



Improving the Consideration of Health, Social and Economic Values in Cumulative Effects Assessment in Canada

Prepared by the [Ciera Group](#) for IAAC/AEIC
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Despite nearly 50 years of practice, cumulative effects, or impact, assessment (CEA/CIA) practice remains weak, slow in its progress, and limited in its efficacy. Dominated by a focus on environmental and biophysical values, current CEA practice results in an imbalance in the consideration and inclusion of health, social and economic valued components and an even lesser attention paid towards the effective management of cumulative effects on these values.



Report Purpose and Background

- This report was commissioned by the *Impact Assessment Agency of Canada* (IAAC) and the *Technical Advisory Committee on Science and Knowledge* (TAC). It's purpose is to understand the barriers and solutions to the effective inclusion of social, health, and economic values in cumulative effects assessment (CEA).
- To better understand cumulative effects assessment and health, social, and economic values a literature review (Part 1) and a practitioner survey (Part 2) were conducted.
 - The literature review and practitioner survey were broken down into the main components of CEA in Canada: CEA challenges; public consultation; indigenous consultation; VC selection; measurement of VCs; and assessment and management of VCs. Recommendations based on the literature review and survey are also provided
- Literature searches were conducted using Google, Google Scholar, JSTOR, and government sites. Literature of interest includes case studies, peer-reviewed articles, and best practice documents.
 - Searches used key phrases relating to the objectives of the report including: “cumulative effects/impact assessments”; “social values”; “social effects”; “social impacts”; “health values”; “health effects”; “health impacts”; “economic values”; “economic effects”; “economic impacts”; “measurement tools”; “indicators”; “management practices”, etc.
 - Key areas of interest were valued component selection for CEA; indigenous perspectives on social, health, and economic values in CEA; measurement of social, health, and economic values for CEA; and assessment and management of social, health, and economic values for CEA.
- A practitioner survey was conducted to gain perspectives and knowledgeable experts in cumulative effects assessment, health values, social values, and economic values.
 - More details on the survey are provided in Part 2 of this report.
- Overall findings and recommendations incorporating lessons learned from the literature review and survey are provided in Part 3. Recommended next steps are presented in Part 4.

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Part 1: Literature Review



1.1 Challenges in CEA

- Despite nearly 50 years of practice, cumulative effects, or impact, assessment (CEA/CIA) practice remains weak, slow in its progress, and limited in efficacy (Duinker & Greig, 2006; Harriman & Noble, 2008; Canter & Ross, 2010; Hegmann & Yarranton, 2011; Lawrence, 2013).

Main challenges:

- Understanding of complex ecosystems (Canter and Ross, 2010).
- Accountability CEA results between developers, proponents, regulators, and stakeholders (Canter and Ross, 2010).
- Poor data quality or lack of access to data from other developments (Piper, 2001; Cooper and Sheate, 2002).
- Poor definition of VCs, associated indicators, and thresholds (Connelly, 2011; Foley 2017).
- Poor practice, guidance, and transparency to CEA methodology for VC scoping, analysis, management, and follow-up evaluations (Baxter et al., 2001; Piper, 2001; Cooper and Sheate, 2002; Canter and Ross, 2010; Olagunju and Gunn, 2015; Foley, 2017).
- Late timing of cumulative effects considerations in impact assessment (Olagunju and Gunn, 2015).
- Lack of sensitivity and insightful, creative approaches to CEA VEC selection (Olagunju and Gunn, 2015).
- CEA analysis is insufficiently distinct from EIA analysis (Baxter et al., 2001).
- Difficulties establishing temporal and spatial scales and boundaries (Connelly, 2011; Foley, 2017).
- Piper (2001) shortages of resources and skills in the individual cases, and the uncertain allocation of responsibility for undertaking the work.
- Lack of regulatory guidance and uncertainty surrounding requirements (Cooper and Sheate, 2002).
- High costs and lengthy time frame to gain information for a comprehensive baseline (Connelly, 2011; Foley 2017).
- CEA is not well understood conceptually and there remains a need for procedural guidance (Blakley and Russell, In Review).



