

# **Science, Decision-Making, and the Law: The Impact Assessment Cat in the Science Hat**

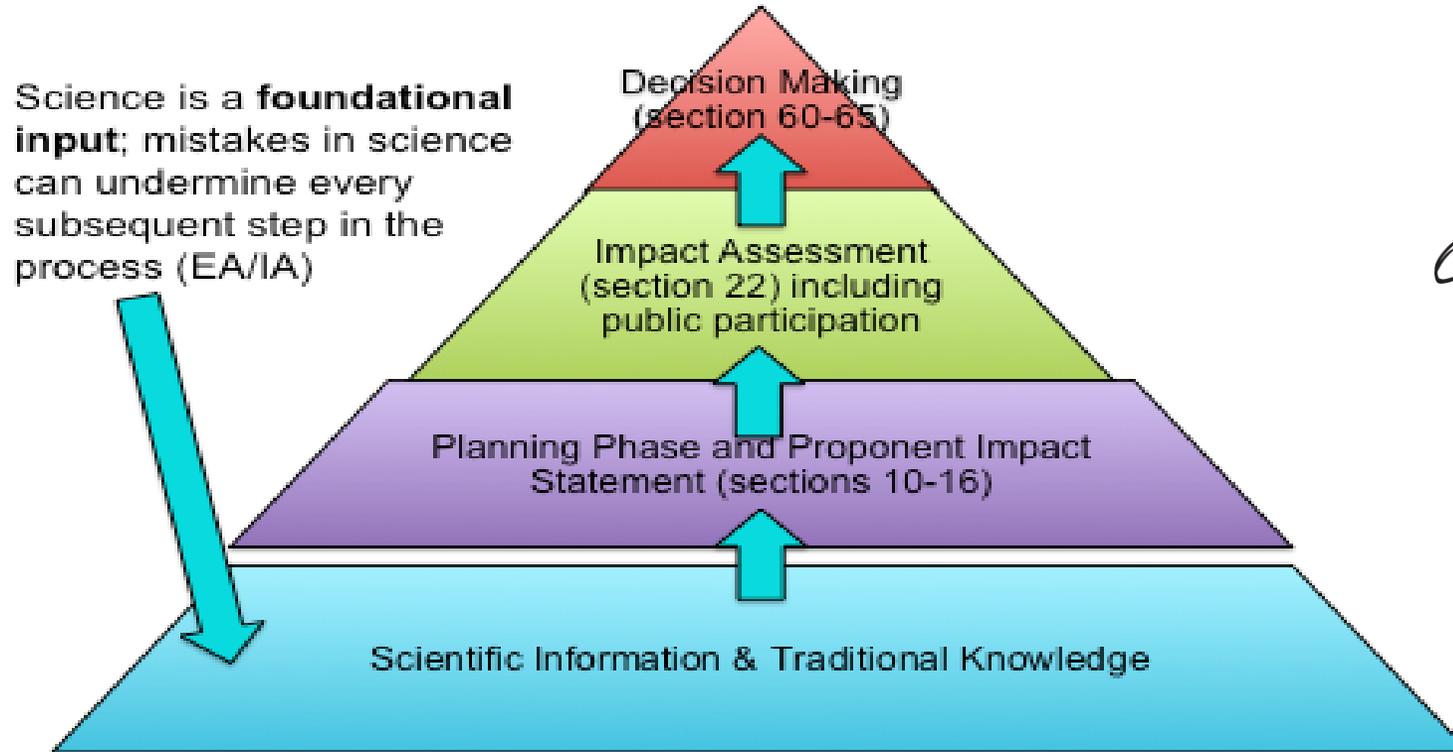


**UNIVERSITY OF  
CALGARY**

**Dr. Aerin Jacob, Yellowstone to Yukon  
Prof. Martin Olszynski, UCalgary Law  
Green Regs and Ham  
October 25, 2018**

1. A brief history of science in Canadian environmental/impact assessment law;
    - a) EARPGO
    - b) CEAA, 1992
    - c) CEAA, 2012
  
  2. Current challenges
  
  3. Science under Bill C-69: *Impact Assessment Act*
    - a) References to science and scientific information
    - b) Duty of scientific integrity
    - c) Adaptive management plans
- \* Presentation based on Westwood et al., “The Role of Science in Contemporary Canadian Environmental Decision-Making: The Example of Environmental Assessment” (2019) UBC Law Review (forthcoming)

## The Importance of Rigorous Science in Impact Assessment



- Neither *EARPGO*, *CEAA, 1992*, nor *CEAA, 2012* contain any explicit reference to “science” or “scientific information”
- Contrast: *CEPA, 1999*
  - Several references to “science” in preamble and throughout Act;
  - Reference to “**weight of evidence**” in toxicity assessments
- Contrast: *SARA*
  - 10 references to “science” or “scientific information”
  - **Transparent separation of science & policy** in listing process – “primary strength” (A.O. Mooers et al)

- *CEAA, 1992* and *CEAA, 2012* do contain some science-related terms...
  - “Significant adverse environmental effects”:
    - “...**not a fixed or wholly objective standard** and contains a large measure of opinion and judgment...” *Alberta Wilderness Assn. v. Express Pipelines Ltd.*, 1996 CanLII 12470 (FCA) at para 10
  - “Technically and economically feasible” mitigation measures:
    - Limited caselaw – and what does exist has not prevented reliance on little more than “vague hopes for future technology” (N. Chalifour, 2009)
      - Remediation of peatlands: Accepted for Kearn Oil Sands project, abandoned by time of Shell Jackpine Expansion project.
      - Tailings ponds = end pit lakes?
  - “Adaptive management” (*CEAA, 1992* only):
    - Caselaw erroneously assumes that AM can be applied to any environmental problem and that it will always lead to positive environmental outcomes (e.g. *Pembina Institute v. Canada*, FC 2008)

- Context matters: most challenges to environmental decision-making occur in context of “judicial review”
  - Courts instructed to defer to regulators on the basis of “implied expertise”
    - Is the decision “reasonable”?
    - Application of “reasonableness” standard is highly uneven across courts
    - Some courts have also declared that they will not sit as “academies of science”
- Vague terms + judicial deference<sup>(unevenly applied)</sup> = lack of scientific rigor?



CANADA, WE HAVE A PROBLEM.

# BCBUSINESS



“I’ve had my professional opinion heavily, heavily pressured. I’ve had my wording changed, my results changed. A lot of my interpretations have been changed.”

*Braden Robinson, \* professional biologist*

“What is classically a huge problem with those huge companies that do [environmental] survey work is they send out their most junior people,”

*Amanda Baker, \* RPBio*

“My boss came to me, and said, of the 20 or so papers you found, how many found no effect, or found it didn’t harm them? Use those four.”

