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Dear Panel on Federal Environmental Assessment Reform;

I want to express my deepest appreciation that the Federal Government is working to improve environmental assessment in Canada. Thank you for the opportunity to offer my perspectives as a scientist with on-the-ground experience with environmental assessment of large proposed developments.

Overall, it is my professional assessment that the Canadian environmental assessment process needs major changes in order to fulfill its mission of evidence-based decision-making for sustainable development. The current system poses severe risks to communities and natural resources.

This is an amazing opportunity for Canada to create a system that works for its people, environment, and economy.

Background.--I am an Associate Professor at Simon Fraser University in the departments of Biological Sciences as well as Resource and Environmental Management and hold the Liber Ero Research Chair of Coastal Science and Management. Specific areas of expertise include fish populations, aquatic ecosystems, and salmon. I have 20 years of expertise researching on salmon and their ecosystems, from Alaska to British Columbia to California, have published 67 peer-reviewed scientific papers on these topics, and was recently recognized as a leading emerging scientist in the field of fisheries sciences by the Canadian Fisheries Society.

I have first-hand experience with environmental assessment in practice through my scientific activities in the Skeena River watershed of Northern British Columbia. My research group has an ongoing and active research program examining the ecology of the Skeena River estuary (near Prince Rupert), focusing primarily on young salmon and their food webs. This research program represents the on-going collaboration between my research group, Skeena Fisheries Commission, and Lax Kw'alaams Fisheries Program. Our

research findings, which have been featured in over 200 media outlets, are relevant to understanding potential risks of the Pacific Northwest LNG project and other developments. Working with First Nations, I have evaluated the science of environmental assessment applications in this Skeena estuary region.

Approach.--In what follows, I will focus on three components of environmental assessment with which I am familiar. For each of these components, I examine a challenge and then offer a possible solution. In each of the three sections, I will reference the questions from the Panel on Federal Environmental Assessment Reform that the components are linked to. I am here not as a representative of any group and rather speak from my own experiences and expertise.

1A. CHALLENGE—LACK OF BROAD AND FORWARD-LOOKING PERSPECTIVE

The current environmental assessment process is reactive to specific project proposals and is lacking a broad and forward-looking perspective on cumulative effects and sustainable development. As a result, specific projects become controversial symbols of broader topics such as climate change, indigenous rights, economics, and environment.

There is currently a lack of a framework to formalize a forward-looking and broad conversation about how much, where, and what types of development are in the best interests for Canada and its commitments.

For example, there are currently 24 LNG export projects in various stages of development in BC¹. Yet there has not been a public “LNG plan” that examined evidence and solicited input on questions such as: How many projects could be economically viable? How will this fit into climate change commitments? How will the environmental risks of these projects interact with cumulative effects of previous development? Are there regions where pipelines and terminals would pose less environmental risk or are there regions that should be off-limits? Which communities and First Nations would support the possibility of LNG in their region?

The lack of a forward-looking plan for sustainable development has several consequences:

- Decision-making is myopic, with no real consideration of cumulative effects.
- Projects become symbols of a broader dialogue that hasn’t happened yet. As a result, projects become embroiled and stalled in controversy, creating uncertainty for potential investors and proponents.
- The plethora of proposals and environmental assessments is inefficient in terms of resources and time.

¹ <https://news.gov.bc.ca/factsheets/factsheet-lng-project-proposals-in-british-columbia>

- The trajectory of development is driven by industry proponents, whose bottom-line may not feature the best interests of Canadians or sustainable development.

Rather than react piecemeal to industry proponents, Canada has the opportunity to chart its own course forward.

1B. SUGGESTION—STRATEGIC ENVIRONMENTAL ASSESSMENT

I suggest that “strategic environmental assessments” could create positive visions for the future and chart a course forward for sustainable development.

One potential approach would be for an expert working group to consider the potential benefits and trade-offs associated with different scenarios of development. These scenarios could then be used as a platform for soliciting input from Indigenous groups and other Canadians. This feedback would then be incorporated into the final strategic environmental assessment. Such assessments could be created for different regions (e.g., watershed plans) or different industry sectors (e.g., LNG). Strategic environmental assessments would represent a higher-level filter for project-specific proposals.

