Adding Organized Reasoning into Impact Assessment to Support Key Decisions

Glenn Brown and Graham Seagel

This Flowchart Encourages Adding Organized Reasoning into the IA Process

The column of green boxes on the left side of this flowchart is what makes it unique.

Readers have seen various flowcharts about the IA process. This one shows how you can add a powerful tool, organized reasoning, into the process. It is shown in the green boxes.

The Arguments in IAs are Often Weak

Organized reasoning is also called reasoned argument or argumentation. The word 'argument' can refer to a hostile confrontation or quarrel. But in professional work, an argument is the careful arrangement of reasons so they lead to a conclusion aimed at a particular audience.

Impact assessment documents contain many arguments to persuade the reader of key conclusions and decisions. Research shows that most steps of organized reasoning are not well done or are missing in many IA documents. That is, most IAs contain weak arguments. The IA can contain valid data and reach fair conclusions—but if the argument presented is incomplete and unclear, then it is weak *as an argument*. Audiences find weak arguments unconvincing.

This poster shows how better reasoning can be integrated into IA by using the tools of argument more explicitly in different phases of the process.

Argument has Many Steps and Tools

There are many methods involved in organized reasoning. Some of them are technical, based on ecology, economics or other fields. We do not discuss those technical matters. Many tools of argument are independent of the technical content. Those are what we discuss here.

Five main steps of organized reasoning, and other background details, are described in the paper that goes with this poster: see final box below.

The five steps are:
1) Distinguishing the hierarchy of reasoning;
2) Emphasizing the need for definition, and
   Applying topic-specific steps of reasoning for three kinds of argument;
3) Arguments of fact;
4) Arguments of evaluation; and
5) Arguments (decisions) for action.

Each step involves a variety of techniques or tools. We cannot name them all here.

On the flowchart the multiple steps and tools that practitioners can use in different phases are summarized as the 'Argument Framework'.

Arguments Lead to Key Decisions

The flowchart shows how the arguments and key data considered in each phase lead to key decisions. This indicates how important it is to consider the steps and tools of argument. Identifying that information in a clear way permits better decisions.

Argument is Part of All Key Steps in IA

Careful argument to reach conclusions and make decisions is part of all phases of IA. For example: choices made in screening and scoping the initial project, the selection of Valued Components, the choice of other topics for study or public consultation, the design of research, the analysis of data, the presentation of results and design of monitoring programs—these are all conclusions of reasoned arguments.

The determination of significance, for example, is an evaluation argument. The significance analysis in an IA would benefit from using the argument guidelines (the appropriate steps and tools) for that kind of argument.

IA Involves Risk and Consequences

Assessment projects face risks that can have serious consequences to a project.

The consequences of concern include:
- ❖ Delay of a decision to proceed
- ❖ Delay of project construction
- ❖ Increased project cost
- ❖ Loss of proponent credibility or social license
- ❖ Regulatory precedents

Carefully applying the steps and tools of argument helps reveal risks not otherwise identified, and thus reduce the potential consequences.

Addressing Arguments Early Reduces Project Risk

The risk bars in the flowchart's left column indicate that at the start of the IA process the potential for risk is highest but no consequences have yet been incurred. However, as the IA process continues the impacts or consequence of the risk increases. Managers want to avoid risks that might be present, by recognizing them early in the project, when it is easier and cheaper to address them or to avoid them.

The flowchart shows a process that brings in the relevant steps and tools of argument early, even though the reasoning will be incomplete and the conclusions will be tentative at first. Introducing argument frameworks early reveals topics and data that must be discussed. That new knowledge encourages gathering somewhat different data and permits more organized and complete discussions with stakeholders and the public. The IA process expands and improves those arguments in later phases.

So, Add More Organized Reasoning!

The steps and tools of organized reasoning can improve the quality and credibility of an impact assessment. Using them does not require any change of policy or of the technical approaches you use. But it does require more attention to steps and tools to create arguments from the data and to present those arguments to the audience. The paper accompanying this poster lists some resources to do so. The flowchart shows that those tools can be applied throughout the IA process.

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Download this poster, the background paper and a list of resources at www.glennbrown.ca > Information Access > IAIA 2016

LEGEND: **Identifying the Places in the IA process where Organized Reasoning can Contribute to Decision Making and Risk Management.**

- ❖ Colour shading in each box corresponds to the actions shown in the header of each column.
- ❖ Pink Box: The Potential Risk to three key factors that can come from errors of omission or commission in reasoning during phases of an IA project
  The risk to the project for the decisions in each phase of the assessment is shown schematically by the red bars in the left column, to illustrate the magnitude of the risk consequence.
- ❖ Green Box: The actions that practitioners can take to specifically identify and include reasoning into their usual activities of planning, data gathering, analysis and report writing.
- ❖ Grey Box: The major actions that practitioners undertake during IA, that generate opportunities or data that could be used in organized reasoning.
- ❖ Two coloured Box: Organized Reasonng leads to decisions. These polygons represent the key decisions that follow from the organized reasoning that is identified in the Green Boxes.
- ❖ Orange Box: The Proponent's key actions, linking the iterative phases of the IA process itself (solid line) to the project development plan within which the IA process takes place (dashed line)
- ❖ Pathways for the IA: → Shows pathways for the argument and decisions.
- ❖ Pathways for the Proponent: - - → Shows project management and EA actions.

