



Science and Evidence in EA and CEA

Justina Ray, Ph.D.
President & Senior Scientist
Wildlife Conservation Society Canada
www.wcscanada.org
jray@wcs.org

OAIA Conference, Toronto, 18 October 2017

EAs rely on the assembly and analysis of diverse evidence

Basics of EA: What is EA (from CEAA website):

- **Identifies** potential adverse environmental effects
- Proposes **measures** to mitigate adverse environmental effects
- **Predicts** whether there will be significant adverse environmental effects, after mitigation measures are implemented
- Includes a follow-up program to **verify** the accuracy of the environmental assessment and the effectiveness of the mitigation measures.

A “renewed commitment” for the role of science in decision making in Canada

❖ The Mandate Letter of the Minister of Environment and Climate Change to review Canada’s environmental assessment processes

– *-ensure decisions are based on **science, facts and evidence***

❖ Stated goal of Federal EA review

– *goal is to develop new, fair processes that are robust, **incorporate scientific evidence**, protect our environment, respect the rights of Indigenous peoples, and support economic growth*

❖ TOR of EA Expert Review Panel

– *How to ensure decisions are based on **science, facts and evidence** and serve the public’s interest?*

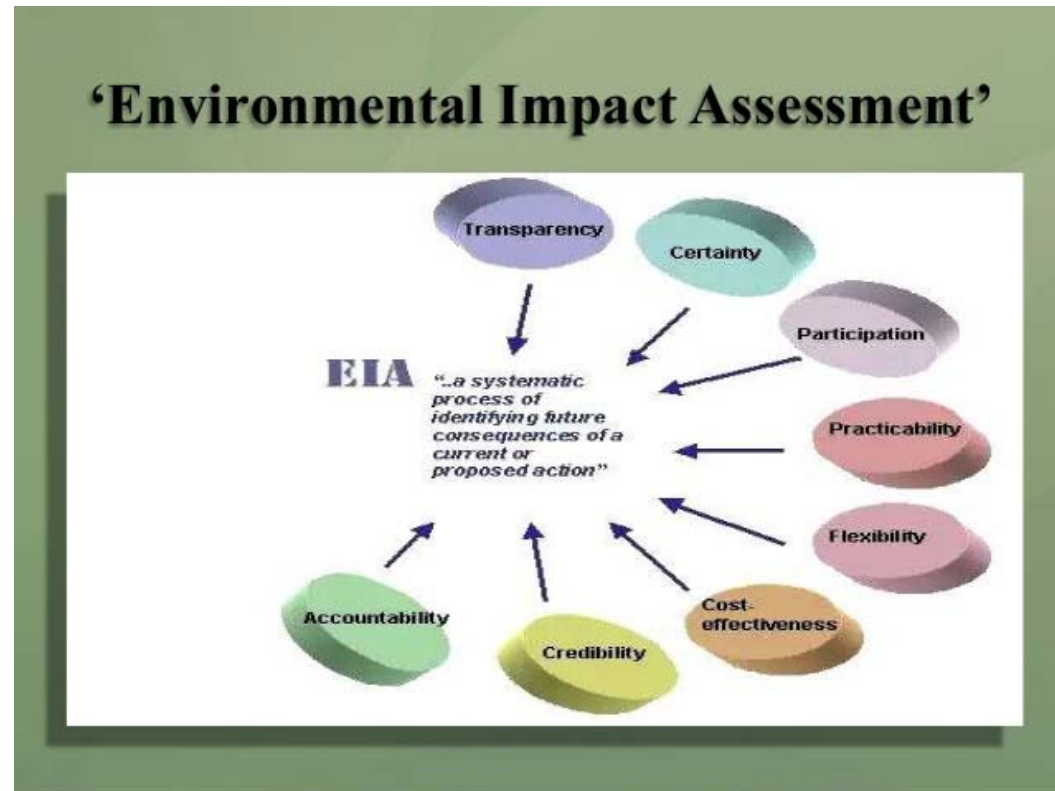
– *How environmental assessment processes are conducted under the Canadian Environmental Assessment Act, 2012, including practices and procedures, such as Indigenous engagement and consultation, public participation, **the role of science** and Indigenous knowledge, cumulative effects assessment and harmonization and coordination with other orders of government*

What is required to better ensure EA decisions have a strong evidentiary basis?