This approach would help enable a more positive consultation process, where the communities are empowered to help chart a path forward for their country. While I am not Indigenous, I have observed that the current consultation process presents a Sophie’s choice for communities: should they: A). Sign the impact-benefit agreement and risk the health of their natural resources that provide food and a cultural foundation? B). Turn their back on a potential financial opportunity that could ease poverty and other deep social injustices? It is my external observation that this process does immeasurable harm to the integrity and functionality of Indigenous communities. Incorporating more collaboration and consultation for strategic environmental assessments will enable a more productive consultation process.

Strategic environmental assessments or regional plans are not a new idea. As noted by Anna Johnston (West Coast Environmental Law), *“doing these kinds of regional-scale assessments would really ease the burden on proponents, on the public, on indigenous peoples, on government.”*²

It is important that these strategic environmental assessments strongly influence decisions. For example, development proposals that do not align with the strategic environmental assessment should likely be rejected without further investment of time and money.

² Gilchrist, E. 2016. A surprisingly simple solution to Canada’s stalled energy debate. Desmog Canada. <https://www.desmog.ca/2016/11/28/surprisingly-simple-solution-canada-s-stalled-energy-debate>

There are various examples of forward-looking strategic plans that had differing levels of efficacy, ranging from watershed plans to the Great Bear rainforest agreement³. The current proposal would help operationalize strategic plans such as these by integrating them into Federal-level decision-making.

The resources to support these processes could come from the suggested model of independent environmental assessment (see Section 2B).

This section addresses the following themes and questions from the panel:

- THEME: Environmental Assessment in Context. Q3, Q4.
- THEME: Planning Environmental Assessments. Q1-Q4.

2A. CHALLENGE--PROPONENT-DRIVEN ENVIRONMENTAL ASSESSMENT

Current model (proponent-driven environmental assessment).--The current structure for environmental assessment is for the proponent to hire a consulting company to collect baseline information and prepare an environmental assessment report. Data collected during the environmental assessment is proprietary—generally “owned” by the project proponent and cannot be independently assessed nor shared for the benefit of future generations. The environmental assessment report forms the basis for the decision-making process for CEAA (Fig. 1). The decision-makers rely on the quality and integrity of the proponent-driven assessment.

However, accurate quantification of environmental risks may not be in the best financial interest of the project proponent. If environmental risks are deemed to be high, then the environmental assessment application may be denied or laden with costly mitigation measures. While I believe that most environmental consultant employees are trying to do a good job, the companies they work for are under financial pressures to successfully obtain an environmental assessment certificate with minimal additional mitigation costs. This is a textbook example of a conflict-of-interest.

Reporter Anne Casselman wrote an award-winning article in BC Business on this topic⁴. She uncovered how this conflict-of-interest can torque the scientific integrity and efficacy of environmental assessments. As one of her anonymous sources who works for a

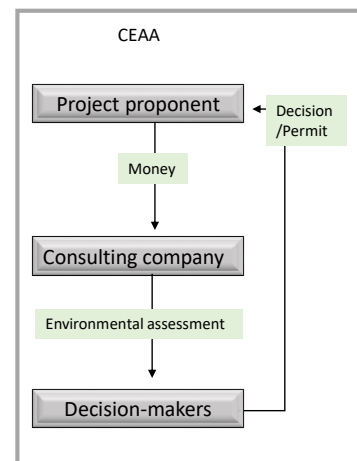


Figure 1. Proponent-funded environmental assessment, as practiced in Canada.

³ Examples of strategic planning from British Columbia can be found at: <https://www.for.gov.bc.ca/TasB/SLRP/>.

⁴ Casselman, A. 2015. Who is watching B.C.'s environmental watch dogs? BC Business. <http://www.bcbusiness.ca/who-is-watching-bcs-environmental-watch-dogs>

consulting agency stated: “I’ve had my professional opinion heavily, heavily pressured. I’ve had my wording changed, my results changed”.