*Alana Westwood\*, consultant*

“[The company] took [my report] and rewrote it, basically. It wasn’t my document anymore.”

*Anonymous, professional biologist*

Calgary floods, July 2013



Mount Polley tailings dam collapse, July 2014



News · World

## Northern Gateway "flawed," 300 scientists tell Stephen Harper

Letter signed by 300 prominent scientist questions findings of Joint Review Panel, evidence before government in advance of Northern Gateway decision

STRAIGHT TALK »

## More than 250 Canadian scientists and professors sign letter objecting to Site C dam approval

by Charlie Smith on May 24th, 2016 at 10:28 AM

## Lelu Island LNG environmental assessment questioned by 130 scientists

Scientists raise five areas of concern with the 'scientifically flawed' draft report

CBC News Posted: Mar 09, 2016 10:40 AM PT | Last Updated: Mar 09, 2016 10:40 AM PT

# Schindler (1976) *Science* The Impact Statement Boondoggle

“These reports have formed a ‘grey literature’ so diffuse, so voluminous, and so limited in distribution that its conclusions and recommendations are **never scrutinized by the scientific community at large.**”

7 May 1976, Volume 192, Number 4239

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## The Impact Statement Boondoggle

The demand for "impact statements" evaluating the environmental consequences of human activities in natural ecosystems seemed a natural outgrowth of the rise in ecological awareness of the 1960's. This idea, designed to protect our natural resources, has to some extent pacified the demands of ecologically concerned citizens. These citizens should have another look. Having seen the results of many of these impact studies, and evaluated proposals for second-generation studies, I believe that the idea has backfired.

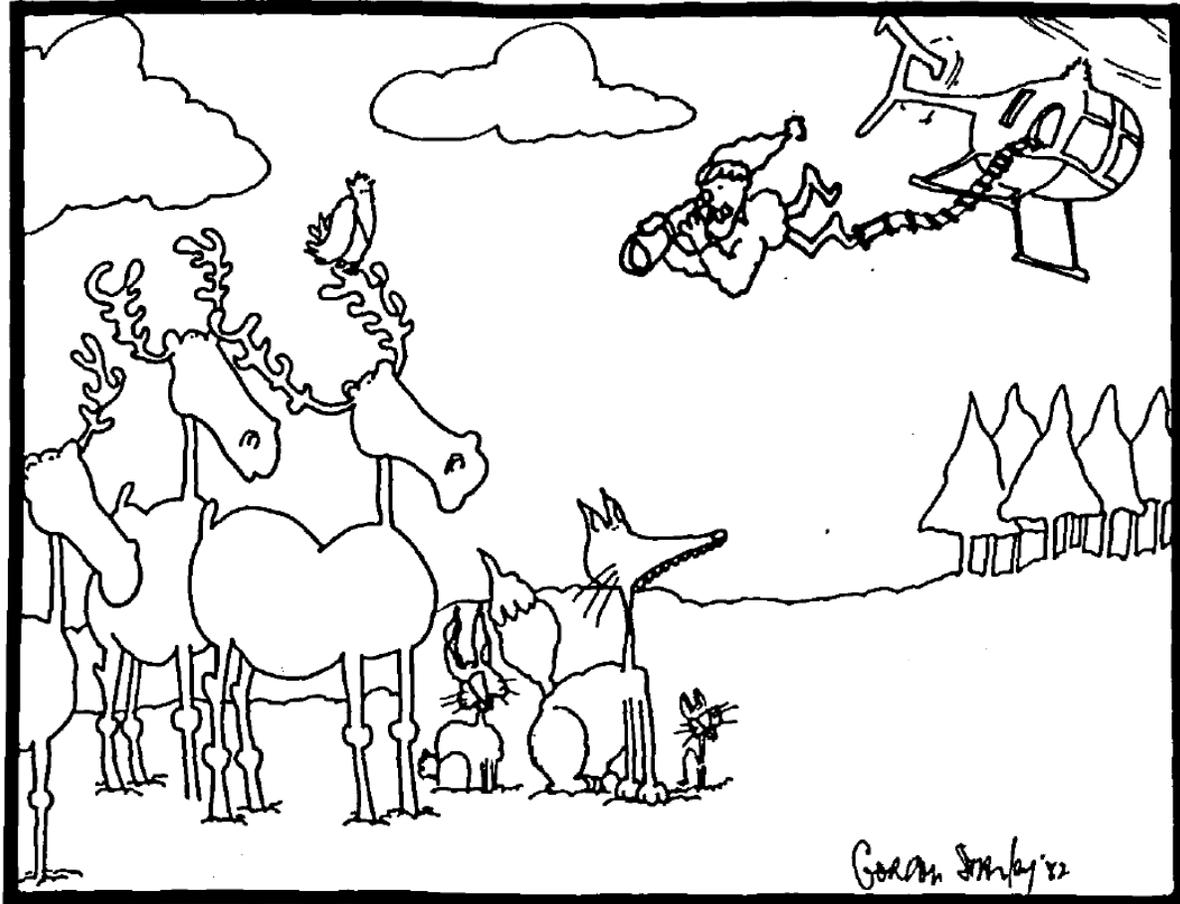
Many politicians have been quick to grasp that the quickest way to silence critical "ecofreaks" is to allocate a small proportion of funds for any engineering project for ecological studies. Someone is inevitably available to receive these funds, conduct the studies regardless of how quickly results are demanded, write large, diffuse reports containing reams of uninterpreted and incomplete descriptive data, and in some cases, construct "predictive" models, irrespective of the quality of the data base. These reports have formed a "gray literature" so diffuse, so voluminous, and so limited in distribution that its conclusions and recommendations are never scrutinized by the scientific community at large. Often the author's only scientific credentials are an impressive title in a government agency, university, or consulting firm. This title, the mass of the report, the author's salary, and his dress and bearing often carry more weight with the commission or study board to whom the statement is presented than either his scientific competence or the validity of his scientific investigation. Indeed, many agencies have found it in their best interests to employ a "traveling circus" of "scientists" with credentials matching these requirements. As a result, impact statements seldom receive the hard scrutiny that follows the publication of scientific findings in a reputable scientific journal.