1.2 CEA Challenges and Health, Social and Economic (HSE) Values

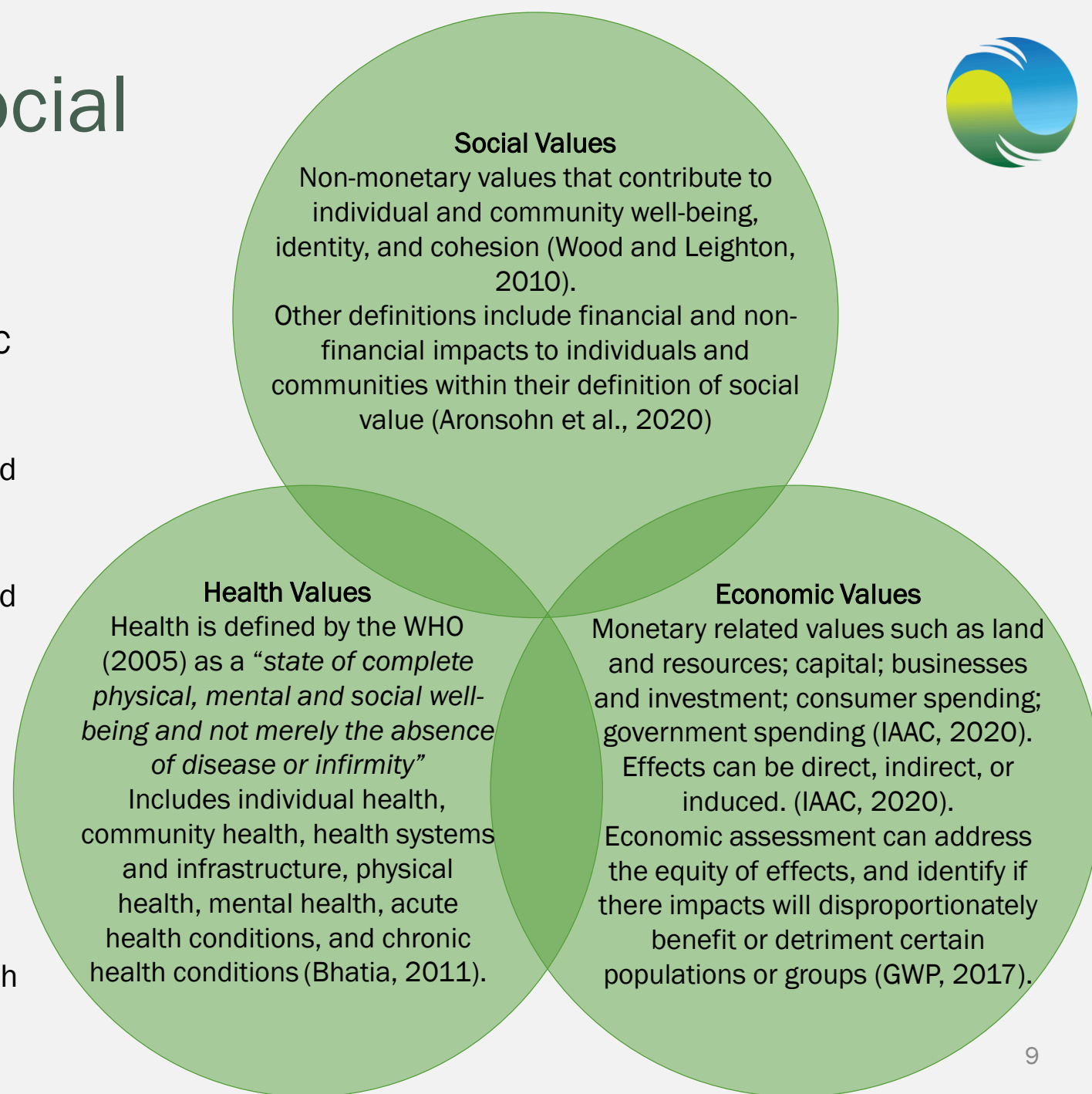
- A current challenge of CEA is its focus on the assessment of biophysical/environmental values that reflects the origin of the practice development from an ecological perspective (Canter and Ross, 2010).
 - This results in an imbalanced and inadequate consideration of HSE values.
- Many of the challenges that plague CEA as a whole, are exacerbated in its attention to and inclusion of health, social, and economic (HSE) values.
- HSE values in CEA are poorly defined and inconsistent.
- Need for improved knowledge transfer in CEA
 - Between science and IA practice, indigenous and western knowledge, expert judgement and modelling, and the incorporation of public perspectives in CEA (Blakley and Russell, in press).
- The International Association for Impact Assessment (IAIA) has “Key Citations” lists for Cumulative Effects Assessment, Health, Gender, Cultural Heritage, and Social Impact Assessment. See: iaia.org/key-citations.php
 - However, the CEA assessment list is mainly for general topics and does not effectively address HSE values and CEA.





1.3 Defining Health, Social and Economic Values

- The *Impact Assessment Act* does not define the terms *health*, *economic* or *social* (Impact Assessment Act, SC 2019, c 28, s 1). This is in contrast to the term *environment* which is defined.
- Additionally, guidance documents offer inconsistent and poor definitions for *health*, *social* and *economic* if the definitions is even addressed.
 - CEA practitioners must interpret what “health” and “social” means for their project and stakeholders resulting in inconsistent definitions and application.
 - A “go-to” guidance document with definitions might be beneficial for improved understanding and consistent application.
- The *Impact Assessment Act* differentiates economics, health, and social values
- Due to this differentiation and the unique needs of each of these values in assessment, they will be discussed separately in this report.





1.4 Public Consultation and CEA

- Public consultation and involvement are essential to access local knowledge, values, and concerns (Jones, 2016).
 - Effective cumulative effects assessment requires a comprehensive approach combining local, traditional, and scientific knowledge (Weber et al., 2012). The public must be consulted early in the CEA scoping process.
- Public consultation processes are not all equal. Citizen participation levels can greatly affect public support and engagement in the project as well as CEA efficacy.
- Citizen participation can be classified by levels that are, from least participation to most as: inform, consult, involve, collaborate, and empower (Bouchard-Bastien et al., 2013).
 - Inform level: the goal of consultation is to provide balanced and objective information while aiding the public to understand problems, alternatives, and solutions. Information is distributed through fact sheets, websites, and open houses.
 - Empower level: the goal of public participation is for the public to make decisions. Project proponents and government then implement the public decisions. The public may be selected through ballots, delegated decisions, and citizen juries.
- Consultation where the public is only consulted to review and comment after VCs and indicators have been selected is superficial and can lead to CEAs failing to fully understand the effects of a project on a region and/or community (Jones, 2016).