Legislation
(Structure, actors,
responsibilities)

Policy & Guidance

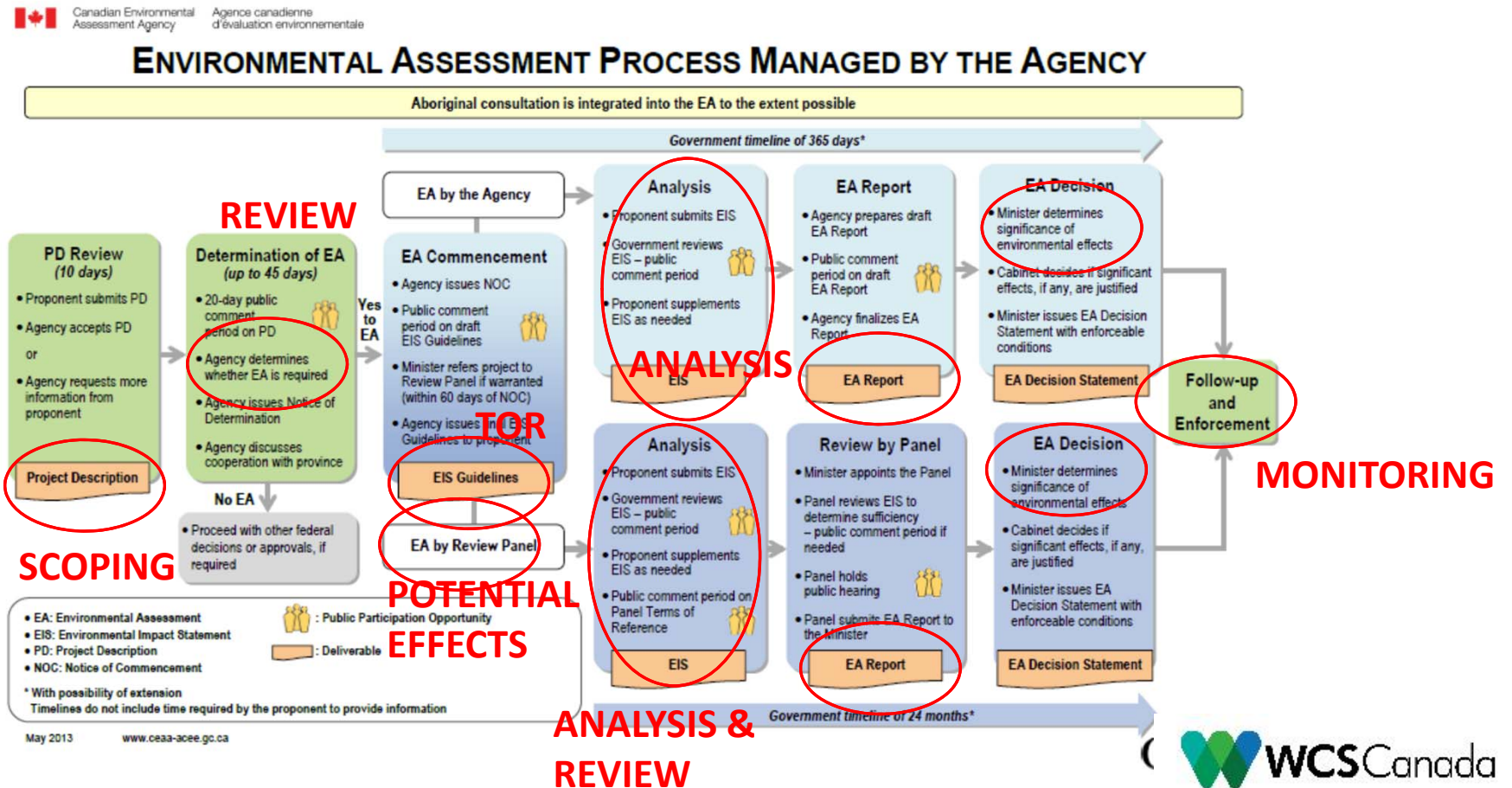
Practice (process
and culture)