The advancement of the scientific method is also in jeopardy. First-rate natural scientists are finally learning to set and test hypotheses and to study mechanisms and processes that are important in natural systems, rather than simply to survey and catalog the systems. They are, however, usually not attracted to the undefined scientific problems, complex committee hierarchy, and unrealistic time constraints that are usually attached to impact studies. Instead, such studies are often done by scientists who cannot successfully compete for funding from traditional scientific sources. In general, their methods are ancient, descriptive "textbook" techniques, which do not reflect either the many scientific advances of the past decade or the problems unique to the study undertaken. The same tired old bag of tricks is applied to studies of every type, regardless of the type of impact anticipated. The type of data generated cannot usually be extrapolated from one ecosystem to another, because studies were not planned with that as a major objective. As a result, each new study begins with little or no logical background, and no master plan for studying environmental processes is emerging. How well a particular study is funded is a direct function of the value of the resource to be affected, with no consideration given to the amenability of the system to study or to the quality of science which might result. Enormous sums are therefore spent with little or no scientific return.

The continued application of such studies can have several effects, including increased prices for natural resources; a declining credibility for environmental science and scientists; a reduction in the overall quality of scientific personnel; and the degradation of our natural resources, not as the result of the direct activities of industry and government, but because of the ineffectual groping of environmental scientists.

If we are to protect both our resources and scientific integrity, environmental scientists must seek to put their studies on a scientifically credible basis—to see that problems, terms of reference, funding, time constraints, reports, and conclusions are all within a bona fide scientific framework.—D. W. SCHINDLER, *Leader, Experimental Limnology Project, Freshwater Institute, 501 University Crescent, Winnipeg, Manitoba, Canada*

# Hilborn & Walters (1981) Pitfalls of Environmental Baseline & Process Studies



“We believe the environmental assessment business would be far more advanced today if the money spent on pre-development studies in the 1970s had been spent on post-development retrospective studies and follow-ups. We learn by experience, but **we fail to document the most useful of all experience, our failures.**”

“Data is essential, but transforming data into information that's both relevant and accessible is crucial... There are mountains of data in various organizations that aren't being transformed into information.”

*Monica*

“Data systems that a they collect only the maximize the use of collected once and used often.”

*Duncan Millard, International Energy Agency*



HOUSE OF COMMONS  
CHAMBRE DES COMMUNES  
CANADA

## RETHINKING CANADA'S ENERGY INFORMATION SYSTEM: COLLABORATIVE MODELS IN A DATA-DRIVEN ECONOMY

Report of the Standing Committee on Natural Resources

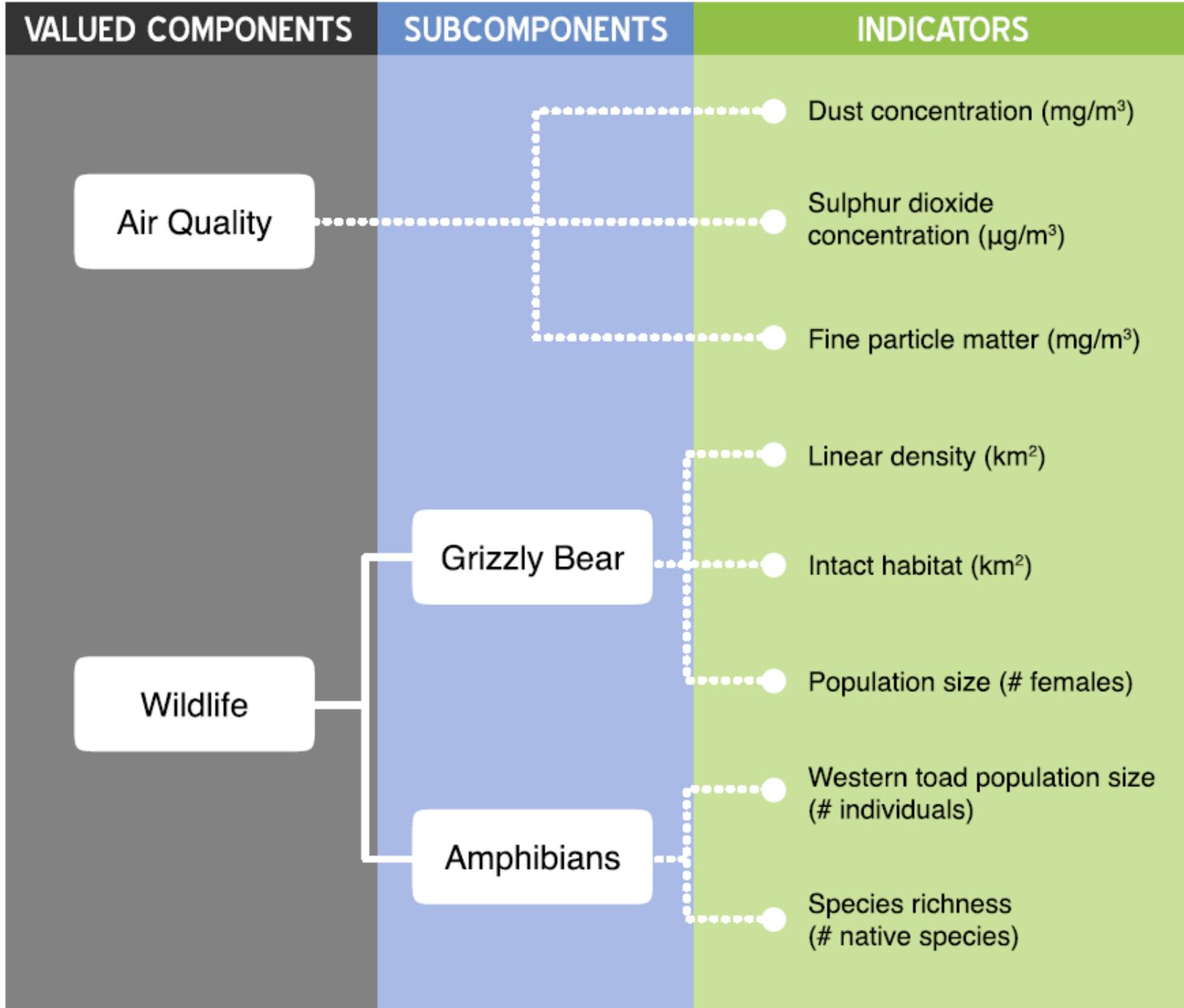
James Maloney, Chair

**It is a common theme for people on either side of a project that confidence is lacking that proper decisions are being made with the best available and neutral information.**