1.4 Public Consultation and CEA (Cont.)



- Public information sessions should explain the CEA objectives and methodology and present information clearly in a straightforward manner, with an open discussion forum where participants can share their knowledge of environmental and social, health and economic values
- Information should be provided to participants in a timely manner and scheduling of hearings should accommodate public participants
 - Political support is necessary to ensure sufficient resources are provided to incorporate traditional and local knowledge, and that the public supports assumptions and findings of modelling scenarios (Weber et al., 2012).
 - Although quantitative approaches are favoured by industry and are more easily comparable, participants are more likely to respond to qualitative approaches, with participants being more engaged in the decisions which will affect their community and way of life (Weber et al., 2012).
 - Non-technical participants would benefit from the development of methods to communicate modelling and scenario results.
 - Consultations between project proponents and communities could include discussions to determine the communities' level of acceptable change with regards to cumulative effects, land-use, project development, and social thresholds (Jones, 2016).





1.5 Indigenous Communities and CEA

- Engaging Indigenous peoples within CEA and environmental assessment process is a fundamental good-practice principle recognized within Canada and internationally (Noble, 2017). Furthermore, in Canada, it is a constitutional obligation to recognize and affirm Indigenous Peoples' rights and treaty agreements (The Constitution Act, 1982, c 11, s 35)
- Cumulative effects management is a priority for indigenous communities due to the environmental and social concerns resulting in increased development, (Environment Canada, 2003). Cumulative effects are particularly important to indigenous communities because of the inextricable relationships between social and cultural values, and environmental integrity (Kinnear et al., 2017).
 - Though there has been work discussing CEAs and indigenous rights, there is a focus on biophysical activities and effects while social, economic, and health values are not well-discussed (Tollefson and Wipond, 2003).
 - Indigenous groups have shown interest and taken action to monitor and manage cumulative effects on their traditional territories. For example, the Metlakatla people established the cumulative effects management (CEM) program to monitor and manage priority Metlakatla values and to proactively respond to cumulative change over time.
- In 2019, the Indigenous Centre for Cumulative Effects was established to better understand cumulative effects and to manage the effects of development, and other cultural, social and health impacts on Indigenous lands and communities





1.5 Indigenous Communities and CEA (Cont'd)



- Cumulative effects management has been identified as a priority for indigenous communities due to the environmental and social concerns resulting from increased development, particularly in northern areas where there has been a surge of development (Environment Canada, 2003). Cumulative effects are particularly important to indigenous communities because of the inextricable relationships between social and cultural values, and environmental integrity (Kinnear et al., 2017).
- Although there has been some research/work on CEA and indigenous rights, there has been a focus on biophysical values while HSE values are not well-discussed (Tollefson and Wipond, 2003).
- Social and cultural values should be considered within an integrated framework for cumulative effects management (Environment Canada, 2003).
- Within indigenous communities there is a desire to better understand environmental change within their territories and to have a sense of control for the fate of their communities (Christensen et al., 2010; Joseph et al., 2017).
- Indigenous consultation may occur with negotiated settlements and comprehensive land claims, these include councils and/or management boards with representation from indigenous and non-indigenous people to provide land management recommendations (Christensen et al., 2010).

1.5 Indigenous Communities and CEA (Cont'd)

- Cumulative effects assessment and social indicator work in Canada's northern communities may be improved by incorporating a 'local historical approach' which recognises the role of specific parties, and the Project assessment within a larger set of First Nation social and resource development efforts (Christensen et al., 2010). Research into the effects and impacts of the proposed project should be seen as part of the growing governance structure in northern and Indigenous communities. Thorough public consultation should be conducted to ensure that policy and decision making is completed in a culturally appropriate manner.
- Christensen et al. (2010) proposed that a two-phase approach should be used for public consultations. Initially, interviews should be conducted with local experts and key informants regarding key concerns on the effects of development, followed by a workshop in which key concerns can be linked to possible indicators important to indigenous communities.
- In a workshop conducted with the Vuntut Gwitchin First Nation (VGFN) on environmental monitoring activities and priorities on their lands, they identified key themes and priorities from the past, present, and for the future. Non-biophysical priorities for the community included heritage, human health, and community.



