA).⁹ A look at NEPA provides a picture of IA, not necessarily as it is, but as it was meant to be if NEPA were to be taken as the start-point. To be sure, while NEPA is often referred to as the beginning of the contemporary practice of impact assessment adopted globally, the assessment of the effects of anthropogenic activities and developmental initiatives pre-dates it.¹⁰ NEPA, however, provides a formal, structured and actionable policy framework for impact assessment. This framework has been adopted globally by hundreds of States, sub-States and other non-State entities.¹¹ Caldwell, reputed as the architect of NEPA, argues that NEPA envisioned IA as a phase in a process and "an aspect of a larger process of policy or decision making."¹² According to Caldwell, NEPA's ultimate objective was to "bring agency policy into conformity with the values declared in the preamble and section 101(b) of NEPA."¹³ Section 101(b)(1) of NEPA obligates the government to, among other things, ensure that all its plans,

8. *Canadian Environmental Assessment Act*, SC 1992, c C-37 [CEAA 1992]; *Impact Assessment Act*, SC 2019, c C-28 [IAA].

9. *National Environmental Policy Act*, Pub L No 91-190, 83 Stat 352 at s 102(a) (codified as amended at 42 USCA § 4332) [NEPA].

10. Lynton Caldwell notes that impact assessment came to the fore in the latter half of the 20th century. Examples of earlier practice include the Cautionary Guides published by the Design and Industries Association of Great Britain in 1930 and the Environmental Health Planning Guide by the U.S. Public Health Service in 1960. See Lynton Caldwell, *The National Environmental Policy Act: An Agenda for the Future* (Bloomington: Indiana University Press, 1998) at 48, 58-59. Arguably, impact assessment dates farther back than Caldwell's mid-20th century reference. For example, Indigenous people have, from time immemorial, paid attention to the effect of human activities and utilization of natural resources on nature, adapting usage to natural cycles and taking only as much as would aid sustenance. See generally, Julian Inglis, ed, *Traditional Ecological Knowledge: Concepts and Cases* (Ottawa: International Program on TEK, 1993); Julien Vanhulst & Adrian Beling, "Buen Vivir: Emergent Discourse Within or Beyond Sustainable Development" (2014) 101 *Ecological Economics* 54.

11. Matthew Cashmore et al, "The Interminable Issue of Effectiveness: Substantive Purposes, Outcomes and Research Challenges in the Advancement of Environmental Impact Assessment Theory" (2004) 22:4 *Impact Assessment and Project Appraisal* 295.

12. Lynton Caldwell, "Analysis-Assessment-Decision: The Anatomy of Rational Policymaking" (1991) 9:4 *Impact Assessment* 81 at 86.

13. See Caldwell, *supra* note 10 at 6, 49.

programmes, and resources are deployed to the end that the nation may “fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.” While not making explicit reference to “sustainability” or “sustainable development,” NEPA foreshadows what became a major definition of the terms in both international and domestic instruments. I will come back to this point shortly.

IA has been criticized as suffering from “technical obesity.” It is trammled by over-documentation, fraught with fragmented legislation, complicated, and confusing.¹⁴ One reason for the allegation of complexity is the proliferation of the types of IA. Vanclay lists 142 types of impact assessment.¹⁵ While this representation of proliferation may be exaggerated due the method of computation,¹⁶ the eclecticism of impact assessment is undeniable. I agree with Pope et al that the number of IA modes has exceeded manageable levels.¹⁷ There are several reasons for this proliferation. For one, the failure of existing IA modes to cater to a concern often leads to the creation of a new IA mode for each concern. This is Vanclay’s justification for the necessity of Social Impact Assessment (SIA), Gender Impact Assessment (GIA), Cumulative Impact Assessment, Human Rights Impact Assessment (HRIA), etc.¹⁸ Another reason is what Sheate describes as “the tool-users dilemma” entailing options confronted by researchers as to whether to use existing tools, adapt, or develop new tools for which they can claim credit.¹⁹ He notes that the last option is often chosen even when it means that the new tools are superficial re-workings of existing ones.²⁰ Morrison-Saunders et al also refer to the need for silo-based expertise, advocacy, democratic processes, strong sustainability

14. See Urmila Jha-Thakur & Thomas Fisher, “25 Years of the UK EIA System: Strengths, Weaknesses, Opportunities and Threats” (2016) 61 *Environmental Impact Assessment Rev* 19 at 22, 24-25.

15. Frank Vanclay, “The Triple Bottom Line and Impact Assessment: How do TBL, EIA, SIA, SEA AND EMS Relate to Each Other?” (2004) 6:3 *J Environmental Assessment Policy & Management* 265 at 274-275.

16. The list was compiled by inserting key words into the google search engine and the number of times the different types of assessment recorded. Hence, the same types of assessment with slightly varying names were listed separately. See for example, cumulative impact assessment and cumulative effects assessment; cultural heritage assessment, cultural heritage impact assessment and cultural impact assessment; ecological assessment, ecological impact assessment, ecology impact assessment.

17. Jenny Pope et al, “Advancing the Theory and Practice of Impact Assessment: Setting the Research Agenda” (2013) 41 *Environmental Impact Assessment Rev* 1 at 5.

18. Frank Vanclay, “Integration and Focus from the Perspective of Social Impact Assessment: A Response to Morrison-Saunders et al” (2014) 32:1 *Impact Assessment and Project Appraisal* 11.

19. William Sheate, “The Evolving Nature of Environmental Assessment and Management: Linking Tools to Help Deliver Sustainability” in William Sheate, ed, *Tools, Techniques and Approaches for Sustainability: Collected Writings in Environmental Assessment Policy and Management* (Singapore: World Scientific, 2009) 1.

20. *Ibid.*

and the difficulty of interdisciplinary communication as some possible justifications for the proliferation of modes of IA.²¹

While there is some validity to the above arguments, the smorgasbord of IA modes has fueled the allegation that IA is inefficient, ineffective, breeds confusion amongst policy makers and the public, and further perpetuates undue technicality and inaccessibility.²² Morrison-Saunders et al argue that this proliferation of modes deprives IA of its sustainable development potential as emphasis is on efficiency of the IA process rather than its effectiveness.²³ Geneletti further notes that proliferation undermines the search for, creation and consideration of alternatives to proposed projects.²⁴ It is argued that the consideration of impacts in siloes negates the fundamentals of IA. NEPA, for example, mandates the utilization of a “systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making.”²⁵ Contrarily, it is now the trend for “EIA people” to be differentiated from “SIA people,” and “HIA people” to be categorized separately from “HRIA people,” as done by Vanclay.²⁶ In reality, however, problems are not siloed—everything is connected. Ecological problems are inherently or consequently people problems, and when peoples’ socio-economic problems are not addressed, they end up becoming ecological problems.

For IA to be effective and efficient, the various modes of IA need to be integrated into a coherent process. Such integration must ensure that comprehensiveness is not sacrificed on the altar of efficiency. I argue that “sustainability,” being the expressly or implicitly stated aim of most (if not all) IA modes,²⁷ is a useful organizing principle for the integration and operationalization of IA modes.²⁸ This argument is, in theory, not so far from the mainstream understanding of what impact assessment is or what it should be. For example, sustainable development has been referred to as one of the legislative purposes of all Canadian IA legislation since 1995.²⁹ The 2019 IAA further makes “contribution to sustainability” one

21. Angus Morrison-Saunders et al, “Strengthening Impact Assessment: A Call for Integration and Focus” (2014) 32:1 *Impact Assessment and Project Appraisal* 2 at 6-7.

22. *Ibid* at 2, 4-5.

23. *Ibid* at 7.

24. Davide Geneletti, “Integration of Impact Assessment Types Improves Consideration of Alternatives” (2014) 32:1 *Impact Assessment and Project Appraisal* 17 at 18.

25. *Supra* note 9 at s 102(a).

26. Vanclay, *supra* note 18 at 11.

27. Sheate notes that while the various types of assessment did not start with sustainability as an underlying purpose, it has now become a common cause shared by all. See Sheate, *supra* note 19 at 19.