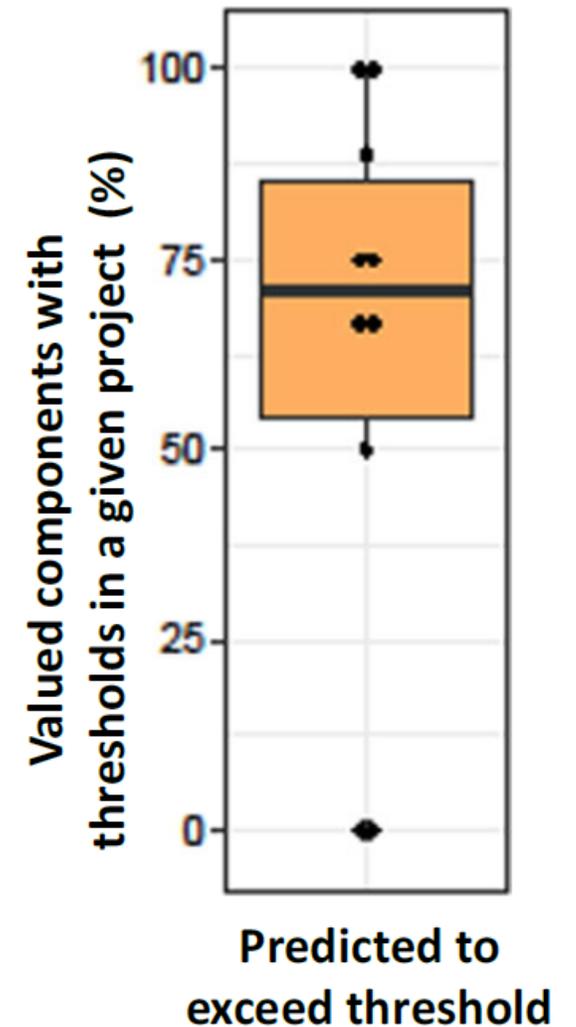
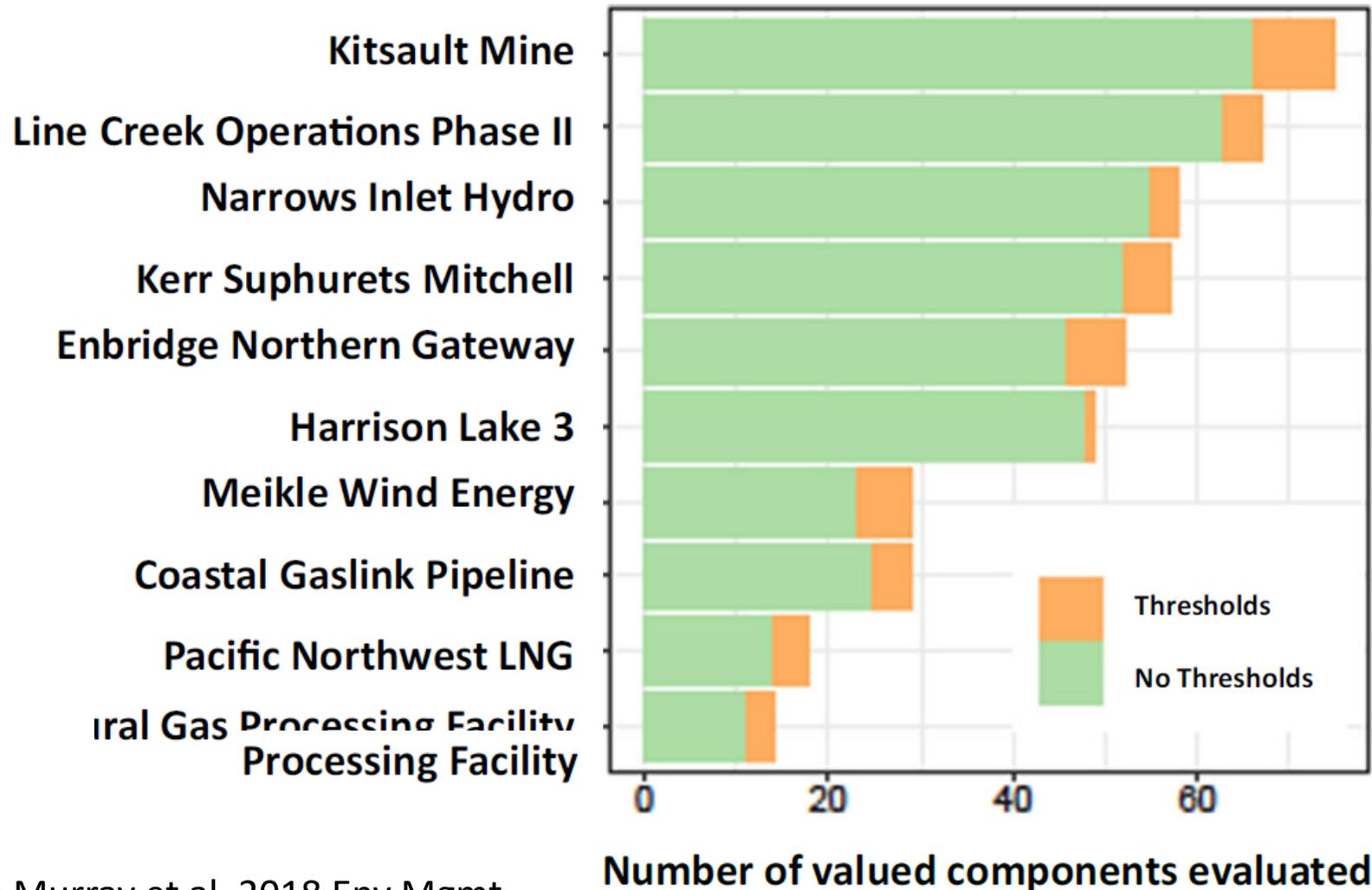
OCTOBER 2018  
42<sup>nd</sup> PARLIAMENT, 1<sup>st</sup> SESSION