1.5 Indigenous Communities and CEA (Cont.)



- Obstacles faced by indigenous groups regarding the effective engagement of indigenous groups in effects assessment are financial limitations, a lack of transparency and accountability in the impact assessment process, the variability in collaboration and consultation standards, and the inclusion of indigenous peoples in leadership and decision-making roles (Eckert et al., 2020); TWC, 2020).
 - Financial limitations result in a lack of funding for First Nations to hire experts for studies or to implement long-term baseline, cumulative effects or monitoring programs (Eckert et al., 2020).
- The need for increased transparency throughout the assessment process arises from uncertainty regarding the use of indigenous knowledge and its influence on decisions (TWC, 2020). The variability in the collaboration process with indigenous groups can lead to misinterpretation of indigenous knowledge or studies due to lack of context; improved methodologies would greatly bridge these gaps (TWC, 2020).
- There is a desire for indigenous people in leadership and decision-making roles so that they feel that their knowledge is valued and incorporated within protocols, governance, and decisions (TWC, 2020).
 - Indigenous communities feel that the current process follows a “tick box” approach (TWO, 2020). Enhanced collaboration would include indigenous involvement and knowledge in design and methodology, scoping, mitigation, monitoring, and management (TWO, 2020).
- Project-level environmental assessments can be ineffective at addressing the concerns of Indigenous peoples resulting in poor public perception and delays (Noble, 2017).
 - Some concerns may be best addressed within a larger regional-scale strategic environmental assessment (RSEA) or plan (Noble, 2017). This would enable common regional issues to be addressed, shortening the EIA process timeline and reducing concerns for all parties. RSEAs would also address the calls for regional level CEA monitoring programs to address the gaps left by project or site-specific monitoring plans (Environment Canada, 2003).

1.6 Selection of Valued Components (VCs)



Valued components are “components of the natural and human environment that are considered by the proponent, public, Aboriginal groups, scientists and other technical specialists, and governmental agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance.” (EAO, 2013).

- Valued components (VCs), or valued ecosystem components (VECs), are a foundation of CEA and EIA. VCs provide a focused and understandable evaluation of project effects. Assessing the effects on all components within the natural and human environment requires extensive resources that is not feasible. Narrowing the scope of study to VCs forces assessors to determine which elements of the human and natural environment will be most impacted by activities in the area of study while balancing the inclusion of VCs critical to stakeholders. This allows for more in-depth analysis and management of the selected VCs as well as a more accessible report for project stakeholders (EAO, 2013).
- The inclusion of HSE values begins with their identification in the VC selection process.
- VC selection is an inherently complex process. Selection of VCs is guided by the activities in the project area, the geographic region, public values, and surrounding communities’ demographics to determine the potential impact of activities in the region (Olagunju et al., 2015).
- VCs can reflect issues of concern to the government, the scientific community, indigenous groups, or other stakeholders. Identification of VCs occurs throughout the scoping stage of environmental assessments, emphasising the criticality of good scoping practices to the efficacy of CEA.
- Criticisms of CEA include that scoping is inadequate, and that VCs are merely selected from VCs chosen the single-project EIA and not on their own merit (Baxter et al., 2001). This contributes to cumulative effects being unexamined or incorrectly assessed as insignificant. Leading to the CEA process becoming indistinctive from single-project EIA.
- There is limited research on the CEA process and rationale for VC selection (Olagunju et al., 2015). The limited available research provides a starting point to understand VC selection processes. Steps in the selection of VCs include the identification of candidate VCs, the evaluation of candidate VCs, and lastly the selection of appropriate VCs (Olagunju et al., 2015). Guiding questions can be used to assist in the identification of VCs (EAO, 2013; Morgan et al., 2013; Olagunju et al., 2015).



1.6 Selection of VCs (Cont.)

- The identified VCs can be narrowed down by evaluating their ability to minimize redundancy and potential to be measured. Assessors should be conscientious of their consideration of HSE values as well as environmental values. Final selection of VCs should include the rationale for the inclusion of each clearly defined VC. The definition of VCs should include its scope both temporally and spatially (IFC, 2013).
- Selection of VCs should include input from project stakeholders, indigenous groups, and the public. Public consultation assures selection of VCs that are important and meaningful to surrounding communities and project stakeholders. The participation of communities in the VC selection process is important for the CEA to consider the magnitude and extent of HSE impacts to affected communities (Blakley and Russell, In Press).
- In Canada, VCs are typically included in CEA only if they are found to be significantly impacted within the EIA (Baxter et al., 2001). The project-by-project consideration of VC cumulative impacts therefore overlooks impacts that could be detected if effects were identified at a regional scale (Bérubé, 2007).
- Previously, the development of a cumulative effects' management framework has been discussed to describe a priority set of VCs and indicators (Lerner, 2018). These priority VCs and indicators could include HSE values, ensuring that they are considered within future CEAs.



1.6 Selection of VCs (Cont.)



- However, this does not mean that VC selection should be standardised, as societal values and goals vary in different regions and communities. Rather, priority VCs could be considered in CEA at the VC identification stage, alongside additional VCs identified during scoping and consultation process for each project.
 - This may identify HSE VCs which would otherwise not be included because impacts aren't considered "significant" by practitioners and are consequently incrementally affected with each additional project as the environmental, economic, social and health baseline shifts (Bérubé. 2007).
- HSE considerations in CEA tend to focus on the financial impacts of proposed projects, such as revenue and employment, VCs such as community well-being are often overlooked (Mitchell and Parkins, 2011).
- For resource-dependent communities, VCs may include livelihood, human capital, security, health, housing, community economic diversity, community capacity, natural/recreational amenities, cultural preservation, and political factors (Kusel, 2001).
 - A community level analysis would involve assessment at the municipal scale in terms of physical, financial, human, cultural, and social capital, i.e., resources or assets. Capital categories could include livelihood, human capital, security, health, demographics, housing, community economic diversity, community capacity, natural/recreational amenities, cultural preservation, and political factors.