I have read through numerous environmental assessments. Of these environmental assessments, I have noticed the following patterns:

- Variable scientific quality—some are decent pieces of science, others have serious flaws in methodology, analyses, logic, and presentation.
- Data are not shared in way that allows for independent assessment or for the data to benefit future environmental assessments or scientific projects.
- Sources of scientific uncertainty or knowledge gaps are generally treated as evidence for no risk. For example, if sampling was not appropriate to observe a species in the project area, then it is assumed that the species is either not located there or that the project poses no risks.
- There is a strong reliance on mitigation without incorporation of uncertainty of efficacy (see Section 3A).
- Invariably, the assessment concludes that the project will have no significant environmental risks, pending mitigation. I find it striking that assessments always reach the same conclusion, regardless of the diversity and varying size and intensity of projects.

The bottom line is that a proponent-funded environmental assessment does not provide a balanced or trust-worthy assessment of environmental risks. Uncertainty or bias in evidence creates risks to natural resources, communities, and economies. There is very good reason for people to not trust that decision making is based on balanced and best-available science.

2B. SUGGESTION—INDEPENDENT ENVIRONMENTAL ASSESSMENT

I propose to create a firewall between industry proponents and environmental assessment.

International Perspective.—Environmental assessment in other countries have processes that do not rely on proponent-funded environmental assessment. For example, as mandated by the California Environmental Quality Act (CEQA), governmental agencies can perform the environmental assessment, assess potential risks, and pass this environmental assessment along to decision-makers (Fig. 2). This structure has the benefit of the environmental assessment being driven by government agencies rather than industry. I note that it seems like this structure could be vulnerable to regulatory capture, where governmental agencies come under pressure from industries and cease to fairly represent the common good.

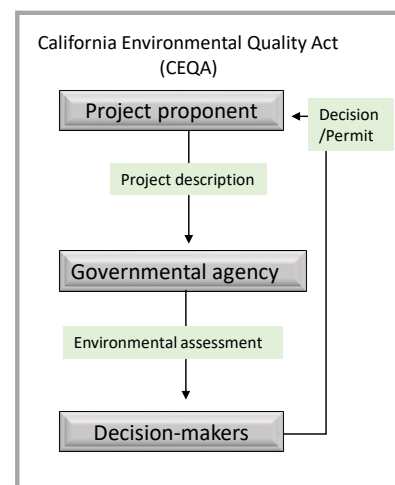


Figure 2. California Environmental Quality Act (CEQA)

A Lesson from Hockey.--The National Hockey League (NHL) now mandates that there are third-party independent observers that monitor players for signs of concussions. Previously, each team was responsible for having their own concussion specialists. But the NHL recognized that a team-hired specialist is financially linked to the team, and might (perhaps subconsciously) put the team above the potential risks to the players. I suggest that decisions regarding major developments in Canada deserve this same level of independence and integrity as provided to hockey.

Suggestion.--I suggest the following framework for environmental assessment in Canada (Fig. 3). The project proponent would send in a project description to a newly created Independent Federal Committee on Environmental Assessment Implementation. Based on feedback from the Committee on the approximate costs of the environmental assessment, the Committee would put the environmental assessment of project out to bid for Consulting Companies. The Committee would charge an overhead to project proponents to recoup costs (e.g., salaries for Independent Federal Committee) and support Strategic Environmental Assessments (see Section 1A). The Consulting company would then prepare the environmental assessment, which would form the basis for decision-making.

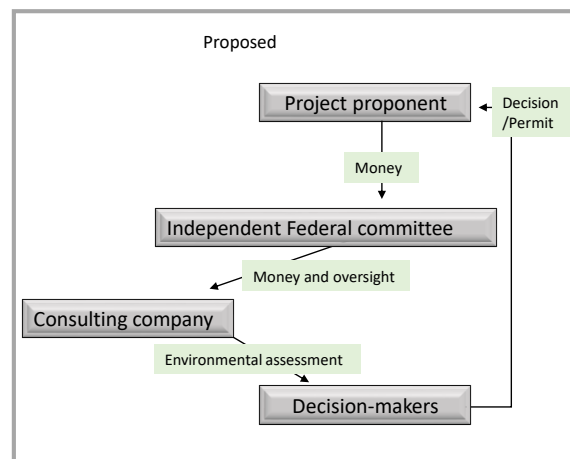


Figure 3. A proposed framework for environmental assessment that enables financial independence.

This suggested framework has several benefits.