EA process = tool to evaluate substantial impacts on *valued components*

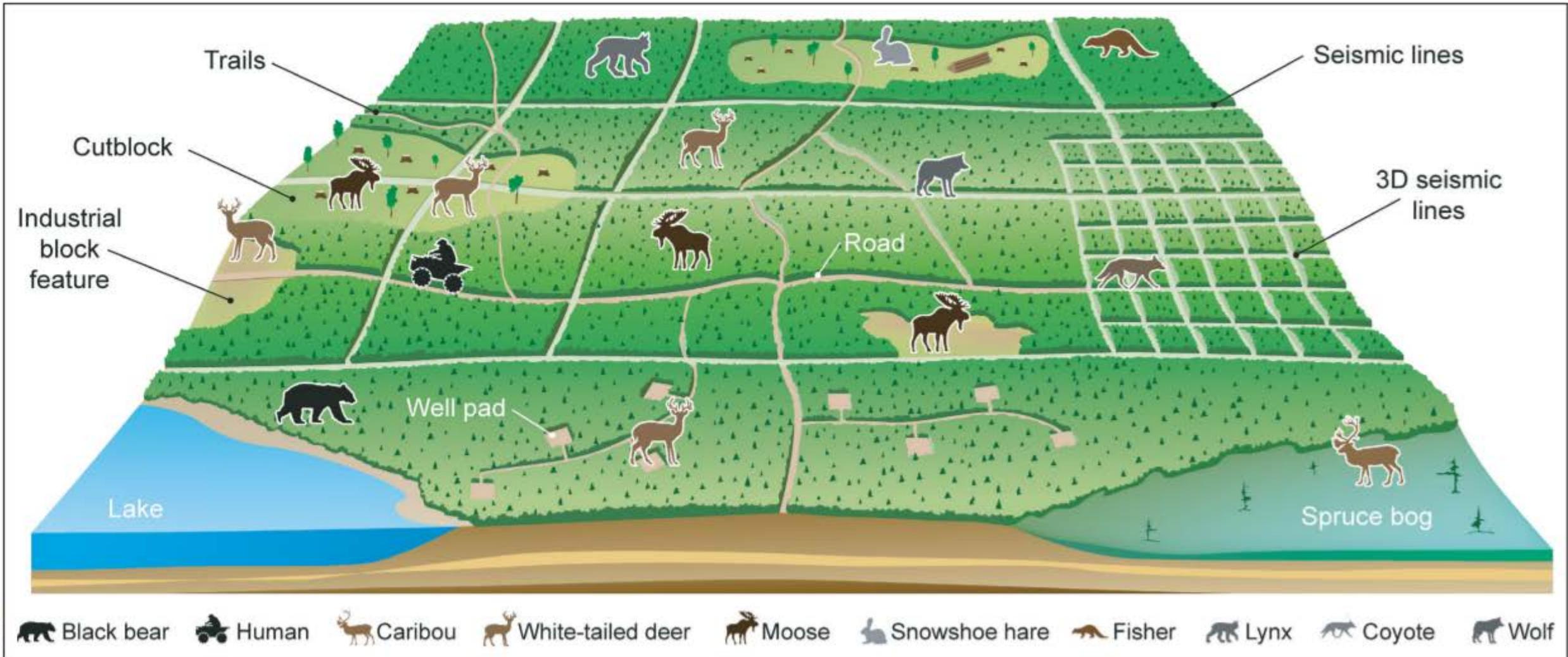
Essential that determining *impact significance* is transparent & systematic



“Our results show that the **thresholds are being exceeded**, often without being identified as significant. Accordingly, there is reason to question whether this tool is doing a good job of preventing large environmental impacts from occurring.”



Landscape disturbances create 'winners' and 'losers'. Man-made features affect entire boreal mammal community – more than natural features.

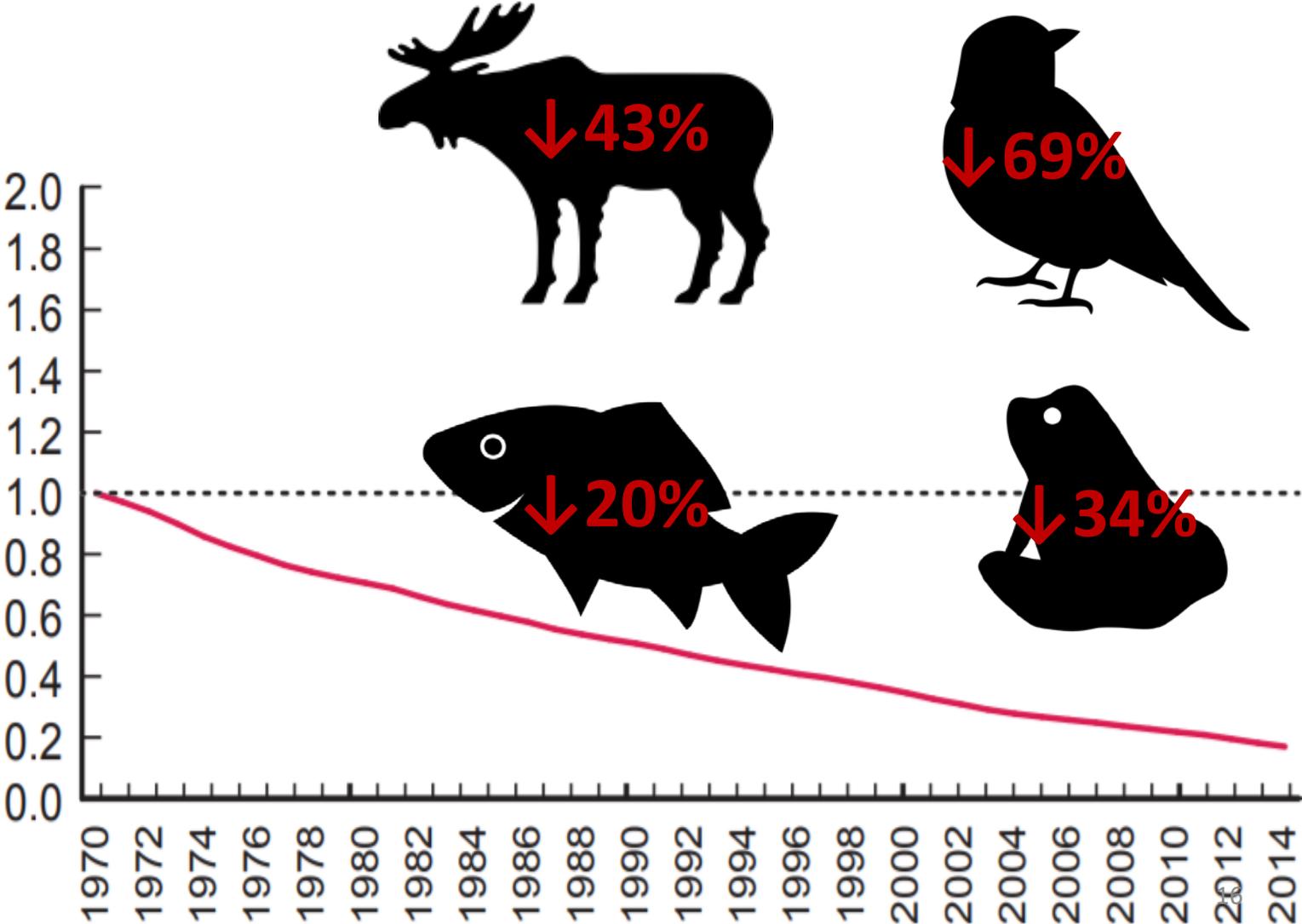


# WWF Living Planet Report - Canada (2017)

3689 pop. trends for  
903 monitored  
vertebrate species,  
1970-2014

Half of monitored  
species (451) in decline

Average: **↓83%**



November 2016: [www.youngresearchersopenletter.org](http://www.youngresearchersopenletter.org)

# Young researchers call for scientific integrity in environmental decision-making in Canada

We are more than 1800 early-career researchers concerned about environmental and regulatory processes in Canada. Environmental and regulatory decision-making processes need scientific rigour and transparency to adequately assess benefits and risks for the health and environment of all Canadians. Our letter provides five recommendations to assist the federal government as it reviews these processes and seeks to strengthen evidence-based decision-making in Canada.