1.6 Selection of VCs (Cont.)



- However, this should not be interpreted to mean that VC selection should be standardised, as societal values and goals vary in different regions and communities. Rather, priority VCs could be considered within the CEA at the VC identification stage, alongside additional VCs and indicators identified during scoping and consultation process for each project. This may help identify HSE VCs which would otherwise not be included because impacts are minor and not be considered “significant” and are consequently incrementally affected with each additional project as the environmental, economic, social and health baseline shifts (Bérubé. 2007). These VCs can then be evaluated and further narrowed down through the CEA process.
- HSE considerations within CEA tend to focus on the financial impacts of proposed projects, with VCs such as revenue and employment often overlooking other VCs such as community well-being (Mitchell and Parkins, 2011). For resource-dependent communities, VCs could include livelihood, human capital, security, health, housing, community economic diversity, community capacity, natural/recreational amenities, cultural preservation, and political factors (Kusel, 2001). A community level analysis for social units would involve assessment at the municipal scale in terms of physical, financial, human, cultural, and social capital, i.e., resources or assets. For resource dependent areas, capital categories could include livelihood, human capital, security, health, demographics, housing, community economic diversity, community capacity, natural/recreational amenities, cultural preservation, and political factors.

1.6 Selection of VCs (Cont.)



Health

- In CEAs, the consideration of health values is largely limited to the impact of environmental factors on health and fail to address the potential effects of the project on the driving forces of change to health conditions, and health determinants. (Hackett et al., 2017). Health VCs should assess cumulative impacts to both individual and community level health as well as access to healthcare resources, community health, and mental health. Healthcare resource accessibility is inclusive of factors such as hospital wait-times; availability of family doctors; affordability of prescription drugs, dental care, and optometry services; and proximity to a health care provider.
- Community health is inclusive of factors such as incidence of health problems; outbreaks of communicable diseases; and nutrition. Mental health is also an important health consideration that is often overlooked in impact assessment. In Australia's resource-dependant regions, resident's feelings of powerlessness and injustice with regards to development and environmental change led to mental health problems and emotional stress (Kinnear et al., 2013). Mental health problems after development were especially prevalent in communities with strong ties to the land or region such as generational farming families or indigenous people.
- Considerations for VC selection should include insight into the regions demographics to understand how/if vulnerable population would be affected by further development. In Canada, the Metlakatla first nation included mental health within their health priority VC.
- To incorporate health values within cumulative effects assessment, practitioners could look to health impact assessment processes and adapt these methods to assessing cumulative effects and VC selection. For example, the following five-step sequential approach has been proposed: i) evaluate and weigh evidence of causal effects; ii) collect and synthesize data on baseline conditions; iii) forecast health effects quantitatively where feasible; iv) characterize expected health effects; and v) evaluate the level of confidence in health effect characterizations (Bhatia, 2011). Evaluating and weighing causal effects would include using evidence to understand linkages between health decisions, health determinants, and health effects. Evidence for impact assessments could utilize existing data such as available health, social, and economic resources, regulatory standards and benchmarks, community expertise, and empirical literature (Bhatia, 2011). Additionally, new data could be incorporated from modelling, surveys, epidemiological studies, risk assessments, and environmental measures.

1.6 Selection of VCs (Cont.)

Economic

- In CEA, Economic values tend to focus on financial and infrastructure capital; jobs; and federal/provincial revenue. Economic VCs should extend to those that are of concern to communities in the region. Economic VCs may consider the supply and demand for labour; economic diversity; traditional harvests; commercial fishing; tourism; new economic ventures; carbon offset sales; and housing costs.
- Economic impacts can be categorized into three types: direct impacts, indirect impacts, and induced impacts. Direct impacts include the revenue and jobs created by the project; indirect impacts refer to revenue and jobs created in other businesses/industries as a result of the project; induced impacts are a result of the spending of revenue from the direct and indirect impacts of the project ex. housing, food, entertainment, etc. (Manitoba Hydro, 2013). Consultation with affected communities can guide CEA practitioners to economic values of concern to people, to ensure that community needs are met.

Social

- Social VCs can include social wellbeing; quality of life; community services; social equity; education rate; community participation/ control; cultural preservation; tourism; stewardship of traditional territory; and traditional culture and use (Mitchell and Parkins, 2011; Morgan et al., 2013; Blakley and Russell, In Press).
- Cumulative effect practitioners could assess which, if any, VCs would be impacted by the project in conjunction with other past, present, and future activities. The public, including indigenous groups, could contribute insight on priority VCs and community knowledge (Christensen et al., 2010; Weber et al., 2012; IFC, 2013). This would be especially beneficial for communities where oral histories are prevalent.