28. Morrison-Saunders et al, *supra* note 21 at 5.

29. *CEAA 1992*, *supra* note 8, s 4(1)(b); *Canadian Environmental Assessment Act (CEAA)*, SC 2012,

of the factors to consider in the impact assessment of a project and in the determination of whether the assessed significant adverse effects of a project can be justified under the public interest exception.³⁰ But what does sustainability in the impact assessment context mean? Further, does “sustainability” mean the same thing as “sustainable development?”

Although IAA uses the term “sustainability” rather than “sustainable development,” which is employed in the 1995 and 2012 CEAA, the terms are similarly defined in all the Statutes.³¹ The IAA further refers to the creation of “opportunities for sustainable economic development” as one of its purposes,³² although what this means is undefined. The *Federal Sustainable Development Act* (SDA) is helpful in distinguishing between sustainable development and sustainability. The SDA defines sustainability as “the capacity of a thing, action, activity, or process to be maintained indefinitely,” and sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”³³ Further, the United States National Research Council finds that while nature, life support systems, and community are to be sustained, people, economy and society are to be developed.³⁴ Similarly, in distinguishing between old sustainability and new sustainability (sustainable development), Gibson argues that old sustainability was conservation-oriented, in service of customary life, stability and continuity.³⁵ It is this understanding of “old sustainability” that is endorsed and advocated in various Indigenous traditions, while new sustainability was made popular by the 1987 Brundtland report and has been the primary sense in which sustainability is used in international instruments.³⁶ While the sustainable development goals (SDGs) do not

c C-37, s 4(1)(h) [*CEAA 2012*]; IAA, *supra* note 8, s 6(1)(a).

30. IAA, *supra* note 8, s 22(1)(h), 63(a).

31. While the 1995 and 2012 CEAA defines sustainable development as “development that meets the needs of the present, without compromising the ability of future generations to meet their own needs,” the IAA defines sustainability as “the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations.” *CEAA 1992*, *supra* note 8; *CEAA 2012*, *supra* note 29, s 2; IAA, *supra* note 8, s 2.

32. IAA, *supra* note 8, s 6(1)(b.1).

33. *Federal Sustainable Development Act* SC 2008, c C-33, s 2.

34. National Research Council, *Our Common Journey: A Transition Toward Sustainability* (Washington: National Academies Press, 1999) at 23-25.

35. Robert Gibson et al, *Sustainability Assessment: Criteria, Processes and Applications* (Virginia: Earthscan, 2005) at 41.

36. See generally Subhabrata Bobby Banerjee, “Who Sustains Whose Development? Sustainable Development and the Reinvention of Nature” (2003) 24:1 *Organization Studies* 143-180; The World Commission on Environment and Development (Brundtland Commission), *Our Common Future* (Oxford: Oxford University Press, 1987).

use the economy, society and environment categories of sustainability promoted by the Brundtland report, the 17 goals could be subsumed under the economy, society and environment categories.³⁷ Contrary to the tri-pillars of economy, society, and environment that the IAA's version of sustainability appears to promote, I argue that an essential consideration in determining whether a project contributes to sustainability under the IAA is whether such project fosters the sustenance of nature, life support systems and community.

Sustainability, as described above, underpins what Gibson construes as sustainability assessment. Gibson proposes criteria that he argues avoid the divisiveness and trade-off-oriented notion of sustainable development based on the three pillars of society, economy, and ecology. This notion of sustainable development not only makes an integrated approach to IA difficult, it also, in practice, invariably allows for the preminent consideration of the economic pillar.³⁸ The Gibson criteria emphasize socio-ecological integrity, livelihood sufficiency and opportunity, intragenerational and intergenerational equity, resource maintenance and efficiency, socio-ecological civility and democratic governance, precaution and adaptation, and immediate and long-term integration.³⁹ Although Gibson argues that sustainability assessment emphasizes encouraging steps towards sustainability rather than mitigating negative effects and focuses on mutually reinforcing gains rather than trade-offs, the inevitability of the need to trade-off in certain instances is recognized. To deal with such trade-off situations, Gibson proposes a set of rules premised on processes including the open and effective involvement of all stakeholders.⁴⁰ The Canadian Guidance and Framework for considering the contribution of projects to sustainability are based on the Gibson Criteria.⁴¹ The Guidance and Framework, however, leave out important elements including livelihood sufficiency and opportunity, resource maintenance and efficiency, adaptation, and immediate and long-term integration. The trade-off rules were also not included in the Guidance and Framework.

37. United Nations, "Sustainable Development Goals," online: <sustainabledevelopment.un.org/sdgs> [perma.cc/R4H7-DBRU].

38. Jenny Pope et al, "Conceptualising Sustainability Assessment" (2004) 24 *Environmental Impact Assessment Rev* 595 at 603.

39. Gibson et al, *supra* note 35 at 184.

40. *Ibid* at 140.

41. Government of Canada, "Interim Guidance: Considering the Extent to Which a Project Contributes to Sustainability," online: <www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/interim-guidance-considering.html> [perma.cc/23EY-H2E2]; Government of Canada, "Interim Framework: Implementation of Sustainability Guidance," online: <www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/interim-guidance.html#fn2> [perma.cc/MW6S-YUSK].

The Gibson rules are not flawless. They have been described as expensive and non-inclusive, failing to effectively inculcate learning into practice, and not radically redirecting policy.⁴² While it is recognized by Gibson that sustainability assessment is context-specific and that the criteria are to assist stakeholders' determination of what constitutes sustainability in their contexts, the distinct position of rights-holders and the impact of the notion of rights in determining what constitutes sustainability have not been recognized. There is also no mention of rights-holders in the IAA and the Sustainability Guidance and Framework. The arguments for the recognition of rights-holders include that it is based on globally recognized and statutorily endorsed rights, it construes project proponents as duty bearers, and appreciates the inherent rights of individuals thereby disavowing trade-offs.⁴³ I agree that the Gibson criteria, while important, need simplification. However, simplification is not the same as debilitation, which the Guidance and Framework appear to have done by leaving out key elements.

There is need for sustainability criteria that will be both encapsulating yet relatable. I argue that the constituents of what Gibson refers to as old sustainability—sustenance of nature, life support systems and community—are apt, simple, and applicable sustainability criteria. Importantly, these three criteria are inherently interwoven, interdependent and consistent with the Indigenous seven-generation understanding of sustainability. Under these criteria, what is often considered a trade-off, is not. A project that primarily seeks to enhance life support systems and community is simply, in the Indigenous sense, “helping” nature to fulfill its obligations to humanity.⁴⁴ Here, profit is not the “be-all-end-all.” The three criteria help define the boundaries of what sustainability entails. Rights-holders and stakeholders are integral to populating and determining the contents of each criterion depending on their contexts. Subsequent

42. See Alan Bond et al, “Sustainability Assessment: The State of the Art” (2012) 30:1 Impact Assessment and Project Appraisal 53 at 59; M Djik et al, “Sustainability Assessment as Problem Structuring: Three Typical Ways” (2017) 12 Sustainability Science 305 at 306.

43. See Nora Gotzmann et al, “Social and Human Rights Impact Assessments: What can they learn from each other?” (2016) 34:1 Impact Assessment and Project Appraisal 14 at 17-18; Eitan Felner et al, *Human Rights Impact Assessment: A Review of the Literature, Differences with other Forms of Assessments and Relevance for Development* (The World Bank & Nordic Trust Fund, 2013) at 3.

44. Under the Mi'kmaq tradition, this concept is described as “Netukulimk.” The *Nova Scotia Sustainable Development Goals Act* defines it as “the use of the natural bounty provided by the creator for the self-support and well-being of the individual and the community by achieving adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity or productivity of the environment.” See *Sustainable Development Goals Act*, SNS 2019, c 26, s 2(e).

reference to sustainability assessment in this article refers to this three-component notion of sustainability.