# Strengthen scientific integrity in IA

1. Seek and act on best available evidence
2. Make all\* information from IAs publicly & permanently available
3. Assess cumulative effects from past, present, and future activities across multiple scales
4. Prevent and eliminate real, apparent, or potential conflicts of interest
5. Explicit decision-making criteria and provide full, transparent rationale of factors considered

\*Some exceptions, e.g., locations of species at risk, Indigenous or community-held knowledge



<http://eareview-examenee.ca>



## 2.5.4 MAKING EVIDENCE-BASED DECISIONS

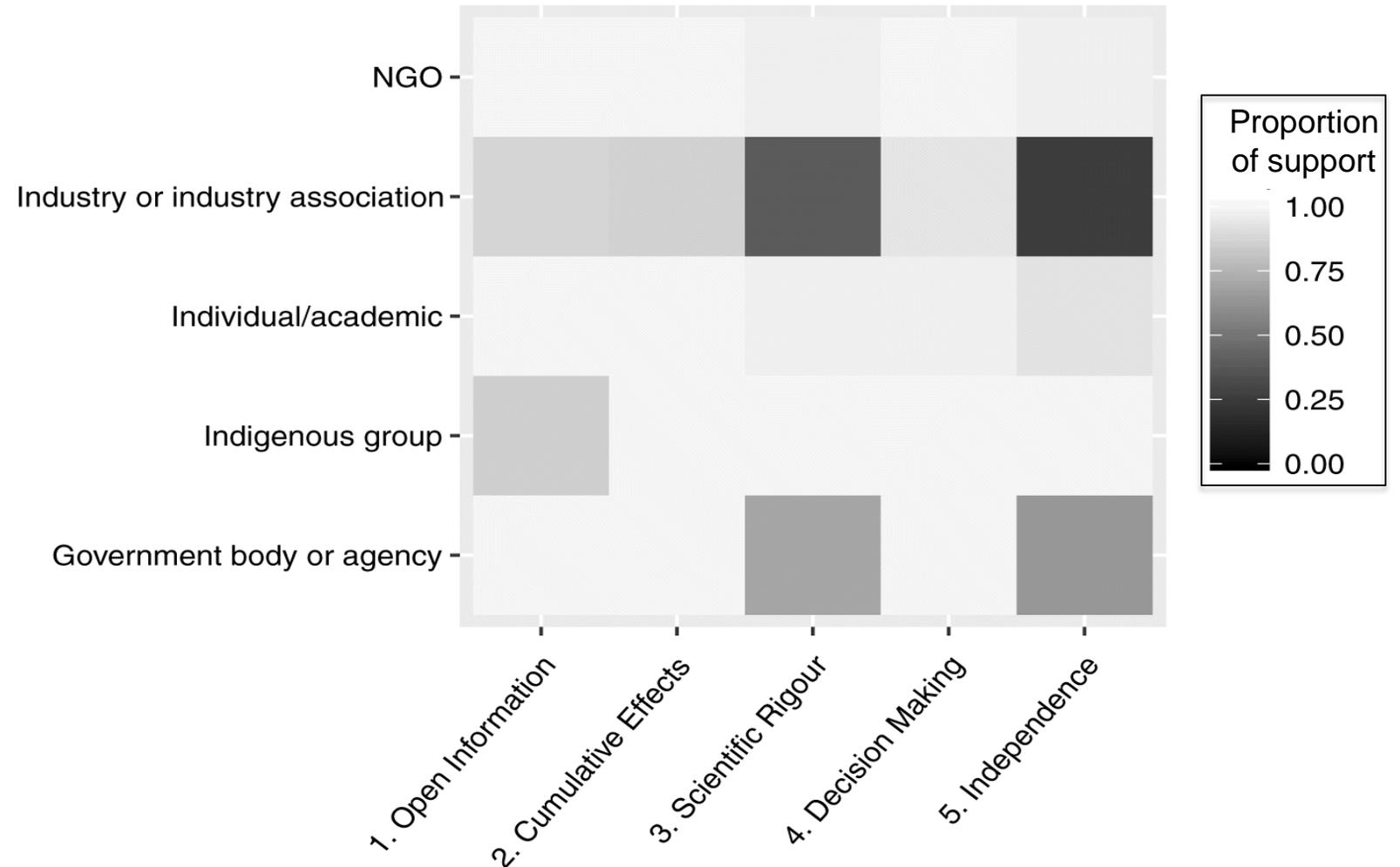
### WHAT WE HEARD

One of the most critical issues identified by participants is a lack of transparency in current assessment processes, especially in decision-making. Participants advocated for the legislation of sustainability criteria and trade-off rules to ensure that decisions take into account the best-available knowledge. Current decisions do not reflect the best information collected during the IA process.