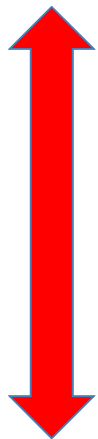
The word of law: EA vs. SAR legislation

CEAA (2012)	Species at Risk Act (2002)
“Scien (ce) (tific)” not mentioned	Scien (ce) (tific)” mentioned 7 times
“Knowledge/expert/information” mentioned in 5 sections , but limited to descriptions of various parties involved in the process (esp. federal authority)	“Knowledge/expert/information/science” mentioned in 12 sections , including the preamble and the purpose, with respect to roles, products, and process.
“the environmental assessment of a designated project <i>may</i> take into account community knowledge and Aboriginal traditional knowledge”.	“Aboriginal traditional knowledge” mentioned 8 times

Scientific knowledge (incl. ATK) is required at every stage of the EA process



Distribution of scientific expertise



❖ **Federal and provincial agencies:**

– *Guidelines, Review, EA Report*

❖ **Proponent (consulting agencies):**

– *Project Description, EIS, Monitoring*

❖ **Joint Review panel:**

– *Review*

❖ **Government, Academic/NGO scientists, Indigenous communities, etc.**

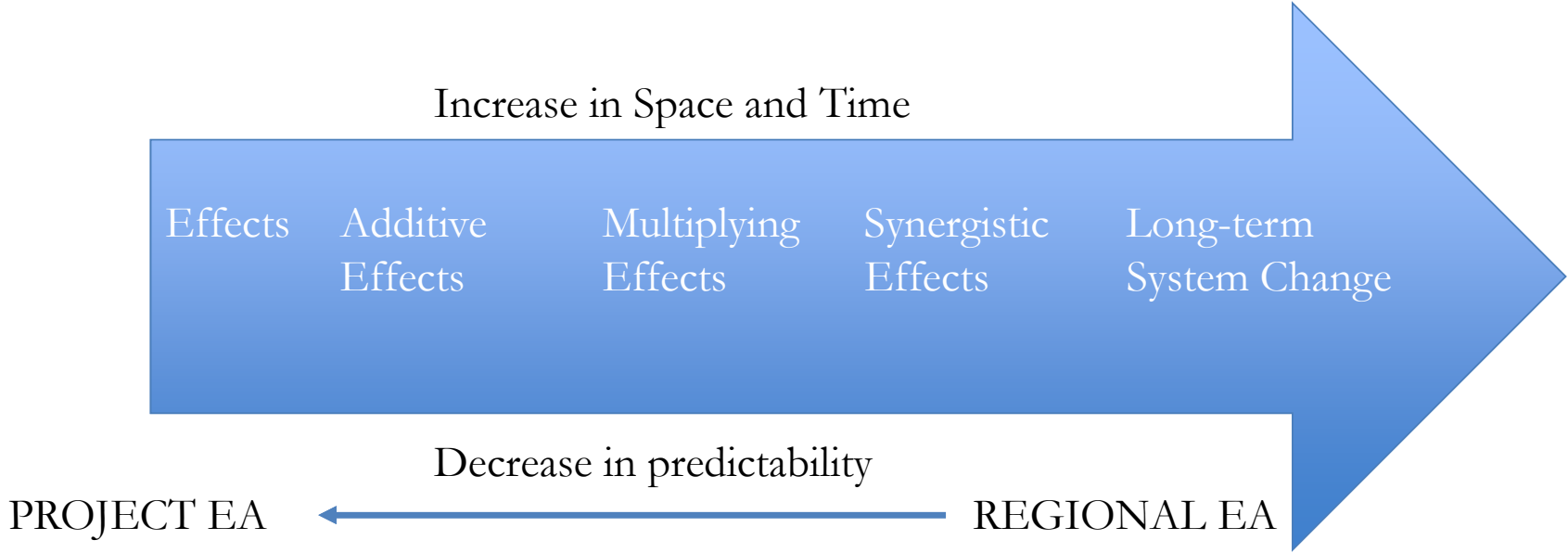
– *Generate Information, Review, Monitoring*