II. *Sustainability-based impact assessment and climate change*

Byer et al describe climate change as a development issue (diminishing natural stock and undermining efforts to alleviate poverty), a security issue (threatening food production, water supplies and destabilizing states), a health issue (spread of diseases caused by rising temperature, precipitation changes etc.), and an equity issue (affecting the poorest in developing countries and diminishing the ability of future generations to meet basic needs).⁴⁵ The far-reaching multi-dimensionality of climate change is what differentiates it from other socio-ecological concerns and, in turn, reinforces the case for an integrated approach to impact assessment. Doelle points out that the delayed, cumulative, and global effects of emissions constitute a challenge to applying traditional IA methodologies and processes to climate change.⁴⁶ Yet, Gibson et al note that IA is one of the most powerful tools for meeting international climate change mitigation commitments.⁴⁷ I argue that rather than traditional IA, climate change should be incorporated into sustainability-based IA. Indeed, as noted by Gibson et al, international mitigation commitments like those made as nationally-determined contributions (NDC) under the Paris Agreement have become the core feature of many scholarly works and IA legislation pertaining to climate change.⁴⁸ The IAA mandates the consideration of the extent to which a project hinders or contributes to the “Government of Canada’s ability to meet its environmental obligations and its commitments in respect of climate change.”⁴⁹ The Impact Assessment Agency of Canada’s (IAAC) Guidance describes climate change commitments as those contained in the Paris Agreement and the Pan-Canadian Framework on Clean Growth and Climate Change (PCF).⁵⁰ Canada’s NDC under the Paris Agreement is,

45. P Byer et al, “Climate Change in Impact Assessment: International Best Practice Principles” (2012) 8 IAIA Special Publication Series at 1.

46. Meinhard Doelle, “Integrating Climate Change into Environmental Impact Assessments: Key Design Elements” (2018) [unpublished], DOI: <10.2139/ssrn.3273499> [perma.cc/6JJJ-QGPT].

47. Robert Gibson et al, “The Key Components and Provisions that need to be Incorporated into Assessment Legislation to Ensure that Assessed Undertakings Help meet Canadian Climate Change Mitigation Commitments and Duties” (2018) The Paris to Projects Research Initiative Discussion Paper 9.

48. Paris Agreement, (12 December 2015, entered into force 4 November 2016) 27 UNTS 54113, art 3.

49. *IAA, supra* note 8, s 22(1)(i).

50. Government of Canada, “Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act” (2020), online: <www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/considering-environmental-obligations.html> [perma.cc/VEZ2-JZJG].

however, wholly mitigation-based and the mandatory component (carbon pricing) of the PCF is also mitigation-centric.⁵¹

The global mitigation target under the Paris Agreement is to ensure that the global average temperature remains well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C. Countries, including Canada, made commitments using the lower mark of 2°C. According to the IPCC, an increase beyond 1.5°C would have immense adverse socio-ecological effects.⁵² However, not only are national commitments aimed towards 2°C, but also, they are not sufficient to meet this lower mark. For example, the Carbon Action Tracker concludes that if every country were to make a similar commitment as Canada's commitment to reduce its emissions by thirty per cent relative to 2005 by 2030, global temperature would increase by over 3°C.⁵³ Making such a target the touchstone of the assessment of climate change in a project IA is therefore inadequate. Another problem with using this approach is what Ohsawa & Duinker refer to as "scale trick"—the idea that determination of the significance of effect is relative to the magnitude of its context of comparison.⁵⁴ For example, project X's effect might be considered insignificant when compared to the Canadian GHG reduction commitment, but it becomes substantial when considered in the context of provincial commitments.⁵⁵ It has been argued that projects should be weighed against a 2050 nation-wide decarbonization target coupled with applying a carbon budgeting system that will help determine whether there "would be room for a proposed project's GHG."⁵⁶ But the "scale trick"

51. See "Canada's INDC Submission to the UNFCCC," online (pdf): <www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Canada%20First/INDC%20-%20Canada%20-%20English.pdf> [perma.cc/T9XH-MCNA]; Government of Canada, "Pan-Canadian Framework on Clean Growth and Climate Change," online (pdf): <www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf> [perma.cc/ANC6-PJ9K].

52. See generally, Valerie Masson-Delmotte et al, *Global Warming of 1.5°C: Special Report* (2018), online: <www.ipcc.ch/sr15/> [perma.cc/5RAG-8S6M].

53. Carbon Action Tracker, "Canada," online: <climateactiontracker.org/countries/canada/> [perma.cc/MMQ4-5M43].

54. Takafumi Ohsawa & Peter Duinker, "Climate Change Mitigation in Canadian Environmental Impact Assessments" (2014) 32:3 *Impact Assessment and Project Appraisal* 222 at 230.

55. Ho and Tollefson, among other examples, refer to the finding of the Joint Review Panel for the MacKenzie Gas Project. The Panel found that while the project would contribute 5-6% of Canada's national emissions annually, it amounts to approximately 0.1% of global GHG emissions. Hence, the Panel concluded that it was unproved that the emissions would result in significant adverse environmental impacts. See Anthony Ho & Chris Tollefson, "Sustainability-Based Assessment of Project-Related Climate Change Impacts: A Next Generation EA Policy Conundrum" (2016) 30:1 *J Environmental L & Practice* 67 at 72.

56. Robert Gibson et al, "Challenges and Opportunities of a Forthcoming Strategic Assessment of the Implications of International Climate Change Mitigation Commitments for Individual Undertakings in Canada" (2018) 10 *Sustainability* 1 at 10-12.

problem still operates here. The national commitment or decarbonization target approaches seem to negate the wisdom in cumulative impact assessment that causal factors of environmental degradation are not necessarily additive, but often synergistic and multiplicative, and that the finding of insignificance of a project does not necessarily mean it is not significant when taken alongside other equally “insignificant projects” or when adaptation and loss and damage effects are considered alongside.⁵⁷

Climate change impacts are classified as mitigation, adaptation, and loss and damage effects. Mitigable effects can be prevented, reduced or offset through strategies aimed at reducing greenhouse gas emissions (GHG) and enhancing GHG sinks. Adaptation entails adjustment to actual or expected consequences due to the variation in natural or human systems. Effects that can neither be mitigated against nor adapted to are classified as loss and damage. These categories of effects should be considered together when climate change is incorporated into impact assessment.⁵⁸ Climate change mitigation, adaptation, and loss and damage effects are interconnected. For example, a mitigation effort like building energy-efficient houses could also be considered as an adaptation effort. Again, a mitigation project (e.g. climate geoengineering) could lead to decrease in emissions, but at the same time increase the vulnerability of ecosystems and reduce the adaptive capacity of socio-ecologies.⁵⁹ More sustainable alternatives to projects can be proposed and sound decisions made when these effects are considered together. Zhao et al refer to such an instance where mitigation and adaptation practices are mutually considered and reinforcing as positive synergies.⁶⁰

The rethinking of how climate change is incorporated into impact assessment is even more important when renewable energy projects are being considered. A mitigation-centric IA would, in most cases, not be central here, as the projects are in themselves geared towards climate

57. See generally Peter Duinker, “Cumulative Effects Assessment: What’s the Big Deal?” in Alan Kennedy, ed, *Cumulative Effects Assessment in Canada: From Concept to Practice* (Edmonton: Alberta Society of Professional Biologists, 1994) at 13-14; Harry Spaling, “Cumulative Effects Assessment: Concept and Principles” (1994) 12:3 *Impact Assessment* 231 at 231-236.

58. Doelle, *supra* note 46 at 1.

59. See generally G Bala, “Problems with Geoengineering Schemes to Combat Climate Change” (2009) 96:1 *Current Science* 41; European Commission, “Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment” (2013) at 18, online (pdf): <ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf> [perma.cc/QXQ3-XGCC].

60. They also describe instances of *adaptive emissions* where adaptive practices result in emissions, *new vulnerabilities* where mitigation undermines adaptation, and *negative synergies* where adverse mitigation and adaptation practices are synergized. Chunli Zhao et al, “Adaptation and Mitigation for Combatting Climate Change—From Single to Joint” (2018) 4:4 *Ecosystem Health & Sustainability* 85 at 88-89.

change mitigation. Rather, the contribution of such project to adaptation and loss and damage effects must be a key consideration. Adaptation and loss and damage-oriented questions must be asked. Does the project cause, induce, or exacerbate extreme weather events or slow onset events? Does it irreversibly alter an ecosystem? Does it make a community less resilient? Does it affect its life support systems? When the above arguments are summed up it becomes evident that the ultimate consideration when climate change is being considered in IA is not whether such project helps a country meet its international mitigation commitment, but whether it aligns with sustainability. Whether the IA is for a renewable or non-renewable energy project, the criteria remain the same. Does it sustain nature, life support systems and the community? As is shown below, one of the key lessons from the Lower Churchill IA decision is the undue pre-eminence placed on the project's contribution to climate change mitigation objectives as against its other effects on nature, life support systems and the community.