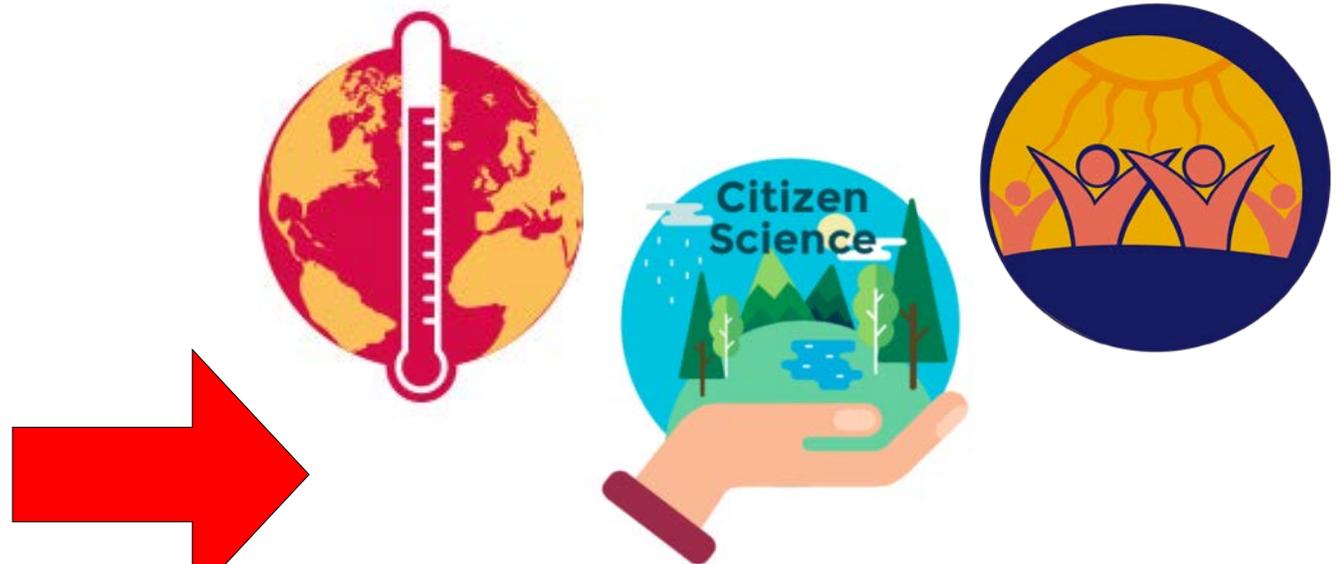
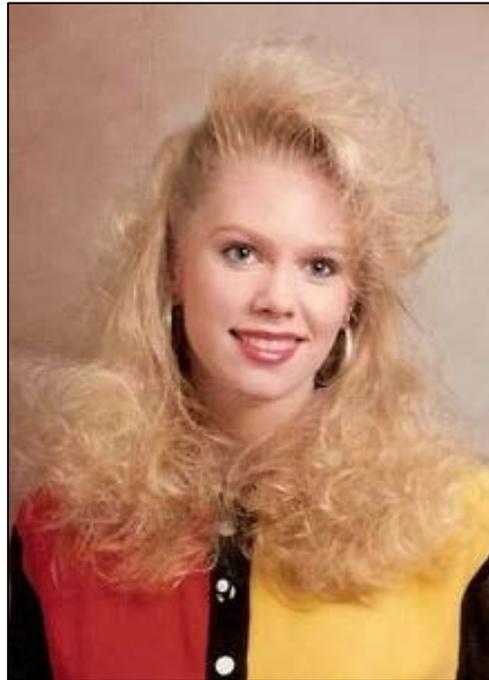
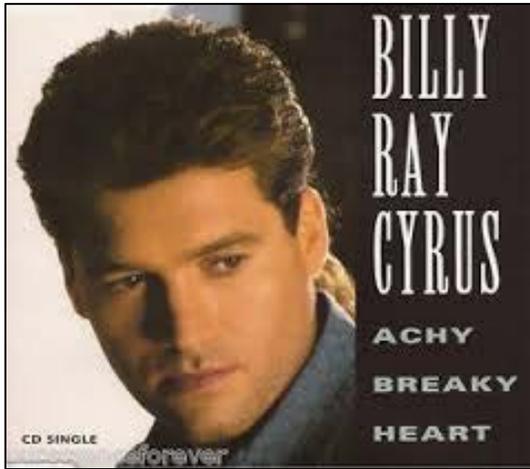
**“Right now, decisions are being made in a black box or we talk about being drawn out of a magic hat. What we want to do here is to be able to draw that curtain back and to see how decisions are made.”**

*Aerin Jacob on behalf of nearly 2,000 other young researchers in Canada*

# We found **broad, cross-sector support for better science** in environmental impact assessment



# A lot has changed since 1992, including science



```
library(ggplot2)
```

```
ggplot(dataset, aes(x=displ, y=hwy)) +  
  geom_point(aes(color = factor(cyl))) +  
  theme(axis.text.x = element_text(size=14),  
        axis.text.y = element_text(size=14),  
        axis.title.x = element_text(size=16),  
        axis.title.y = element_text(size=16)) +  
  ylab("Highway MPG") +  
  xlab("Engine Displacement")
```



# Stronger science in impact assessment can...

- Build relationships
- Reduce uncertainty
- Increase transparency
- Make informed decisions
- Increase public trust in decisions
- Enable long-term learning



## BETTER RULES TO PROTECT CANADA'S ENVIRONMENT AND GROW THE ECONOMY

### BENEFITS FOR CANADIANS

#### ASSESSING WHAT MATTERS TO CANADIANS

Developing resources while protecting the environment requires taking a big-picture look at a project's potential impacts.

Project reviews would consider not just impacts on our **environment**, but also on **social and health aspects, Indigenous peoples, jobs and the economy** over the long-term. We will also conduct gender-based analyses.

Project reviews would consider how projects are consistent with our environmental obligations and climate change commitments, including the Paris Agreement on Climate Change.

We would undertake a **strategic assessment for climate change** to provide guidance on how to consider greenhouse gas emissions in individual project reviews.

#### REGULATORY CERTAINTY AND PREDICTABILITY FOR COMPANIES

The new impact assessment system would be **more efficient and predictable**, giving companies the **clarity** they need.

Project reviews would be rigorously managed to ensure that they are more timely. Companies will know what is required from them at the outset, including what is required for Indigenous engagement.

A revised project list based on clear criteria would identify which types of projects would require a review, offering greater clarity about how the new rules apply.

#### PUBLIC PARTICIPATION, SCIENCE, AND TRANSPARENCY

We would ensure that Canadians' views are heard from the start and improve participant funding programs for Indigenous peoples and the public.

Project decisions would be guided by **science, evidence and Indigenous traditional knowledge**. Science and evidence provided by companies would be rigorously reviewed by federal scientists. Independent reviews would be done where there is strong public concern or the results of a study are uncertain.

We would increase online access to science and evidence, including data on follow-up, monitoring, compliance and enforcement. We would also make easy-to-understand summaries of decisions publicly available.

#### A SINGLE AGENCY TO CONDUCT IMPACT ASSESSMENTS

To rebuild public trust and make the review process **more efficient and consistent**, a single Agency would lead federal project reviews and coordinate consultations with Indigenous peoples.

The Canadian Environmental Assessment Agency would become the Impact Assessment Agency of Canada. It would work collaboratively with life-cycle regulators, such as the Canadian Nuclear Safety Commission and offshore boards.

The Agency would coordinate with provinces and territories to advance our commitment to **one project, one review**.

#### PARTNERING WITH INDIGENOUS PEOPLES

The goals of **reconciliation** must guide our shared path forward.

There would be **early and regular engagement** with Indigenous peoples based on recognition of Indigenous **rights and interests** from the start.

We would work in partnership with Indigenous peoples for project reviews.

Consideration of Indigenous traditional knowledge would now be mandatory. We would protect the confidentiality of Indigenous traditional knowledge (e.g. sacred site locations) and respect Indigenous laws and protocols for its use.

#### A NEW CANADIAN ENERGY REGULATOR

A modern energy regulator has an essential role to play in ensuring access to safe, affordable and reliable energy and guiding Canada's transition to a **low-carbon economy**.

We would replace the National Energy Board with an independent, new federal agency called the Canadian Energy Regulator (CER).