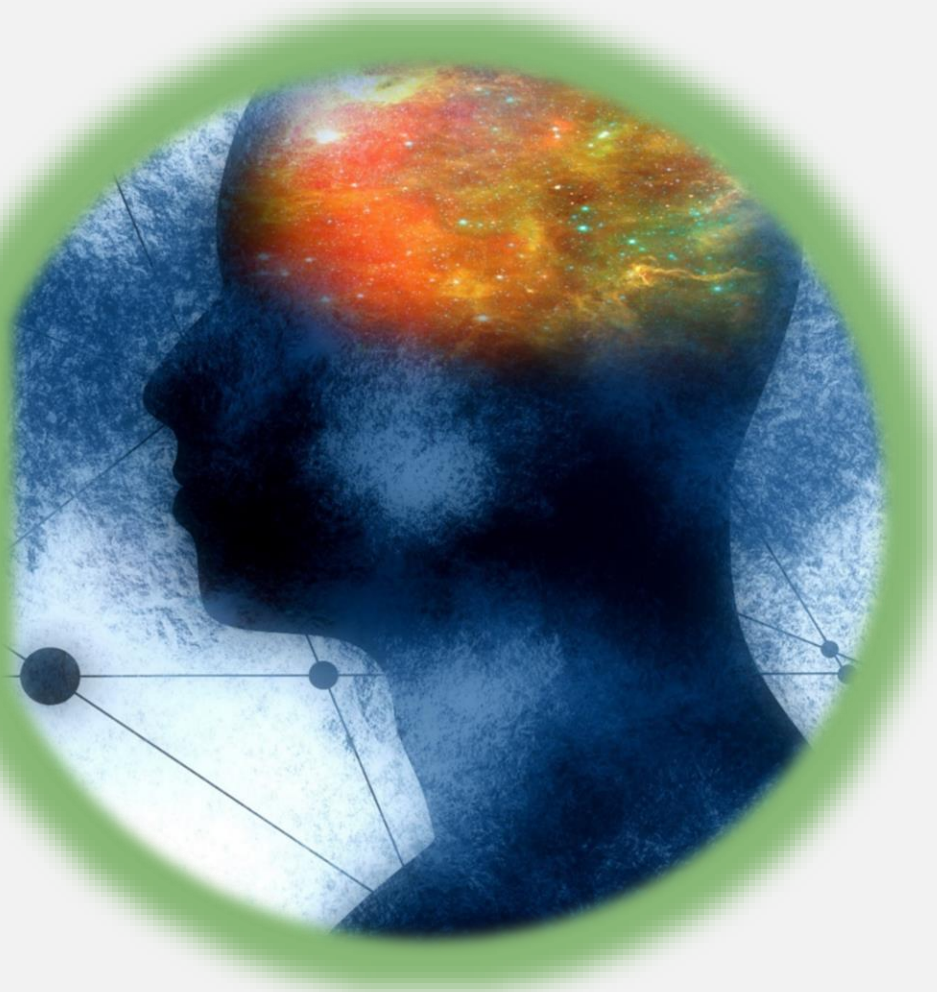




1.7 Measurement of HSE VCs

- Measurement of the extent and significance of cumulative effects, particularly, social, health, and economic VCs can be difficult due to the broad categories used to define them and the qualitative nature of these values, in contrast to environmental and biophysical VCs. Barriers to the broader inclusion of social, health, and economic VCs include the additional time, money, and expertise necessary for their effective incorporation (Jones, 2016; Eckert et al., 2020).
- The qualitative nature of many social and health VCs makes determining thresholds and limits of acceptable change for proposed development a much more difficult task. Alternatives to quantitative analysis include trend analysis and the use of scenarios (Jones, 2016).
 - For example, trend analysis could compare rates of employment before development, during construction, operation, and for multiple projects in similar communities. Alternatively, similar communities with and without developments can be compared to determine the scale of cumulative effects (Jones, 2016).
- It is important to note that not all effects will have a negative effect. Changes in employment may result in higher wages and disposable income which communities can use to pursue their interests. However, a lack of work-life balance may result in communities abandoning their cultural activities if they are unable to pursue them (Jones, 2016).
- Indicators are metrics that can be used as proxies “to measure and report on the condition and trend of a VC” (EAO, 2013). Indicators should be identified within the VC selection process as early as possible when assessing whether a VC is measurable. Early identification of indicators guides the data collection process and facilitates the analysis of interactions between activities in the project area of impact and the VC.
 - To be effective and useful, indicators must (1) relate directly or indirectly to the selected VC; (2) be practical to evaluate; (3) generate useful data from their measurement; (4) be responsive to potential effects of the project; (5) accurately reflect impacts to the VC; (6) be predictable in terms of their response (EAO, 2013).
 - Impacts may be felt disproportionately across communities and so factors such as age, gender, ethnicity, and social status must be considered (Mitchell and Parkins, 2011).

