



Sustainability assessment: basic components of a practical approach



Robert B. Gibson
Environment and Resource Studies
University of Waterloo, Canada
rbgibson@uwaterloo.ca



-
-
-

Agenda

- basic insights about sustainability requirements
- basic implications for sustainability assessment processes, and
- initial elaboration of approaches the most challenging areas: defining sustainability requirements as evaluation and decision making criteria, and dealing with trade-offs among these requirements.

•
•
•

Canadian Environmental Assessment Act purposes, section 4(1)

- (b) encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy

-
-
- *EIS Guidelines for the Review of the Voisey's Bay Mine and Mill Undertaking*, section 3.3

- ... in reviewing the EIS and other submissions, the Panel will consider:
- the extent to which the Undertaking may make a positive overall contribution towards the attainment of ecological and community sustainability, both at the local and regional levels; ...
-

B.C. *Growth Strategies Amendment Act*

- The purpose of a regional growth strategy is to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources (*Municipal Act*, section 849(1)).

Reasons for a continuing spread of sustainability assessment initiatives

- increasing awareness of interconnections among economic, social and ecological considerations,
- increasingly evident costs and perils of unsustainable behaviour,
- expectations after formal commitments to sustainability, and
- emerging consensus on the fundamentals of "sustainability"

Sustainability concept basics

- interdependency of socio-economic and biophysical factors
- human as well as ecological effects in large complex systems
- complexity, uncertainty, surprise and precaution
- positive steps
- multiple objectives and positive feedbacks
- location specific considerations

Process design basics 1

- begins with explicit commitment to sustainability objectives and to application of sustainability-based criteria
- covers all potentially significant initiatives, at the strategic as well as project level, in a way that connects work at the two levels
- focuses attention on the most significant undertakings (at the strategic and project levels) and on work that will have the greatest beneficial influence
- is transparent and ensures open and effective involvement of local residents, potentially affected communities and other parties with important knowledge and concerns to consider and an interest in ensuring properly rigorous assessment

Process design basics 2

- ensures representation of important interests and considerations not otherwise effectively included (e.g. disadvantaged populations, future generations, broader socio-ecological relations)
- gives integrated attention to social, economic, cultural, political and environmental factors, with guidance from essential sustainability requirements that respect the interrelations among these factors
- incorporates means of specifying and integrating sustainability considerations particular to the local and broader context of individual assessments
- addresses indirect and cumulative as well as direct and immediate effects
- emphasizes enhancement of positive effects as well as avoidance or mitigation of negative ones

Process design basics 3

- is initiated at the outset of policy, program and project deliberations when problems and/or opportunities are identified
- requires critical examination of purposes and alternatives
- examines positive as well as negative effects and enhancements as well as mitigations
- favours options incorporating adaptive design and requires preparation for adaptive implementation of approved undertakings
- seeks to identify alternatives that offer the greatest overall benefits and that avoid undesirable trade-offs (rather than merely enhance/mitigate the effects of already chosen options)

Process design basics 4

- specifies and applies explicit rules and/or requires explicit rationales for trade-off decisions
- includes effective means of monitoring implementation and effects, and of ensuring appropriate response to identified problems and opportunities
- recognizes uncertainties, favours caution, designs for continuous learning and follows initial decisions for adaptive adjustment through the full lifecycle of assessed undertakings
- ensures that proponents of undertakings and responsible authorities are aware of their assessment obligations before they begin planning and that they have effective motivations (legal requirements or the equivalent) to meet these obligations.

• • • **Key implementation challenges and tasks**

- elaborating the core sustainability requirements for evaluation and decision making criteria
- determining how to deal with the inevitable trade-offs between and among these requirements in particular cases.