This would ensure that good projects go ahead with **timely decisions** that reflect common values and shared benefits.

The new CER would be built on: **modern effective governance**, **more inclusive engagement**, greater Indigenous participation, stronger safety and environmental protection, and more timely decisions.

Life-cycle regulators will retain responsibility for the assessment of non-designated projects.

#### PROTECTING CANADA'S NAVIGABLE WATERS

To protect the public right of navigation, we are bringing forward the *Canadian Navigable Waters Act*.

New navigation protections would apply to all of Canada's navigable waters — covering our vast network of rivers, lakes and canals. New **modern safeguards** would create **greater transparency**, and give local communities a say in projects that could affect their navigation.

This includes a greater level of oversight for navigable waterways that are most important to Canadians and to Indigenous peoples, including eligible Heritage and wild and free-flowing rivers.

#### RESTORING LOST PROTECTIONS TO FISH AND FISH HABITAT

We are strengthening the protection of all fish and fish habitat for future generations. Legislative amendments would **restore lost protections** by protecting all fish and fish habitats; **strengthen the role of Indigenous peoples** in project reviews, monitoring and policy development; and allow for **better management of large and small projects** that may be harmful to fish or fish habitat through a new permitting system and codes of practice.



## 1. References to “science” or “scientific information”?

- At least 6 references, including in the preamble, purpose clause, registry provisions, and technical advisory committee;
- Should signal a more robust role for science as part of a “purposive” interpretation of the Act

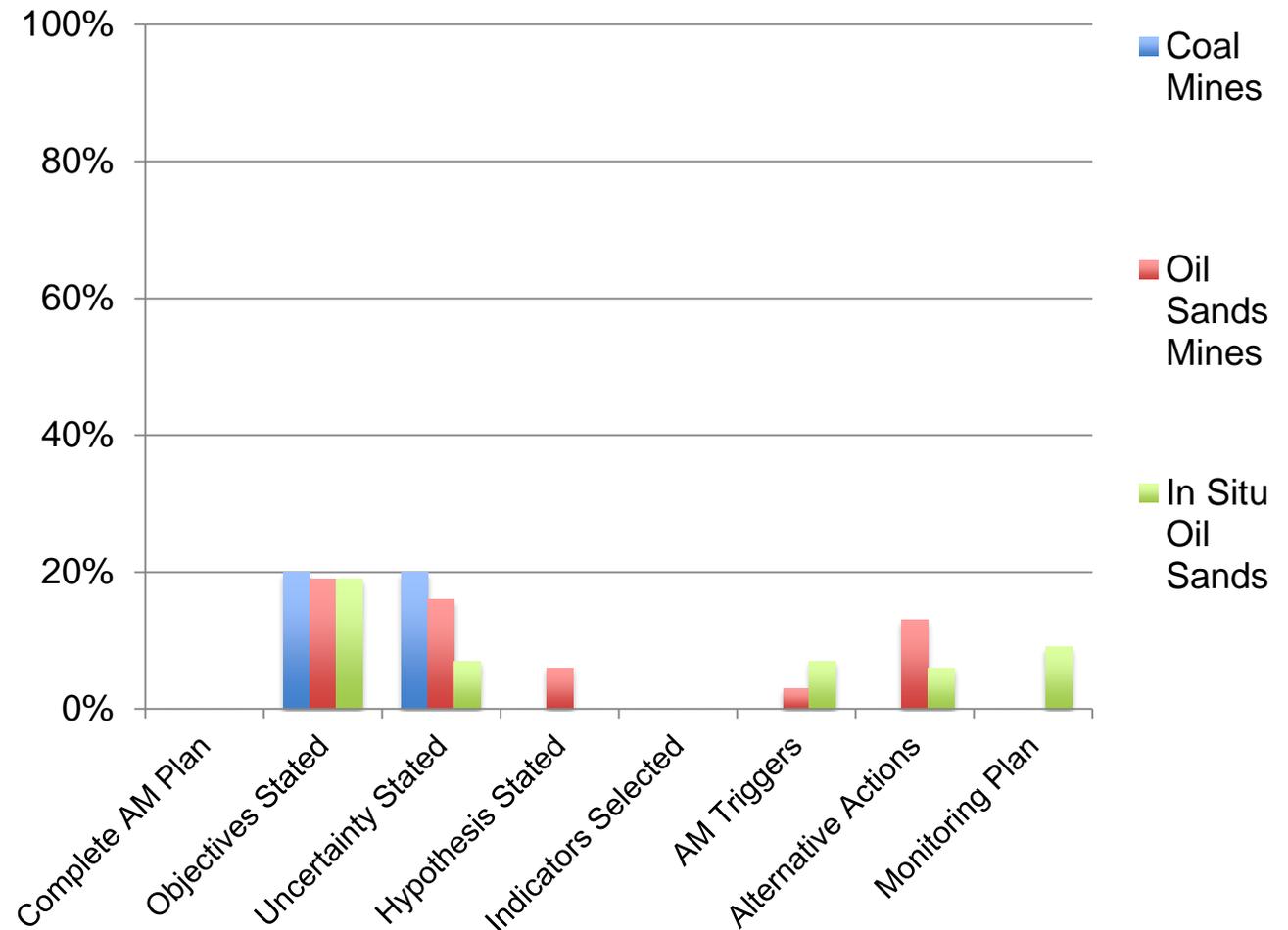
## 2. New duty of “scientific integrity”:

- Subs 4(3): [GOC], the Minister, the Agency and federal authorities must, in the administration of this Act, exercise their powers in a manner that adheres to the **principles of scientific integrity, honesty, objectivity, thoroughness and accuracy.**
- Half-measure?
  - Not *directly* applicable to proponents and consultants;
  - Will it *indirectly* lead to more rigorous impact statements (downward pressure)?
- U.S. regulations under *NEPA* likely to inform meaning;
  - e.g. § 1502.24 (methodology and scientific accuracy):
    - “scientific integrity” requires identification of “any methodologies used” and explicit reference “to the scientific and other sources relied upon for conclusions in the statement...”
    - “...requires that the public receive the underlying environmental data from which a Forest Service expert derived her opinion”: *Idaho Sporting Congress v. Thomas* (1997) USCA 9<sup>th</sup> Cir.

## 3. Adaptive Management (AM)

- Decision statement provisions now explicitly refer to “adaptive management **plans**”
  - AM was referred to in *CEAA*, 1992, removed in 2012, and now re-introduced in *IAA*;
  
- Definition would be preferable, but addition of term “plans” should address many of the current shortcomings in AM’s application, including a near total failure to actually plan;

Completeness of AM Cycle at EA Stage by Project Type  
(% of Proposed AM Applications, N= 18)





Questions & Comments

Thank you!