1.7 Measurement of HSE VCs (Cont.)



Health

- Collecting and synthesizing data on baseline health data would involve determining which populations should be considered and identifying sensitive or disproportionately affected sub-populations (Bhatia et al., 2011). This includes identifying indicators for health determinants (Bhatia et al., 2011). Where possible, health effects should be forecasted for quantitative data using predictive models, baseline conditions, and changes in risk or resilience factors (Bhatia et al., 2011). This involves identifying suitable prediction models, evaluating data availability for quantitative analysis, and computing effects for alternatives.
- This step in the process may be difficult or impractical due to the high information requirements necessary for quantitative analysis of health data. Expected health effects can be characterized using the likelihood, severity, magnitude, and distribution of each decision alternative using empirical evidence, baseline conditions, and forecasting tools (Bhatia et al., 2011; Solomon et al., 2016). The likelihood of an effect is the probability that it will occur. Severity is the intensity of an effect for example a life-threatening injury versus a contained infection. Magnitude is the impact that a decision would have on the effect chance of occurring or severity. Distribution requires assessors to determine if effects uniformly affect populations. Evaluating the level of confidence in health effect characterizations would require analyzing data limitations and assumptions, the validity of models, and unmeasured factors which would have an effect. Considerations could include limitations, assumptions, and unmeasured factors may alter estimates and characterizations (Bhatia et al., 2011).

* Measurement of health VCs at the cumulative level is one of the areas the authors of this report found to be one of the most under-researched areas in the literature. Solomon et al. (2016) provides very useful information on this topic. However, in places, it has been supplemented by the work of Bhatia (2011) in health impact assessment as his descriptions and definitions are useful to understand the role of assessment as it relates to health.

1.7 Measurement of HSE VCs (Cont.)

- The incidence and severity of many diseases are associated with social and environmental stressors. These can be described by four key concepts that underlie health cumulative impacts (Solomon et al., 2016). These are:
 - The relationship between social and environmental factors, and health disparities
 - Differences in exposure to environmental hazards by individuals and communities
 - Intrinsic biological and physiological factors in individuals can exacerbate the effects of environmental factors
 - Extrinsic individual and community social vulnerability factors may amplify effects from environmental hazards
- These concepts are inter-related and interact, exacerbating the effect of each concept (Solomon et al., 2016). Intrinsic vulnerabilities can be pre-existing health conditions or increased genetic susceptibility (Solomon et al., 2016). Extrinsic vulnerabilities are low socio-economic status, linguistic barriers, poor housing quality and availability, crime, and food insecurity (Solomon et al., 2016).





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Health

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1.7 Measurement of HSE VCs (Cont.)

Economic

- Economic valued components and indicators commonly include employment, labour income, value-added gross domestic product (GDP), and tax revenue. However, additional VCs could include those identified from public and indigenous consultation processes. Absolute objectives or targets in economic values are less common than in environmental values (Morgan et al., 2013). Economic values more commonly have objectives defined relative to existing conditions, such as more increased crown revenue or jobs.
 - In consultations with indigenous communities, traditional harvests; employment; commercial fishing; tourism; new economic ventures; carbon offset sales; and housing were selected as VCs in CEA (Joseph et al., 2017). The selected VCs are reflective of community values important to their quality of life from a financial perspective. For selected VCs, examples were provided for indicators and significance thresholds.





1.7 Measurement of HSE VCs (Cont.)

Social

- There is no set group of indicators to assess impacts to social VCs. Indicators can be categorized by those identified by experts (i.e., top-down approach) and those identified the community (i.e., bottom-up approach) (Mitchell and Parkins, 2011). Ideally, the indicator identification and prioritization process would use a combined approach where practitioners and the community could identify indicators and/or provide input on prioritization. In a joint consultation indicators could be narrowed down, enabling the CEA process to effectively incorporate practitioner and community values.
- VCs can be assessed using multiple indicators to understand potential cumulative effects (Mitchell and Parkins, 2011; Weber et al., 2012). For example, effects to quality of life could be assessed using a combination of indicators such as self-assessed quality of life, employment, income, population growth, housing, crime rates, and education attainment. Data on employment, income, population growth, housing, crime rates, and education attainment may be accessible through publicly available municipal or regional information. Conversely, data for indicators, such as self-assessed quality of life, may require extensive and comprehensive consultation with the public to develop scenarios to quantify potential effects. When utilising multiple indicators for VC measurement the weighting of each indicator should be considered. One indicator may impose more stress to a VC than another and this would need to be reflected in the measurement.
- Composite indicators use a multi-indicator approach and may be created by interested organizations. For example, the Human Development Index (HDI), developed by the United Nations Development Program, combines gross national income, life expectancy, and school enrolment. The HDI is used to compare human progress and development for countries around the world. The Canadian Index of Multiple Deprivation (CIMD) is an area-based index composed of four dimensions of deprivation and marginalization: residential instability; situational vulnerability; economic dependency; and ethno-cultural composition. The CIMD can be used to understand social inequalities at a geographical level to guide policy planning and evaluation, resource allocation, and further research and analysis (Statistics Canada, 2019). Similarly, the English Indices of Multiple Deprivation (E-IMD) considers seven domains: income, employment, education, health, crime, barriers to housing and services and living environment. The E-IMD is used to assess the relative deprivation of small areas (post code level) and explore the factors which are contributing to their relative ranking. Limitations for the E-IMD include that it cannot be used to measure changes in deprivation over time, or to quantify the deprivation of an area (MOH, 2019).