One could, however, argue that while the assessment of adaptation and loss and damage effects can be sustainability-based, such sustainability approach is not apt for mitigation. This is because, while other local effects might be traced to a project in some sense, the effects of unmitigated local emissions are global. While there is advancement in attribution studies,⁶¹ connecting emissions from particular projects to effects remains a vital missing piece in climate change discourse. This is the case for the national contribution to global target approach. I, however, argue that the sustainability-based approach emphasized here is apt when considering climate change mitigation in IA. There should be a presumption of harm to nature, life support systems and community on a global scale when considering GHG emissions from projects. The argument here is not that emitters should be considered liable, in which case the issue of compensation could arise, but that they should be considered responsible for their emissions, and, hence, obligated to offset such emissions measurably, credibly and responsibly.⁶² The argument also is not about the quantum of harm. Central to this argument is that emissions, however seemingly small, are additive and contributory. A presumption of harm

61. Alexis Hannart & Philippe Naveau, "Probabilities of Causation of Climate Changes" (2018) 31 *J Climate* 5507; Panmao Zhai et al, "A Review of Climate Change Attribution Studies" (2018) 32 *J Meteorological Research* 671.

62. For a more comprehensive distinction between "liability" and "responsibility," see Emma Lees, "Responsibility and Liability for Climate Loss and Damage after Paris" (2017) 17:1 *Climate Policy* 59. See also Martin Spitzer and Bernhard Burtscher, "Liability for Climate Change: Cases, Challenges and Concepts" (2017) 2 *J European Tort L* 137.

approach circumvents the cause–effect disconnect problem, embodies the cumulative effects principle, gives effect to the precautionary principle, and, to an extent, addresses the challenges and complexities that beset the national contribution and decarbonization propositions. A necessary follow-up to a presumption of harm approach is that while it is impractical that such projects be rejected in all situations, they must, at the least, be mandated to be emissions (carbon)-neutral. Whether a project will be approved then becomes, in part, a question of whether, at minimum, its direct emissions can be responsibly, measurably and fully offset.⁶³

Table 1: Climate Change in Traditional IA and Sustainability based IA

<i>Climate Change in Traditional IA</i>	<i>Climate Change in Sustainability Based IA</i>
Mitigation focused	Mutually considers mitigation, adaptation and loss and damages
Based on project’s contribution to national mitigation commitment	Applies a presumption of harm approach
Project’s emission intensity is determined on an individual project basis	Effects are considered cumulatively
Negative contribution to global warming is a primary contribution	Emphasizes positive contribution to nature, life support system, and the community
Trade-off is resolved in favour of emission mitigation	Trade-off is resolved in favour of overall contribution to sustainability

III. *Lower Churchill: Sustainability “versus” climate change*

Lower Churchill is a useful case study to appraise the tension between climate change and sustainability, and how such seeming contradiction should (not) be handled in IA. The project was registered for federal and provincial assessment by Newfoundland and Labrador Hydro, a subsidiary of Nalcor Energy in 2006. The project was previously considered in the 1980s as a further development on the Churchill River on which the Churchill Falls Power Station had already been developed in 1974. However, the project failed to proceed. Attempts to revive the project were made in 1990/1991 and from 1998–2001. Once again, the project did not

63. Emissions are commonly classified as scope 1 (direct), scope 2 (upstream indirect, e.g., purchased electricity) and scope 3 (value chain indirect) emissions. While scopes 2 and 3 emissions can be reported, it seems most practicable to request for an offset of scope 1 emission. See generally World Business Council for Sustainable Development and World Resources Institute, *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)* (WBCSD and WRI, 2004).

proceed given unfavourable market conditions. As already noted in the Introduction, lower Churchill is made up of two sub-projects—Muskrat Falls and Gull Island hydroelectric power plants. Although Gull Island has more electricity generation potential, it was put on hold given ongoing disputes with neighboring Quebec, preventing access to markets in Ontario and the United States. Muskrat Falls is situated approximately 30 kilometres southwest of Happy Valley-Goose Bay in Central Labrador, Canada. This area and proximate areas are inhabited by various Indigenous communities including the Labrador Innu, Inuit and Inuit-Metis. At risk were (and are) the traditional land, sites of spiritual, historic, archaeological and cultural resources, particularly the river, farms, camping areas, resource and water use, and health due to possible methylmercury contamination. Wetlands, riparian habitat, rare plants, and aquatic, terrestrial and avian wildlife are also at risk. The proponent argues that the project is needed to address future electricity demand, develop province's hydroelectric resources, secure a renewable future, and generate long term revenues. It further argues that the facilities are designed to result in lower emissions of GHG over their lifetimes. A Joint Review Panel was constituted by the Canadian and NL governments in 2009 which collected information from 2009–2011, conducted hearings from January 2011, and released its report in November 2011 without an overall recommendation, consistent with the Panel's terms of reference. In 2012, the federal and provincial governments responded to the report, leading to the subsequent approval of the project.

More comprehensive reflections on the Lower Churchill project and its IA process have been done in previous works.⁶⁴ I will, therefore, restrict this analysis to the sustainability–climate change tension and the application of the sustainability and trade-off rules in the climate change context. As noted earlier, one of the major selling points of the project is that it would assist in mitigating climate change. The proponent argued that “the project will continue to generate renewable energy....[T]he power that is produced from the project is clean power—it will result in far fewer greenhouse gas emissions per unit of electricity than any coal, gas, or oil-fired power plant.”⁶⁵ This mitigatory prospect applies to NL and Nova

64. See generally Meinhard Doelle, “The Role of EA in Achieving a Sustainable Energy Future in Canada: A Case Study of the Lower Churchill Panel Review” (2013) 25 *J Environmental L & Practice* 114 [Doelle, “Lower Churchill Panel Case Study”]; Meinhard Doelle, “The Lower Churchill Panel Review: Sustainability Assessment under Legislative Constraints” in Robert Gibson, ed, *Sustainability Assessment: Applications and Opportunities* (New York: Routledge, 2017) at 110-126.

65. Nalcor Energy, “Lower Churchill Hydroelectric Generation Project—Final Written Submissions” at para 7, online (pdf): <www.ceaa.gc.ca/050/documents/49733/49733E.pdf> [perma.cc/4296-VFDY].

Scotia, which considers the project a major route out of coal dependency and towards achieving emission reduction.⁶⁶ Opponents, however, argued that the project negates sustainable development as it “will overpower and destroy a natural river system, [and] rob future generations of the benefits that the river has provided for millennia.”⁶⁷ The Panel found that the project would not result in net biophysical and economic benefits, and that it was uncertain if it would result in net social benefits and net benefits to future generations.⁶⁸ It recommended that the “Muskrat Falls portion of the project should likely not be permitted to proceed.”⁶⁹ The Panel also recommended that before the government makes its decision, further assessments and studies of the project, particularly on economic and social implications, downstream effects, and alternatives, should be conducted.⁷⁰

If achieving energy security efficiently and sustainably was the primary rationale of the Lower Churchill project, other alternatives that would have mitigated climate change without endangering resilience, biodiversity, and the entire ecosystem could have been considered. Rather, the proponent highlights the development of NL’s hydroelectric resources as one of the underlying needs of the project.⁷¹ As noted by stakeholders like Sierra Club Atlantic and Grand RiverKeeper Labrador Inc, by making the project a need in itself, there was a problem in the consideration of alternatives to the Project.⁷² The Panel agreed that Nalcor failed to adequately consider alternatives and recommended that an independent consideration be completed before the approval of the project. This

66. Government of Nova Scotia, “The Maritime Link: Nova Scotia’s Connection to a Better Energy Future” (2016) at para 7, online (pdf): *Government of Nova Scotia* <www.novascotia.ca/homepage/argyle/hottopics/maritime-link-flyer-web.pdf> [perma.cc/3DAW-85HF]. Nalcor represented that twenty per cent of energy produced would be exported to Nova Scotia. This exportation targets, in part, the replacement of 1,430 MW of installed coal-generated power capacity, which reaches the end of service life by 2030. Nalcor also argued that power from Lower Churchill would help Nova Scotia meet its renewable energy targets. While noting that there is neither reliable information on what power would be displaced nor clear evidence on the project’s impact on GHG displacement in Nova Scotia, it concluded that the project has potential global GHG emission reduction benefits, particularly in jurisdictions with firm emission reduction targets like Nova Scotia. See Joint Review Panel, “Report,” *supra* note 4 at 17-18, 57-58.