INSIDE

OUTSIDE

Science and Cumulative Effects Assessments



Modified from Mekong River Commission

Scientific Challenges in Evaluating Cumulative Effects

- ❖ Size of study area that will encompass effects
- ❖ Decisions about what future projects should be considered in the CEA
- ❖ Limited knowledge and understanding on the relationships and tolerances of ecological systems
- ❖ Analyses must be able to address multiple actions and additive or interactive effects at different time and spatial scales
- ❖ Baseline data to support retrospective analyses of changes in VC conditions span a larger area over long time period than most project-level EAs



Comparing Multiple Plausible Scenarios of Change

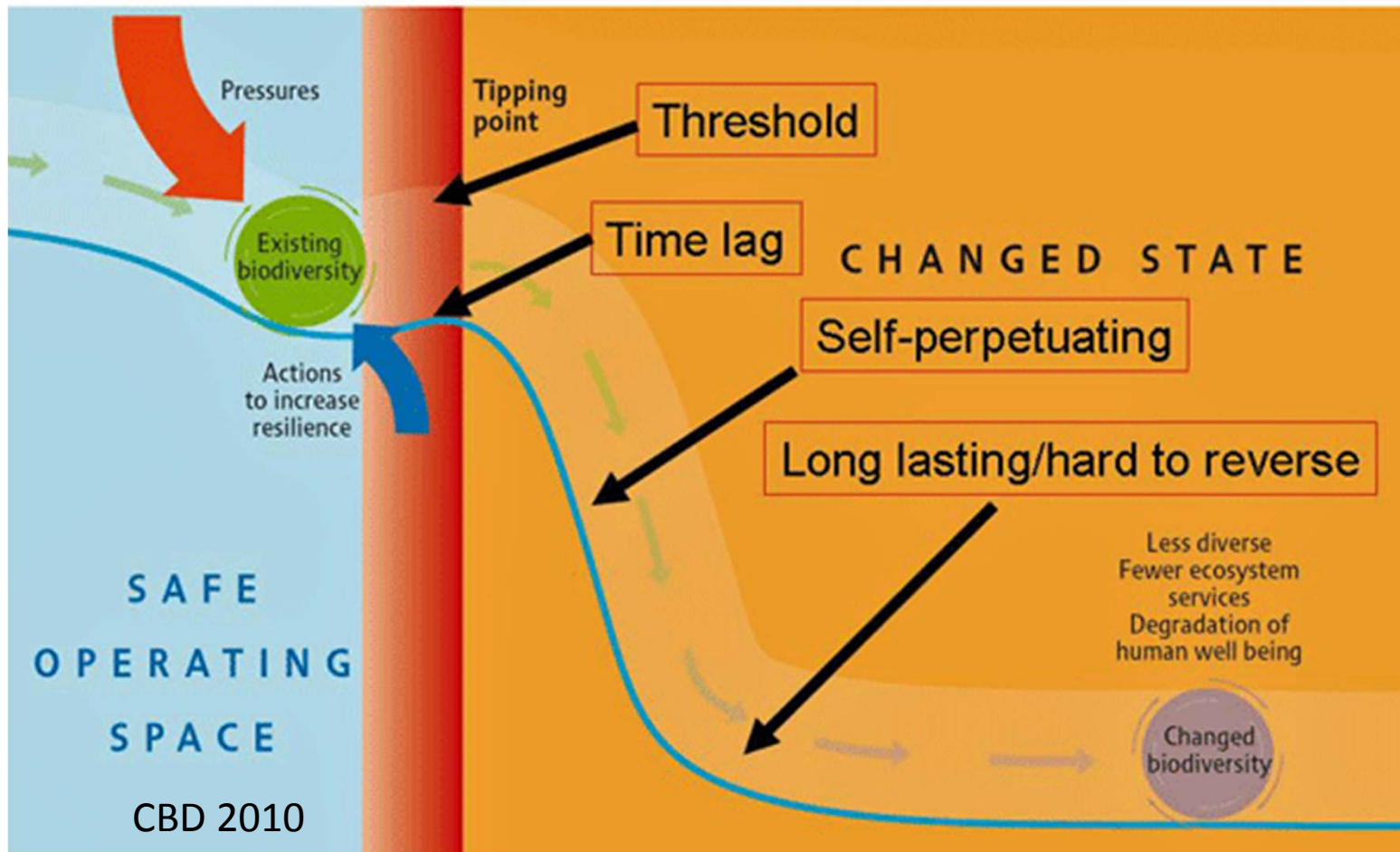
Scenario Analysis

- Compare (not predict!) the consequences of urban growth strategies
- Outcome contingent on scenario assumptions and indicators