- This framework creates a barrier between the Project Proponent and the Consulting Company, insulating the environmental assessment from industry influence.
- Decisions would benefit from the increased quality and integrity of environmental assessments. The foundation of environmental decision-making would be financially independent of proponents and present a more balanced assessment of potential environmental risks.
- Public trust would be improved.
- This structure could also enable a funding mechanism for supporting Governmental Strategic Environmental Assessment (section 1B).
- This structure could enable a mechanism by which data collected by Consultants is shared to the benefit of future environmental assessments and science. The Independent Federal committee should mandate that they receive and share data collected by the Consultants—thus, environmental assessments would no longer be a “black hole” for data.
- This framework would enable flexibility for First Nations science programs to participate more actively in the environmental assessment of potential projects. For

example, First Nations science programs could be contracted by the Independent Federal committee for components of the environmental assessment.

This section addresses the following themes and questions from the panel:

- THEME: Conduct of Environmental Assessments. Q1-3.

3A. CHALLENGE—LACK OF TRANSPARENCY IN DECISION-MAKING

Decisions should be made upon the explicit criteria to assess potential consequences of projects for environment, economics, and communities. Yet, it is my experience that these criteria are often not articulated. Below I highlight several specific areas where a lack of transparency is apparent in decision-making.

- *Quantification of trade-offs.* For example, if environmental harm is justified by economic gain (e.g., recent Pacific NorthWest LNG approval), it is important to quantify how these trade-offs are assessed. How much economic gain is needed to justify increased risks to our climate future?
- *Reliance on mitigation.* Projects are often approved with a long list of conditions or mitigation measures that may or may not decrease their environmental risk. However, ecological systems are complex and scientific studies demonstrate that mitigation often does not work. DFO previously did an audit of fish habitat compensation projects and they found that most projects were unsuccessful⁵. Yet, mitigation and habitat compensation are still a key foundation of approval of environmental assessment applications.
- *Uncertainty and knowledge gaps.* It is currently unclear how current decisions consider uncertainty. Often there are key components of ecosystems for which there is poor scientific understanding of their status and vulnerability. Key risk pathways often have uncertainty. Lack of knowledge should not be equated with lack of environmental risks.

3B. SUGGESTION—TRANSPARENCY IN DECISION-MAKING CRITERIA

Decisions should entail disclosure of decision-making criteria⁶. This transparency in decision-making would bolster public trust and help illustrate how decision-makers assessed trade-offs, risks, and uncertainty.

Properly accounting for uncertainty, such as that present in mitigation, is a key component of evidence-based decision-making. Science is often held up as a reason to justify a

⁵ Quigley, J.T, and D.J. Harper. 2006. Effectiveness of fish habitat compensation in Canada in achieving no net loss. Environmental Management.

⁶ Gibson, R.B, M. Doelle, and A.J. Sinclair. 2016. Fulfilling the promise: Basic components of next generation environmental assessment. Journal of Environmental Law and Practice.

decision, even if there are large science gaps. The precautionary principle is a strong foundation for dealing with uncertainty.

Decisions should utilize strategic environmental assessments (1B) as a filter through which to evaluate environmental assessments. The decision-statement should explain how the decision reflects the findings of prior strategic environmental assessments.

This section addresses the following themes and questions from the panel:

- THEME: Decision and follow-up. Q1, Q2, Q5.

CONCLUSIONS

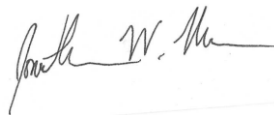
This is a transformative opportunity for Canada to create a system that works for its people, environment, and economy. While it is my experience that the current approach is ineffective, I do believe that there are realistic solutions to these challenges. First, strategic environmental assessments would enable forward-looking sustainable development. Second, a firewall is needed to enable scientific integrity in environmental assessment. Third, transparency in decision-making will increase accountability and trust.

There are many scientists in Canada who would love to roll up their sleeves and offer our hard work and expertise to help make this happen. I am one of them. Use us!

I sincerely thank you for considering the input from myself and others, your hard work and dedication.

Sincerely,

Jonathan W. Moore

A handwritten signature in black ink, appearing to read "Jonathan W. Moore". The signature is written in a cursive style and is positioned to the right of the typed name.