67. Joint Review Panel, Department of Environment and Conservation Registration, “Lower Churchill Hydroelectric Generation Project Hearing” (2011) at para 84, online (pdf): *Commission of Inquiry Respecting the Muskrat Falls Project* <www.muskratfallsinquiry.ca/files/P-00356.pdf> [perma.cc/EJN6-3FAM].

68. Joint Review Panel, “Report of the Joint Review Panel, Lower Churchill Hydroelectric Generation Project (Executive Summary and Recommendations)” (2011) at 22-23, online (pdf): *Canadian Environmental Assessment Agency* <ceaa-acee.gc.ca/050/documents/51706/51706E.pdf>.

69. *Ibid* at 24.

70. *Ibid* at 281-297.

71. Joint Review Panel, “Report,” *supra* note 4 at 16.

72. *Ibid* at 21.

recommendation was outrightly rejected by both the Canadian and NL governments.⁷³ They argued that the project, as proposed, is the “least cost option” to meet domestic demand.⁷⁴ The projected cost by Nalcor was 14.3 cents per KWh.⁷⁵ A more recent estimate, however, puts the price at 22.9 cents per KWh, given that its cost doubled to about \$12.7 billion (from \$6.4 billion).⁷⁶

The foregoing narrative brings to the fore two key lessons. One, the process of determining the need and purpose for which projects are designed is vital. Doelle and Sinclair argue that the stages of community-based determination of purposes and identification of range of suitable alternatives are “important for transition to sustainability.”⁷⁷ While the 1995 (and 2012) CEAA had no requirement for early participation, the IAA mandates meaningful public participation at the planning stage.⁷⁸ Planning phase in the IAA, however, refers to preparations for possible IA of a designated project.⁷⁹ IAA does not mandate the involvement of the public in determining the needs and rationale of a project, as was needed in the Lower Churchill project. This phase precedes the IA preparatory stage, to which the IAA’s planning phase caters. As suggested by the Panel, a more apt question in articulating the project’s rationale should have been “what would be the best way to meet domestic (energy) demand?” Such a question will raise various options that would then be compared to arrive at the most “viable.” This leads to the second point. In comparing costs and

73. Government of Newfoundland and Labrador, “Government of Newfoundland and Labrador’s Response to the Report of the Joint Review Panel for Nalcor Energy’s Lower Churchill Hydroelectric Generation Project” (15 March 2012), online (pdf): *Environment, Climate Change and Municipalities* <www.mae.gov.nl.ca/env_assessment/projects/Y2010/1305/Response_to_Panel_Report.pdf> [perma.cc/T57C-R7MC] [Government of Newfoundland and Labrador, “Response to Joint Review Panel”]; Government of Canada, “Government of Canada’s Response to the Report of the Joint Federal-Provincial Review Panel for Nalcor’s Lower Churchill Generation Project in Newfoundland and Labrador” at 5, online (pdf): *Canadian Environmental Assessment Agency* <www.ceaa.gc.ca/050/documents/54772/54772E.pdf> [perma.cc/5LN5-NKXH] [Government of Canada, “Response to Joint Review Panel”].

74. Government of Canada, “Response to Joint Review Panel,” *supra* note 73 at 5; Government of Newfoundland and Labrador, “Response to Joint Review Panel,” *supra* note 73 at 2.

75. Joint Review Panel, “Report,” *supra* note 4 at 29.

76. Government of Newfoundland & Labrador, “Protecting you from the Cost Impacts of Muskrat Falls” (April 2019), online (pdf): <www.gov.nl.ca/iet/files/Framework.pdf> [perma.cc/CF3Y-ZNCW]; Holly McKenzie-Sutter, “Audit Finds Muskrat Falls Cost Overruns were Obvious Soon After Project was Sanctioned,” (18 February 2019), online: *The Globe and Mail*, <www.theglobeandmail.com/canada/article-audit-finds-muskrat-falls-cost-overruns-were-obvious-soon-after/> [perma.cc/66RS-8EV2].

77. Meinhard Doelle & John Sinclair, “Time for a New Approach to Public Participation in EA: Promoting Cooperation and Consensus for Sustainability” (2006) 26 *Environmental Impact Assessment Rev* 185 at 193.

78. *IAA*, *supra* note 4, s 11.

79. *Ibid.*

concluding that one option is the “least cost” option, it is important to look beyond actual economic cost and include other externalities. Would the conclusion still have been reached that Lower Churchill was the least cost option if the various adverse impacts had been costed or considered and included? Since no such analysis was carried out, it is difficult to answer this question. But the point remains that focusing only on economic or monetizable costs is misleading.⁸⁰

One of the most important phases in IA is the scoping phase.⁸¹ It is at this early stage that issues and factors considered relevant to be assessed and the dimensions of assessment are decided. A good scoping process requires the involvement of the public, applies the precautionary principle, and ensures efficiency.⁸² In Lower Churchill, scoping was conducted jointly by the Canadian and NL governments and was included in the Environmental Impact Statement (EIS) Guidelines. The draft of the EIS Guidelines was subject to a public consultation process for about two months.⁸³ The implication of this approach was that the Panel was brought in to consider only the EIS and representations made by stakeholders as informed, largely, by the EIS Guidelines. This left the Panel with gaps in information and insufficient information on issues including alternatives and impact of the project on Indigenous rights and interests.⁸⁴ An indicator species approach was also employed in the EIS Guidelines.⁸⁵ In other words, information provided by Nalcor was based on specified species. This approach, according to Doelle, undervalued resilience, risked ecosystem health, and made it impossible to consider the broader effect

80. Wright and Doelle make a case for the consideration of the social cost of carbon (SCC) in Canadian IA processes. They define SCC as “a dollar figure representing the estimated cost of damages that result from an additional ton of carbon dioxide emitted into the atmosphere.” Recognizing the limitation of such monetary estimation, they recognize the need to separate such analysis from a rights-based analysis of “climate change impacts” on Indigenous people and that “any role for monetized figures would need to be approached with respect and sensitivity given to the impossibility of quantifying such rights and impacts in monetary terms.” See David Wright & Meinhard Doelle, “Social Cost of Carbon in Environmental Impact Assessment” (2019) 52:3 UBC L Rev 1007.

81. Jeffrey Barnes et al, “A Review of the Project Scope and Environmental Assessment Scope for Energy and Mining Projects Across Canada,” Paper presented at the 30th Annual Meeting of the International Association for Impact Assessment in Geneva, Switzerland (6-11 April 2010), online: <www.mcinnescooper.com/publications/a-review-of-the-project-scope-and-environmental-assessment-scope-for-mining-and-energy-projects-across-canada/> [perma.cc/7CK7-3GA6].

82. Gibson et al, *supra* note 35 at 154. See also Tim Snell & Richard Cowell, “Scoping in Environmental Impact Assessment: Balancing Precaution and Efficiency” (2006) 26 Environmental Impact Assessment Rev 359.

83. Government of Canada & Newfoundland and Labrador, *Environmental Impact Statement Guidelines* (July 2008) at 23, online (pdf): <www.gov.nl.ca/eccm/files/env-assessment-projects-y2010-1305-lower-churchill-final-guidelines-en.pdf> [perma.cc/9HA4-4DWK].