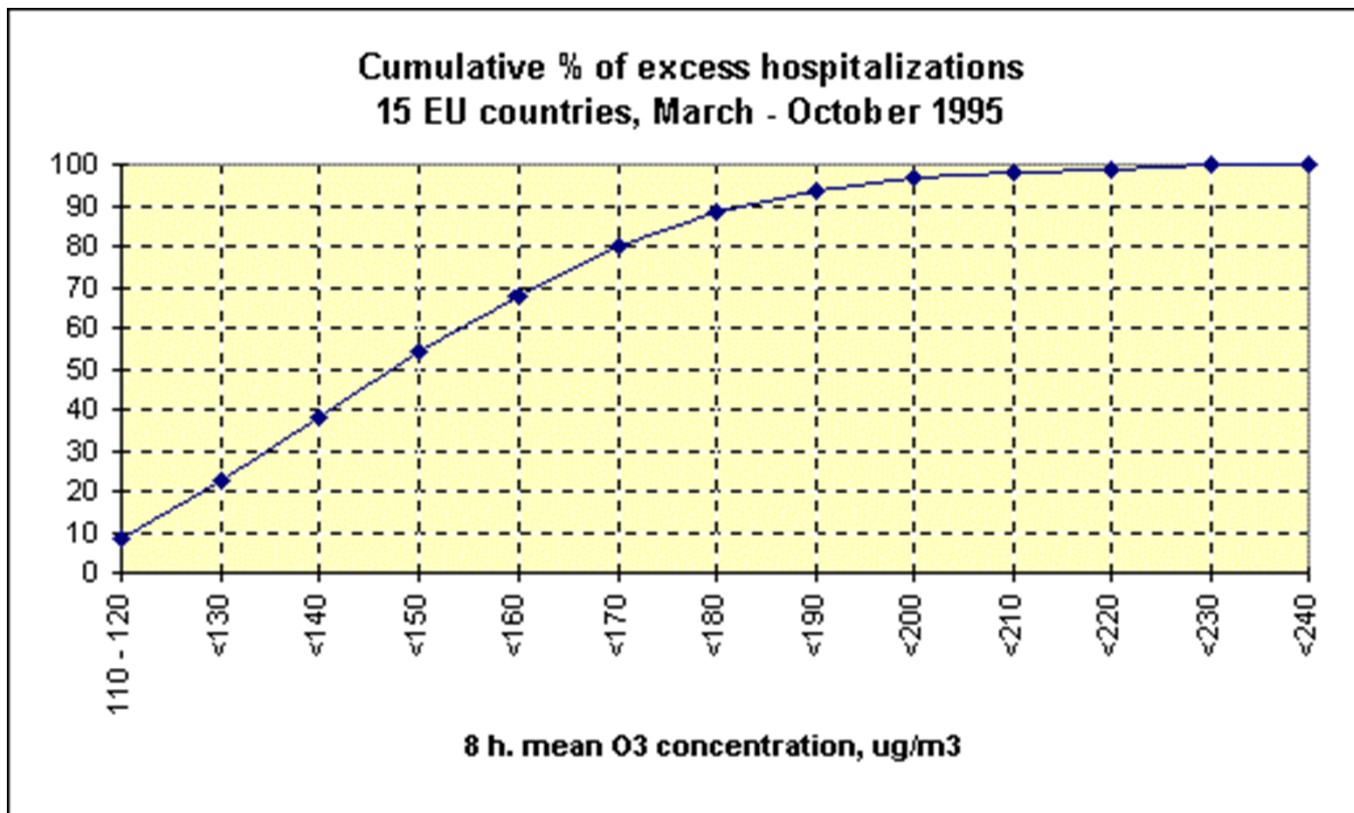
Benefits	?+
Liabilities	?-

ALCES

Ecological thresholds



Science can evaluate impact but society decides the acceptable limits



Government capacity is central to achieving a robust scientific basis for CEA


- ❖ Baseline data for VEC conditions
- ❖ Developing clear and consistent guidance and standards for identifying important VCs and indicators for various project proponents