MAGNITUDE OF RISK TO THE PROJECT	ACTIONS to INTEGRATE REASONING & ARGUMENT	ACTIONS of the Environmental Practitioners & Proponent for the ENVIRONMENTAL ASSESSMENT	KEY DECISIONS DOCUMENTS & SHARING for: Regulators & Public	ACTIONS PROPONENT Management, Coordination & QA/QC of the ENVIRONMENTAL PROJECT

Risk Potential
Approvals:
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

PHASE 1 - Concept - Problem Definition by the Proponent

Strategic Thinking Phase

PROPOSAL TO INITIATE ENVIRONMENTAL PROJECT

PROJECT Concept Developed by Proponent
Preliminary Design

Outline Initial Argument Frameworks for:
- ❖ Screening & Scoping of the Project and Its Environmental Assessment;
- ❖ Possible Topics and Criteria for VCs and Related Significance, Mitigation and Cumulative Effects;
- ❖ Establishing Legal and Regulatory Requirements

- ❖ Gather and Assess Project Information
- ❖ Consider Approach & Policy to Engagement & Consultation
- ❖ Scope Resource Needs, Methods, Costs, Schedule, Regulatory Requirements

Proponent Documents CONCLUSIONS & REASONS About the Strength of the Environmental Argument & Identifies Conditions to Proceed

Environmental Component of the **PROJECT** Initiated

Risk Potential
Approvals:
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

PHASE 2 - Development - Project Planning by the Proponent

Strategic Thinking Phase

DISCIPLINES (Sub-Projects & Inter-dependencies)

Setup Project Management, Coordination and Reporting

Identify Preliminary Topics and Criteria for VCs and Related Significance, Mitigation & Cumulative Effects

Gather and Assess Initial: Project Environmental Knowledge; First Nations, Public, Stakeholder & Regulatory Input

Outline Revised Argument Framework for Scope of the Environmental Assessment

Preliminary Scoping

Proponent Documents CONCLUSIONS & REASONS for the preliminary scope of work, and the environmental assessment that provide a basis for budgets, schedules & workplanning

Risk Potential
Approvals:
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

PHASE 3 - Development - Project Planning (Scoping, Workplanning & Information Gathering)

Tactical Thinking Phase

Project Management, Coordination and Reporting

- ❖ Update Probable Topics and Criteria for VCs.
- ❖ Outline Probable Argument Frameworks for:
  - Scope of the EA;
  - Identifying Initial Residual Effects and Related Significance, Mitigation & Cumulative Effects

- ❖ Establish Objectives for the EA
- ❖ WORK PLANNING
- ❖ Implement Fieldwork
- ❖ Gather More Information from Reading and Research

Draft Table of Contents for the EA Document

Proponent Updates & Documents CONCLUSIONS & REASONS Related to Strength of the Environmental Argument for the EA and

Complete EA Project Resourcing,

Risk Potential
Approvals:
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

PHASE 4 - Implementation - Data Collection & Engagement

Tactical Thinking Phase

- ❖ Update and Refine Working Topics and Criteria for VCs
- ❖ Update and Refine Argument Framework for:
  - Scope of the EA
  - Identifying Initial Residual Effects and Related Significance, Mitigation & Cumulative Effects

- ❖ **IMPLEMENTATION the EA**
- ❖ Project Input to & From Engagement & Consultation
- ❖ **ASSESS IMPLICATIONS** of the Available Information & Anticipated Field Studies on Required Documents & Decision Making

Proponent Submits Project Description to Regulator(s) to Start the Regulatory Process

Prepare Draft ToC v2 for the EA Document

Proponent SUBMITS the Environmental Impact Statement Guidelines Document to Regulators

Project Coordination

Risk Potential
Approvals:
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

PHASE 5 - Implementation - Analyses & Documentation

Tactical Thinking Phase

EIS Guidelines Approved by Regulators

Project Management

Update the Hierarchy and Inter-relationships Among Arguments, Including Integrating Data, Effects, Significance and Compliance

PREPARE MASTER EA DOCUMENT

Analyses and Documentation for DISCIPLINES (Sub-Projects & Inter-dependencies)

Refine and Review Logical Structure; Confirm Reasoning for Residual & Cumulative Effects and their Significance

Proponent Documents CONCLUSIONS & REASONS for the Arguments in the EA Document

QA and QC

COMPLETE EA DOCUMENT

Proponent Completes the Final QA and QC

SUBMIT EIS for Review by the Regulators, Public, Stakeholders & First Nations

Project Decisions from Regulators

EA Project Completion

Risk Potential
Approvals: Permits
Information Needs:
Social License:
Risk Impact
Approvals:
Information Needs:
Social License:

POST ENVIRONMENTAL ASSESSMENT PROJECT

Permitting, Monitoring, Follow-up, Implementation of mitigation, construction