84. Doelle, “Lower Churchill Panel Case Study,” *supra* note 64 at 121-122.

85. *Supra* note 83 at 27-28.

of the project on all Valued Ecosystem Components (VECs).⁸⁶ This, in part, explains the stand-alone consideration of the different issues under the Review Panel's report. The foregoing points to the need for not only a scoping process done with meaningful participation, but that is also adaptive. Review panels should have the authority to rescope IAs subject to representations of rights-holders and stakeholders. Under the IAA, meaningful participation by the public and Indigenous groups are mandated at the scoping phase.⁸⁷ There is, however, nothing under the Act that permits a review panel to rescope issues or factors to be considered. This role is done primarily by the responsible agency.

The 1995 CEAA provides that if a review panel decides that a project is likely to cause significant adverse effects, it must be referred to the Governor in Council (GIC), which can decide whether the effects are justified in the circumstances.⁸⁸ There were, however, no statutorily prescribed factors in coming to a conclusion. In another hydroelectricity dam case (Site C), the Prophet River and West Moberly First Nations challenged the decision of the GIC that significant adverse effects were justified in the circumstances. They challenged the decision on the ground that the project infringed treaty rights. The Federal Court of Appeal held that the GIC has no jurisdiction to consider such infringement.⁸⁹ The IAA's replacement of the "justified in the circumstances" provision with "adverse effects...in the public interest" and its specification of factors to determine such public interest, including sustainability and Indigenous rights, could have informed different decisions in the Lower Churchill and Site C assessments. Worth noting is the IAA's recognition of assessments and studies conducted by Indigenous governing bodies as factors to be considered in IA processes.⁹⁰

The IAA, unlike the 1995 and 2012 CEAA, mandates the consideration of the impact of projects on Indigenous rights under section 35 of the 1982 Constitution Act in an IA.⁹¹ The IAA, however, has no provision on the assessment of human rights impacts. As already noted, Gibson's sustainability criteria also do not cater to human rights and neither were they considered in Lower Churchill. Essentially, embedding human rights into IA processes raises the standing of rights-holders from persons with

86. Doelle, *supra* note 64 at 120.

87. *IAA*, *supra* note 8, s 14, 18(1.1), 18(1.2), 22(2).

88. *CEAA 1995*, *supra* note 8, s 37(1)(1.1).

89. *Prophet River First Nation & Anor v AG Canada & Ors*, 2017 FCA 15.

90. *IAA*, *supra* note 8, s 22(1)(q)(r).

91. *Ibid*, s 22(1)(c).

interest to individuals with legally enforceable claims.⁹² Considering human rights in IA also recognizes the duties of proponents and decision-makers not just to ensure participation, but to address infringement of rights, be accountable to rights-holders, and to involve rights-holders in decision-making processes.⁹³ The rights required to be recognized in a human rights complaint assessment transcends limited rights under domestic laws. They include rights guaranteed by ratified international instruments. These instruments guarantee rights including rights to health, water, food, and an adequate standard of living.⁹⁴ Although not domesticated, Canada has an obligation not to violate these rights. Given the inherence of human rights, if found to be at risk of being adversely affected by a project, such concern must be addressed rather than offset in the light of other positive effects.

The failure to mitigate the accumulation of methylmercury as recommended by the Panel, thereby putting at risk the health, food chain, and water quality of Indigenous communities, infringes the rights of individuals in communities proximate to the project. While these effects were highlighted in the Lower Churchill IA report, they were not framed in the human rights sense. Framed as human rights concerns, the argument by Nalcor that the full clearing proposed by the Panel to reduce the accumulation of methylmercury was not economically and technically feasible is untenable. The human rights frame does not allow for the net social benefits argument. The existence of rights and the determination that there is a possibility of breach mandate a prevention of such breach. While human rights might not be absolute, economic and technical convenience are not exemptions to fulfilling human rights duties. The potential effects of a project on an individual's rights to assembly, association, and speech, which are exercised through protests, are also brought to the fore when human rights impacts are considered in IAs. Such consideration allows parties to consider various scenarios and agree upon a response for such scenarios. This consideration would likely have helped to avoid the criminalization of protesters' objections to the project's potential breach of their rights to health, water, food, and livelihood through methylmercury

92. Gotzmann, *supra* note 43 at 18.

93. Nora Gotzmann et al, *Human Rights Impact Assessment: Guidance and Toolbox* (Copenhagen: The Danish Institute for Human Rights, 2016) at 19, online (pdf): <www.humanrights.dk/sites/humanrights.dk/files/media/dokumenter/udgivelser/hria_toolbox_2020/eng/dihr_hria_guidance_and_toolbox_2020_eng.pdf> [perma.cc/7GPX-9GKT].

94. The International Covenant on Economic, Social and Cultural Rights, 16 December 1966, 993 UNTS 14531 arts 11, 12(1) (entered into force 3 January 1976, accession by Canada 19 May 1976) [ICESCR]; *The Human Right to Water and Sanitation*, UNGAOR, 64th Sess, UN Doc A/RES/64/292 (2010).

contamination.⁹⁵ The consideration of human rights impact in the assessment of renewable energy projects is even more important as the growth of the renewable energy sector has also translated into it being a major domain of the abuse of rights.⁹⁶

In concluding that the significant adverse effects of Lower Churchill are justified, the Canadian government referred to mitigation efforts to be taken, the potential economic, social and environmental benefits, and the project being one with the least cost option for meeting anticipated provincial electricity need.⁹⁷ As examples of potential environmental and economic benefits, the Canadian government referred to “displacement of greenhouse gas and air pollutant emissions,” the benefits of which are both global and “important in meeting the Government’s climate change and clean air commitments.”⁹⁸ The conclusions of the Canadian government on climate change substantially align with the Review Panel, which also concluded that although the emissions from the project would be significant if considered in isolation, the project would offset more GHG emissions than it would produce.⁹⁹ Although the Panel confirms that emissions from lower Churchill are significant, there was no recommendation for project-specific offsets.¹⁰⁰ The argument that the net displacement of emissions from emission intensive sources, like the Holyrood thermal generating station, offsets the project’s emissions is questionable on multiple fronts. First, the projection of replacement did not take into consideration the unstable waters of the economics and politics of energy. While the closure of Holyrood was one of the key arguments for Lower Churchill with the promise that it would be closed in 2021, Nalcor recently confirmed that the facility can be retained for “a long period of time.”¹⁰¹ Even if Holyrood

95. Justin Brake, “Criminal Charges Dropped Against Labrador Land Protectors; Others Still Face Criminalization,” (20 May 2019), online: *APTN National News* <www.aptnnews.ca/national-news/criminal-charges-dropped-against-labrador-land-protectors-others-still-face-criminalization/> [perma.cc/MMV3-5D2T].

96. Business and Human Rights Resource Centre, “Fast and Fair Renewable Energy Investments: A Practical Guide for Investors” (2019) at 4, online (pdf): *Business and Human Resource Centre* <www.business-humanrights.org/sites/default/files/Renewable%20Energy%20Investor%20Briefing_0.pdf> [perma.cc/ZRA3-UKCJ].

97. Government of Canada, “Response to Joint Review Panel,” *supra* note 73 at 5-6.

98. *Ibid* at 6.

99. Joint Review Panel, *supra* note 4 at 56.

100. Participants complained that there were no plans to offset emissions from the project fuel combustion and decaying vegetation in the reservoirs. Other project related emission sources include loss of forest carbon sink due to flooding and the loss of boreal forest. There was also no estimate of GHG emissions from alternatives to the project. Joint Panel Report, *supra* note 4 at 53.