- ❖ Ensuring consistency in data collection methods
- ❖ Bringing in information from other environmental planning and resource management activities relevant to the CEA
- ❖ Coordinated regional monitoring
- ❖ Cumulative effects efforts must go beyond products from frameworks and become an integral part of decision making processes



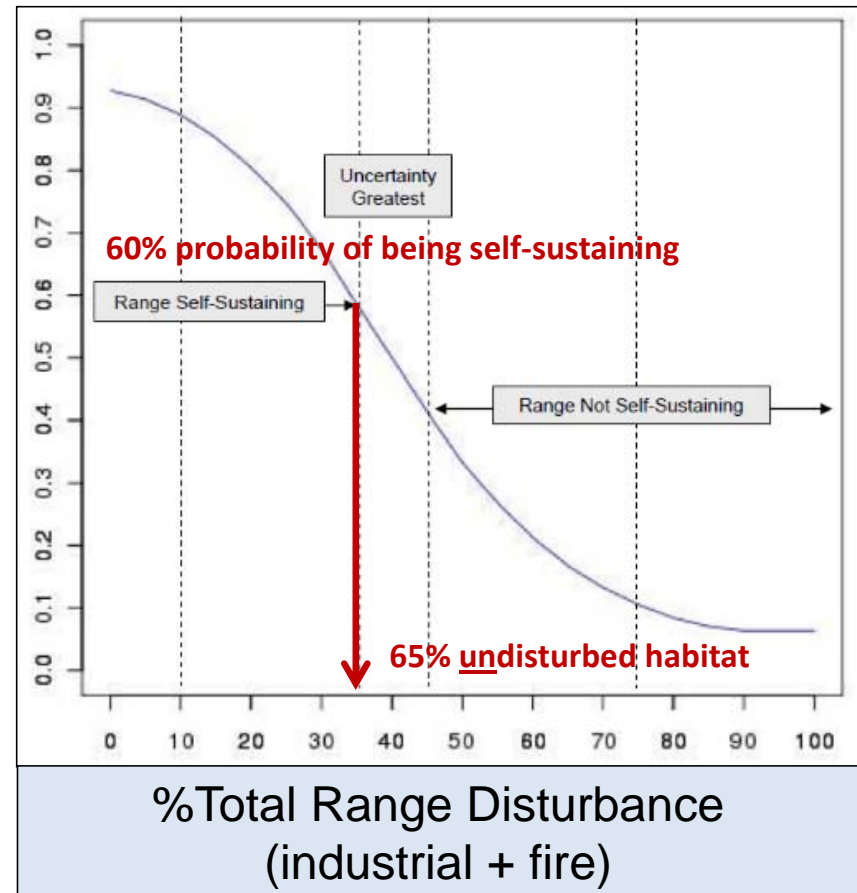
How much is too much?

Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada

Woodland Caribou, Boreal population



2012



Scientific dimensions of cumulative effects assessment: toward improvements in guidance for practice

Peter N. Duinker, Erin L. Burbidge, Samantha R. Boardley, and Lorne A. Greig

Environ. Rev. 21: 40–52 (2013) [dx.doi.org/10.1139/er-2012-0035](https://doi.org/10.1139/er-2012-0035)

“The point is that when impact-assessment practitioners are called upon to mobilize the best science they can to support a regional and strategic CEA, the result is often far superior, methodologically, to what passes for CEA in most project EIAs. Thus, despite the potential challenges in moving CEA concepts from the project scale to the region or strategy, it appears that the wherewithal exists to get a relatively good job done.”



Looking up, down, and sideways: Reconceiving cumulative effects assessment as a mindset

A. John Sinclair^{a,*}, Meinhard Doelle^b, Peter N. Duinker^c

^a Natural Resources Institute, University of Manitoba, Winnipeg, MB R3T 2N2, Canada

^b Marine & Environmental Law Institute, Dalhousie University, Schulich School of Law, Dalhousie University, 6061 University Ave., Halifax, Nova Scotia B3H 4R2, Canada

^c School for Resource and Environmental Studies, Dalhousie University, 6100 University Ave., Halifax, Nova Scotia B3H 4R2, Canada



“Recognizing the need to include all of the lenses also underscores that CEA cannot be an innocuous little chapter hidden in the last binder of an EIS — when implemented as a mindset, it is the essence of assessment if such assessment is to be aimed at securing sustainable development.”

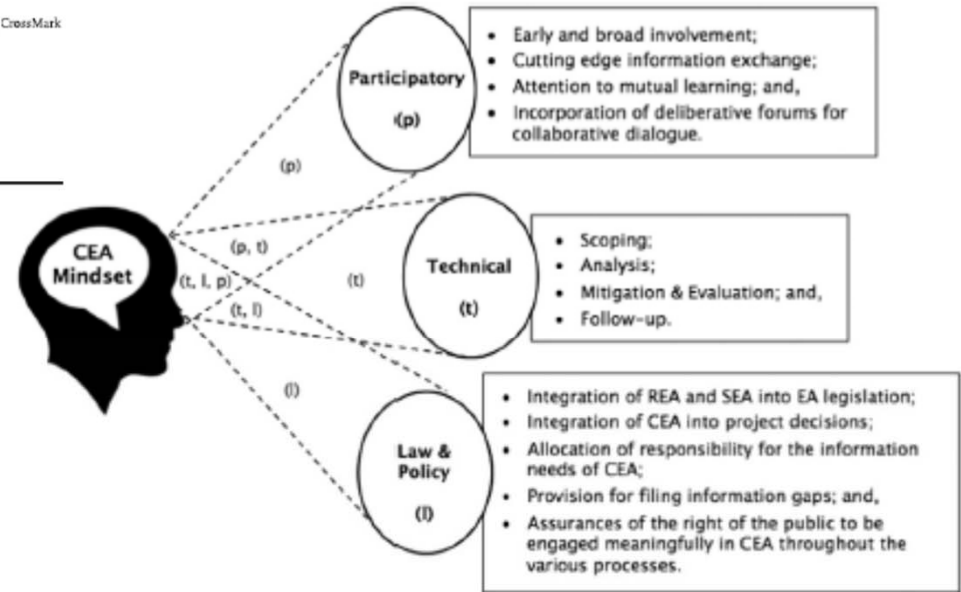


Fig. 1. The CEA Mindset

Take-home messages

- 1) There is much work to be done to better ensure that EA has a robust evidentiary basis, which permeates all levels of EA; this will necessarily involve a re-design of legislation, policies, practice and culture.
- 2) Although the scientific challenges underpinning CEA are manifold and significant, they are certainly doable, particularly if liberated from a narrow project-level perspective and implemented as a “mindset”.
- 3) Many aspects of CEA cannot be accomplished by project proponents and require significantly enhanced government capacity.