Sustainability requirement approaches

- pillar approaches with ecological and human categories (or social, ecological and economic, or ecological, economic, political, social and cultural, or ...)
- integrative approaches based on the key objectives or changes needed in human arrangements and activities

General sustainability requirements 1

- Social-ecological integrity
 - Build human-ecological relations to establish and maintain the long term integrity of socio-biophysical systems that protect the irreplaceable life support functions upon which human well-being depends.
- Sufficiency and opportunity
 - Ensure that everyone has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity.
- Equity
 - Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, etc.) between the rich and the poor.
- Efficiency and throughput reduction
 - Provide a larger base for ensuring sustainable livelihoods for all while reducing threats to the long term integrity of socio-ecological systems by avoiding waste and reducing overall material and energy use per unit of benefit.

General sustainability requirements 2

- Democracy and civility
 - Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision-making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision-making practices.
- Precaution and adaptation
 - Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation.
- Immediate and long term integration
 - Apply all requirements of sustainability together as a set of interdependent parts, seeking mutually supportive benefits and multiple gains.

Sustainability requirement applications

- a basic set of criteria for sustainability assessment evaluations and decisions
- a working framework for identifying and considering serious trade-off problems

Common trade-off decisions 1

- compensations and substitutions (direct and indirect compensation for, rather than full mitigation of, negative effects)
 - later rehabilitation of aggregate mining operations on agricultural lands that are now at least somewhat degraded (substitution in time)
 - a constructed wetland to replace relatively natural one (substitution in place)
 - new community recreational facilities compensating for risks to traditional hunting or fishing (substitution in kind).

Common trade-off decisions 2

- net gain and loss calculations (aggregation of net gain and net loss calculations)
 - reduction of near term ecological damage risks from surface storage of toxic wastes balanced against smaller but long term risks from initially secure deep underground disposal (differences in time);
 - major damages to the interests of tribal people displaced by a new dam balanced against more material security for many poor farmers downstream (differences in place); and
 - efficiency gains from industrial process improvements balanced against associated job losses (differences in kind, across requirements).

Basic trade-off decision rules

- trade-off decisions must not compromise the fundamental objective of net sustainability gain
- all "significant" compromises and trade-offs must be explicitly identified and the most desirable option among the alternatives must be chosen
- all significant trade-offs must be addressed and justified explicitly and openly

Possible trade-off decision rules 1

- no "significant" trade-offs are permitted, unless approved by all relevant stakeholders;
- trade-offs in (all or specified) sustainability-related matters are undesirable unless proven otherwise; the burden of proof falls on the proponent of any compromise or trade-off;
- only undertakings that are likely to provide neutral or positive overall effects for each core sustainability requirement) can be acceptable (e.g. no net additional burdens on the poorest of the poor);
- no significant adverse effects in any core category can be justified by compensations of other kinds, or in other places (e.g. no use of ecological rehabilitation compensations for significantly greater inequities);

Possible trade-off decision rules 2

- no displacement of (significant, net, any) negative effects from the present to the future can be justified ;
- no enhancement can be accepted as an acceptable trade-off against incomplete mitigation if stronger mitigation efforts are feasible;
- only trade-offs leading to, or compatible with, substantial net positive long term effects are acceptable; and/or
- no trade-offs are acceptable if they entail further declines or risks of decline in officially recognized areas of concern (set out in specified official national or other sustainability strategies, plans, etc.)

-
-
-

General trade-off decision process considerations

- issues for case-specific clarification processes
 - how the issues are presented, debated and resolved
 - by whom

Next steps

- further *ad hoc* experiments
- creative use of existing legislated regimes (e.g. Voisey's Bay case)
- further evolution of existing strategic and project level environmental assessment processes
- broader proliferation of new mechanisms (e.g. regional growth management strategy development in British Columbia)

Risk: loss of environmental issue focus

- clarify sustainability assessment aims and requirements
- expand the diversity of applications and tools

• • • Priority steps for assessment law and policy

- revise laws and processes to clarify sustainability purposes and facilitate practical transition from the mitigation focus to positive contributions to sustainability improvement, and
- work out more of the details on such matters as how to specify sustainability requirements and how to deal with trade-offs generally and in particular circumstances.