101. Terry Roberts, “Profits up at Nalcor but still no Plan for Holyrood in Q1 Report,” (28 May 2019), online: *CBC News* <www.cbc.ca/news/canada/newfoundland-labrador/nalcor-quarterly-update-1.5152695> [perma.cc/2RCK-SWWD].

were to be closed as promised, there is a risk of double counting. Whereas emissions from the project are deemed offset by displaced emissions from other energy sources, the displaced emissions are also counted towards international emission reduction commitments that do not consider renewables as emission sources.¹⁰² Renewable energy projects should not be presumed to be directly or indirectly emissions neutral. Generally, if such projects must proceed, offset measures for project specific emissions, regardless of the prospect for displaced emissions, must be required.¹⁰³

While the Canadian and NL governments referred to Lower Churchill's contribution to Canada's climate change mitigation commitments, they barely took into consideration the concerns of stakeholders and findings of the Panel on the implications of the project for resilience and adaptation. For example, the Panel found that "habitat biodiversity and the overall integrity of terrestrial ecosystems" will be significantly impacted by the project in combination with other developments and "shifting climate patterns resulting from climate change." Other findings include adverse changes to the ice bridge due, in part, to climate change, and the effects of climate change and reservoir creation on water temperature and fish growth.¹⁰⁴ In response to the finding on the ice bridge and contrary to the recommendation of the Panel, the NL government concluded that "Nalcor shall only be required to provide alternative transportation if travel is adversely affected...as a result of changes directly related to the project."¹⁰⁵ As already noted, it is nearly impossible to trace the direct

102. The Canadian government is of the position that "hydroelectricity...emits no GHGs when generating electricity." See Government of Canada, "Greenhouse Gas Emissions" (April 2020), online: *Government of Canada* <www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html> [perma.cc/7GSH-VLGV]. While emissions from the construction of dams are arguably included in reported emissions, the same cannot be said for emissions from ongoing operation and existence of the dam. See Environment and Climate Change Canada, *Canada's 7th National Communication and 3rd Biennial Report* (Gartineau, Quebec: Environment and Climate Change Canada, 9 December 2017) at 36. Contrary to the position of the Canadian government, Bridget et al find that dams emit twenty-five per cent more methane by unit of surface than previously estimated. See Bridget Deemer et al, "Greenhouse Gas Emissions from Reservoir Water Surfaces: A New Global Synthesis" (2016) 66:11 *BioScience* 949 at 952.

103. The Joint Panel recommended that Nalcor be required to implement mitigation commitments to minimize GHG emissions resulting from the project. While the Canadian government construed the recommendation to be directed to the provincial government (a position different from the case made before provincial court of appeals, such as in *Reference re Greenhouse Gas Pollution Pricing Act*, 2019 SKCA 40, that the regulation of GHG emissions is within the jurisdiction of the federal government), the NL government accepted only the "intents" of the recommendation and modified the recommendation to mean the efficient operation of the project and routine replacement of equipment. See Government of Newfoundland and Labrador, "Response to Joint Review Panel," *supra* note 73 at 4.

104. Joint Review Panel, *supra* note 4 at 96.

105. Government of Newfoundland and Labrador, "Response to Joint Review Panel," *supra* note 73 at 15-16.

impact of projects in the climate change context. The climate change-related contribution of Nalcor to a possible degradation of the ice bridge will, likely, remain unknown. But this does not mean that there is no such impact. As found by the Panel, and consistent with the presumption of harm argument, Nalcor should have been considered responsible for such adverse effect without the need for direct attribution.

In developing his trade-off rules, the tension between multiple ecological realities (e.g. climate change and biodiversity loss) appears not to have been considered by Gibson. Nevertheless, the rules are not inapt in such context. Particularly apt are the rules on maximum net gain and the avoidance of significant adverse effects. Using these two criteria, eligible projects in meeting NL's energy needs should avoid biodiversity loss as well as mitigate climate change. As Gibson emphasized, no compromise would be allowed if there is risk of decline or the project deepens the problem in a major area of concern.¹⁰⁶ No compromise would also be allowed unless "the alternative is acceptance of an even more significant adverse effect."¹⁰⁷ There were alternatives to the Lower Churchill project that might be more expensive in terms of the actual cost (without considering other socio-ecological gains) but would not have led to the ecological trade-off that Lower Churchill requires. As the Panel found, the investment in the project could have been channeled towards other profitable ventures while still ensuring the energy security of the province. Recent occurrences in respect of the project have justified these conclusions. It is important that climate change be considered as part of the sustainability agenda in IA processes. It must be part of the sustainability conversation and not an "outlier" that receives a pass for compromising ecosystems. In what he describes as a "green civil war," using solar energy as case study, Mulvaney warns that "[as] environmentalism increasingly puts climate at the center of environmental politics, local ecologies and cultures can be erased or subsumed to address this effort."¹⁰⁸ Advantaging climate change over other concerns in IA processes simply reinforces traditional IA, which emphasizes the avoidance of a seemingly worse negative effect (climate change). Sustainability-focused assessment, however, stresses mutual positive gains. One way this could have worked in Lower Churchill is via a more robust consideration of other renewable energy sources (and other demand side measures) with lesser impact on

106. Gibson et al, *supra* note 35 at 135.

107. *Ibid.*

108. Dustin Mulvaney, *Solar Power: Innovation, Sustainability, and Environmental Justice* (California: University of California Press, 2019) 161.

the ecosystem and comparatively lower emissions.¹⁰⁹ As noted in part I, neither the interim sustainability Guidance nor Framework recognizes the trade-off rules.

Although not explicitly provided for in its terms of reference, the Lower Churchill Review Panel made sustainable development a key objective of the project's review, drawing from the 1995 CEAA.¹¹⁰ There was, therefore, an attempt to employ an adapted version of Gibson's sustainability and trade-off rules, which were developed and indexed in the panel report to guide the final decision-makers.¹¹¹ The Panel's involvement of stakeholders in developing subject-specific sustainability criteria is laudable. However, in reaching its decision, there is no evidence that either the Canadian or the NL governments applied the rules. While the sustainability and trade-off rules can be critiqued as done in part I, the underlying principle can hardly be challenged—every project must contribute to sustainability, not take away from it. This means, in part, that ecological integrity must be protected and the right of future generations to meet their needs must not be compromised. These are common and recurrent features in the various metrics of sustainability, whether one decides to apply the more robust Gibson rules or apply the simplified version proposed here.

One of the most serious failings of Lower Churchill is the decoupling of the application of the sustainability and trade-off rules developed by the Review Panel from the assessment process. The Panel had no mandate to recommend whether the project should be allowed. Hence, they designed the sustainability and trade-off rules with the hope that they will be applied by the decision-maker. Logically, the sustainability and trade-off rules should be applied by the same Panel that has had the opportunity to facilitate their development and listen to various stakeholders, including the government. There is no provision under the IAA mandating a review panel to provide recommendation on whether a project should proceed. Provisions in the 1995 and 2012 CEAA and the IAA are similar on this point.¹¹² What is different is that there is a statutory obligation for the government to consider sustainability in determining whether significant

109. The committee found that Nalcor's consideration of how alternatives to Muskrat Falls compare in terms of economics, energy and environment was inadequate. In fact, the inadequate comparison focused on the economics and the energy potentials of the alternatives. There was no meaningful consideration of how emissions from the dam compare with emissions from other energy sources. See Joint Review Panel, *supra* note 4 at 34.

110. *Ibid* at 269.

111. *Ibid* at 352-355.

112. CEAA 1992, *supra* note 8, s 34(c); CEAA 2012, *supra* note 29, s 43(d); IAA, *supra* note 8, s 51(1)(d). The IAA, however, mandates a review panel to set out how it took into account Indigenous knowledge.

adverse effects are in the public interest under the IAA. This, however, does not mean that the governments would have been obligated to apply the Review Panel's vision of sustainability under the IAA. In fact, neither the IAA Guidance or Framework is binding on the Minister or the GIC.¹¹³ This leaves several questions. Who determines what sustainability is when public interest is being considered? Are stakeholders and rights-holders allowed to participate in this determination at the decision-making stage? If stakeholders and rights-holders had articulated their visions of sustainability at the assessment phase, are decision-makers allowed to envision it differently? The answers in Lower Churchill are not too dissimilar to conclusions that could be reached under the IAA, more so as the IAA requires no public participation in the decision-making phase.

