

PUBLISHED JUNE 2020

EVIDENCE BRIEF

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SSHRC's Imagining Canada's Future initiative mobilizes social sciences and humanities research to address emerging economic, societal and knowledge needs for Canada, and help guide decision-making across all sectors towards a better future. This evidence brief addresses the Future Challenge Area of: **Informing Best Practices in Environmental and Impact Assessments**.

Evaluating methods for analyzing economic impacts in environmental assessments

About the project

Sound methodological guidelines are essential for generating accurate and consistent data on socio-economic impacts in environmental assessment (EA) to determine whether a project is in the public interest and what conditions need to be attached to its approval to mitigate adverse impacts. The Canadian environmental assessment process currently lacks comprehensive methodological guidelines for undertaking socio-economic analysis of projects. Consequently, project analysts have wide discretion that can result in a lack of consistency and accuracy in forecasting impacts.

This research focused on the economic dimension of this problem by evaluating strengths and weaknesses of methods for assessing economic impacts, developing best practice guidelines for undertaking economic impact assessment, and identifying areas for future research. Five methods were evaluated: economic impact analysis; sustainability impact assessment; benefit-cost analysis; multiple-account benefit-cost analysis; and multi-criteria decision analysis. The findings are relevant for assessing social and environmental impacts and determining whether a project is in the public interest.

Key findings

- Economic impact analysis is the most common method used in the EA process to assess economic impacts, but the models used (input-output and regional income/employment multipliers) have serious limitations: they assume static relationships between sectors, they place no constraints on labour and capital, and they omit opportunity and other project costs. As a result, the models overestimate employment, economic output and fiscal impacts of projects, and exaggerate economic benefits. If properly done, economic impact analysis can provide useful information on regional demographic impacts for planning infrastructure and services, but the limitations in the methods need to be addressed.
- Sustainability impact assessment is not a single method, but uses many different methods that assess the impact of a project on sustainability goals. The challenge of using sustainability assessment is setting appropriate targets and estimating the project's impact on these targets.
- Benefit-cost analysis is the preferred method for identifying and comparing all major costs and benefits of a project and determining whether a project generates a net benefit to society and is in the public interest. Challenges in applying benefit-cost include defining appropriate discount rates, measuring non-market values, disaggregating impacts by geographic and stakeholder groups, dealing with uncertainty and risk, and providing information on issues such as employment and fiscal impacts in a format useful to decision-makers. Despite its strengths, benefit-cost has rarely been used in EA.
- Multiple account benefit-cost analysis overcomes many of the limitations of other techniques by combining economic impact analysis, benefit-cost analysis and other environmental assessment methods into a single comprehensive framework. It provides decision-makers with the information they need by including a number of separate accounts. However, because this method



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combines the other methods, it faces many of the same challenges and limitations.

- Multi-criteria decision analysis is a more generalized method for evaluating alternative projects and policies

relative to a set of evaluation criteria. It has many of the attributes of multiple account benefit-cost analysis in terms of disaggregating project impacts and evaluating them in relation to desired outcomes, but is not as well suited to EA as multiple accounts.

Policy implications

- Canada lacks comprehensive guidelines for undertaking socio-economic impact assessments; comprehensive guidelines need to be developed to improve the accuracy and consistency of results for decision-making in the EA process.
- Multiple account benefit-cost analysis is the best method for assessing economic impacts—as well as other environmental and social impacts—because it combines economic impact analysis, benefit-cost analysis and other methods of environmental impact assessment into a single, comprehensive evaluation framework that provides decision-makers with a transparent and systematic assessment of project impacts and trade-offs. Consequently, the priority should be to develop guidelines for using multiple account benefit-cost analysis so that it can be applied in a consistent and methodologically sound manner in EA.
- Guidelines should address issues in applying multiple account benefit-cost and its components of economic impact analysis and benefit-cost, including:
 - defining account categories;
 - clearly stating the limitations of the various analysis components;
 - providing sensitivity analysis to capture the range of likely impacts instead of generating one forecast;
 - providing estimates of net economic changes as well as gross changes;
 - using standardized definitions of impacts, such as annual person-years of employment instead of total person-years of employment to avoid misinterpreting results;
 - disaggregating impacts by key stakeholder groups;
 - defining appropriate discount rates;
 - measuring non-market values; and
 - dealing with uncertainty and risk.

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FURTHER INFORMATION:

[▶ Read the full report](#)

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The Impact Assessment Agency of Canada (IAAC) is a federal body accountable to the minister of Environment and Climate Change. The IAAC delivers high-quality impact assessments that contribute to informed decision-making on major projects in support of sustainable development.

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