Assessing cumulative effects is integral to sustainability-based assessment. While impact assessment is conducted within artificial jurisdictional boundaries, nature is boundaryless. I consider lifecycle and regional effects as representing the temporal and spatial aspects of cumulative effects.¹¹⁴ As Duinker brilliantly puts it, cumulative assessment is "the only kind of EIA worth doing...it is what EIA was meant to be."¹¹⁵ Here, again, the Lower Churchill assessment falls short. While the Panel's recommendation for the identification of regional mechanisms to assess and mitigate the cumulative effects of current and future development in Labrador was accepted in intent by the NL government, Doelle notes that no actions have been identified in this regard either by the province or the proponent.¹¹⁶ Further, no overall cradle-to-grave analysis (lifecycle) of the project was conducted, as Nalcor insisted that it had no plan to decommission the project, although it confirmed that decommissioning would have substantial environmental implications.¹¹⁷ What those implications would be were not mentioned, and neither was the likely

113. Both instruments contain the clause that they are "not intended to fetter decision-makers." See Government of Canada, *supra* note 41.

114. Spaling, *supra* note 57 at 236.

115. Duinker, *supra* note 57 at 13-14.

116. Meinhard Doelle, "The Disconnect Between EA & Implementation: A Look at the Methylmercury Issue in the Lower Churchill Project" (20 November 2015), online: *Dalhousie University Blogs* <blogs.dal.ca/melaw/2015/11/20/the-disconnect-between-ea-implementation-a-look-at-the-methylmercury-issue-in-the-lower-churchill-project/#comments> [perma.cc/S423-9RYS] [Doelle, "Disconnect between EA & Implementation"].

117. Joint Review Panel, *supra* note 4 at xxxi, 12, 262. Reference to life-cycle effects was made primarily in the context of Nalcor's compensation and mitigation strategies to meet Fisheries Canada's no net loss policy and providing sufficient habitat for the life cycle of fish species. See *ibid* at 77. Both the federal and provincial governments, however, outrightly rejected the Panel's recommendation that Nalcor demonstrates, prior to approval, how it will assume financial responsibility for potential future decommissioning of the project. *Supra* note 73, Government of Canada at 40 and Government of Newfoundland and Labrador at 36.

cost. The Panel concluded that “Nalcor’s approach to cumulative effects assessment was less than comprehensive.”¹¹⁸ For example, Nalcor chose a current-state baseline, failing to consider historical baselines, which provide a picture of a more abundant ecological state.¹¹⁹

Further, effective project-level cumulative assessment mandates a need for a high-level and broad strategic assessment, which maps a socio-ecological region that transcends artificial political and administrative boundaries and sets thresholds for development. The recommendation that the province should bring its total protected area in Labrador to the national average before any additional major development is approved, was, however, rejected by the NL government.¹²⁰ Like the previous iterations of the CEAA, the IAA refers to cumulative and regional assessment. The IAA has gone further to provide for strategic assessments of Canada’s policy, plan or program relevant to conducting impact assessment or any issue relevant to conducting impact assessment of designated projects.¹²¹ This provision, while important, is unlikely to have altered the decision of NL given its jurisdiction over non-federal lands within the province. However, the federal government could make the consideration of cumulative and regional effects a condition for approving the project.¹²² A cradle-to-grave analysis would also likely not be conducted under the IAA as it has no lifecycle assessment provision.

There are many more lessons that could be gleaned from the pre-assessment, assessment, and post-assessment processes of Lower Churchill. The application of the precautionary principle in the assessment is questionable. While there were monitoring plans, human health risk assessment and other studies conducted after the assessment and approval of the project, the project lacks the adaptive management

118. *Supra* note 4 at 267.

119. On current and historical baselines, see Clark Murray et al, “Cumulative Effects in Marine Ecosystems: Scientific Perspectives on its Challenges and Solutions” (Vancouver: WWF-Canada, 2014) at 31, online (pdf): <awsassets.wwf.ca/downloads/cumulativeeffects__updated_forwebupload__singlepages.pdf> [perma.cc/3972-UKGP].

120. Government of Newfoundland and Labrador, “Response to Joint Review Panel,” *supra* note 73 at 36-37.

121. *IAA*, *supra* note 8, s 95(1).

122. Jason MacLean, Meinhard Doelle & Chris Tollefson, “Polyjural and Polycentric Sustainability Assessment: A Once-in-a-Generation Law Reform Opportunity” (2016) 30:1 J Envtl L & Prac 35; in their analysis of court decisions including *Friends of the Oldman River Society v Canada (Minister of Transport)* [1992] 1 SCR 3, 88 DLR (4th) 1; *MiningWatch Canada v Canada (Minister of Fisheries & Oceans)* 2010 SCC 2; and *Syncrude Canada Ltd v Canada (Attorney General)* 2016 FCA 160, note that the Federal Government could have “broader powers to make decisions and impose conditions to implement the results of a comprehensive sustainability-based assessment” and that when IAs identify clear impacts on areas of federal jurisdiction, “there would be a solid basis for federal jurisdiction that implements an integrated approach to addressing the impacts identified” (at 45).

required to give effect to findings.¹²³ Arguably, the project could have fared relatively differently under the IAA given the explicit requirement for the consideration of sustainability and the extensive and stronger provision on follow-up, although an adaptive management plan is required under the Act only if the Minister considers it appropriate.¹²⁴ But as Gibson recently notes, while the IAA has considerable potential to improve Canadian IA processes, the success of the Act will depend on the elaboration of its provisions in well-crafted authoritative regulations and guidance, and their subsequent implementation.¹²⁵ As already shown, the elaboration of the Act's provision on sustainability in the Guidance and Framework are, as put by Gibson, "disappointing."¹²⁶

Conclusion and Recommendations

In this article, I have explored the relationship between sustainability, climate change, and impact assessment using Lower Churchill as case study. Rarely do we get to see the continued unravelling of a project that has been cautioned against in an IA process within a few years of its assessment. The prophecies of the project's Review Panel are, regrettably, coming to pass. The bright side is that there are lessons to learn. I have drawn a few lessons from Lower Churchill, particularly by situating the lessons in the context of the new IAA. These lessons, while generally applicable to the consideration of climate change in IA, are even more relevant to the growing renewable energy sector in Canada. *Table 1* shows the difference between the consideration of climate change in traditional IA compared to a sustainability-based IA frame. Renewable energy projects are being increasingly assessed under federal and provincial IA processes.¹²⁷ While renewable energy is a key piece of the global response to climate change, it is, however, not without its adverse biophysical and human consequences. I have argued here that a sustainability-based IA is the appropriate approach to assessing these effects and proposing alternatives. The IAA is an improvement on previous IA regimes for reasons including the recognition of renewable energy as a head of physical activities for which impact assessment will be considered under the regime.¹²⁸

123. Doelle, "Disconnect between EA & Implementation," *supra* note 116.

124. *IAA*, *supra* note 8, s 64(4).

125. Robert Gibson, "An Evaluation of Canada's New Sustainability-Based Impact Assessment Act" (2020) 33:1 *J Envtl L & Pol'y* 1 at 30-31.

126. *Ibid* at 13.

127. The Impact Assessment Agency of Canada's online registry as of 26 May 2020 has 26 hydroelectricity, 10 nuclear energy and 8 alternative energy projects listed. See Impact Assessment Agency of Canada, "Search Registry" (22 February 2021), online: *Impact Assessment Agency of Canada* <[https://iaac-aeic.gc.ca/050/evaluations/exploration?showMap=true&search=>](https://iaac-aeic.gc.ca/050/evaluations/exploration?showMap=true&search=).

128. Physical Activities Regulations, SOR/2019-285, ss 42-45.

The Physical Activities Regulation made pursuant to the IAA recognizes hydroelectricity, tidal power, and offshore wind energy.¹²⁹ The non-inclusion of solar farms and onshore wind turbines is arguably because such projects are mostly under the jurisdiction of provincial governments. This, however, does not mean such projects cannot be conducted on federal lands, thereby requiring assessment. There is, therefore, need to expand the renewable energy provision of the Physical Activities Regulation. Also needed is a renewable energy sector specific Guidance on the implementation and implications of the IAA. The Guidance should incorporate the lessons from Lower Churchill highlighted in this work, including: the involvement of rights-holders and stakeholders in determining the need, rationale and scope of a renewable energy project; balancing the climate change benefits of the project with other sustainability concerns; guaranteeing and protecting human rights; ensuring the participation of rights-holders and stakeholders in determining and applying sustainability and trade-off criteria at the decision making stage; and ensuring follow-up and adaptive management.

129. *Ibid.*, ss 42-43.