1.7 Measurement of HSE VCs (Cont.)



Social

- In a workshop on social indicators for CEA, indicators important to participants included population growth rate, equity, quality of life, education rate, and locus of control (Mitchell and Parkins, 2011). Population growth rate and education rate are more common indicators whilst quantitative measurements, equity, quality of life, and locus of control are less studied in the context of cumulative effects.
- In a review of cumulative effects assessments in northern British Columbia, VCs identified by indigenous communities included stewardship of traditional territory; traditional harvests; community human resources; tourism; health and community services; and community health (Joseph et al., 2017). Stakeholder and indigenous values, and the use of unambiguous, non-arbitrary significance thresholds for indicators were emphasized.
- For health and community, the indicator chosen was the hospitalization rate for ambulatory care sensitive conditions (ACSC) and the significance threshold was the average provincial ACSC rate. For community wellness, the indicator selected was the criminal offence rate, the average provincial crime rate was the significance threshold.
 - This study followed a value-centered approach to project-level EA as opposed to the project-centered approach that is typical elsewhere in Canada. The value-centered approach may encourage focus on VCs and their conditions as opposed to the contributions of the project to the VC.

1.8 Assessing and Managing HSE Cumulative Effects

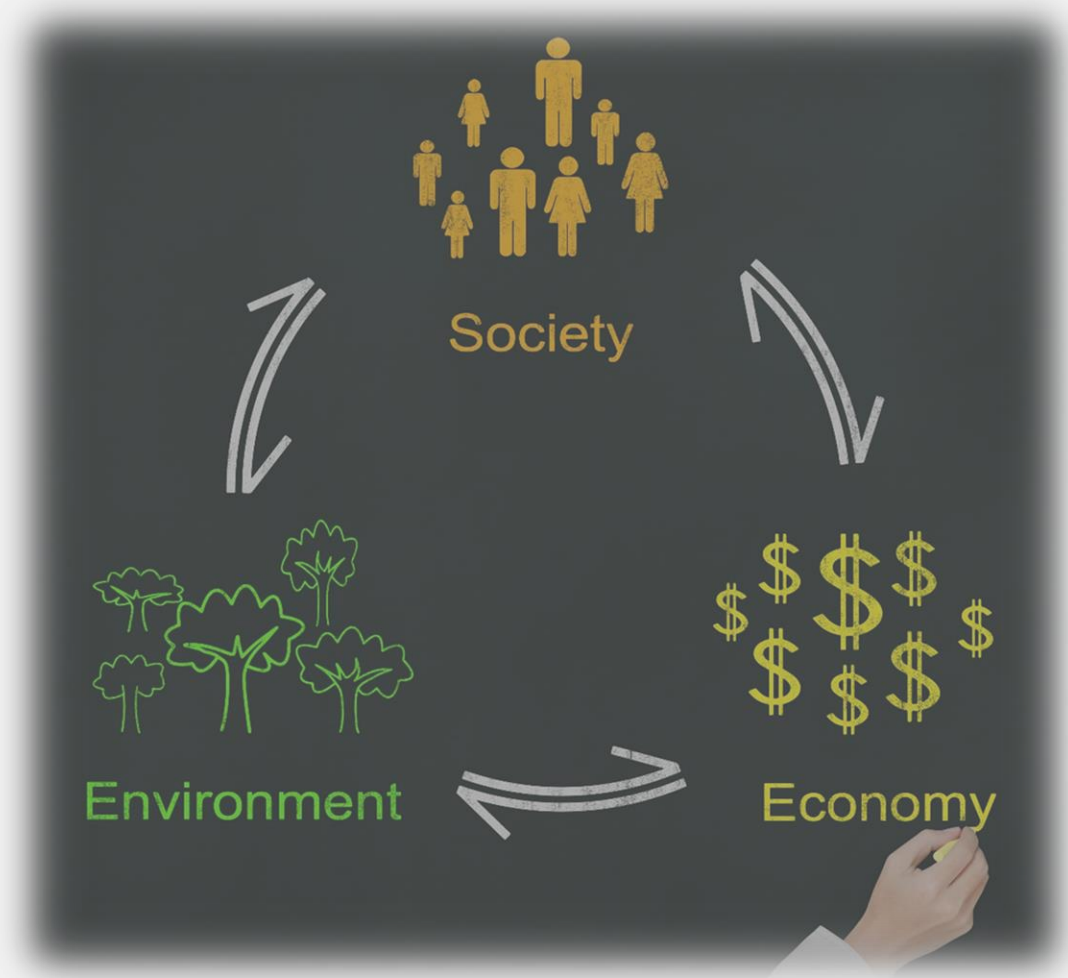


- CEAs are used to predict impacts of the proposed project on each selected VC in conjunction with other projects and activities in a region. Scenarios can be used to assess how VCs or indicators would respond to future activities through modelling or computer simulations. Scenarios can be used to highlight specific issues that are important to stakeholders, the community, or indigenous groups (Mahmoud et al., 2009).
- Scenarios should be built by focusing on the objective/ driving forces of each scenario, while maintaining common inputs so results of different scenarios can be compared. Scenarios serve two functions (1) risk management, to test strategies and decisions, and (2) facilitating creativity and new ideas for practitioners (Greig and Duinker, 2007). Determining an objective for each scenario avoids redundancy. Though likely conditions are often used to build scenarios, there are benefits to the use of extreme events or conditions, even if they are unlikely to occur.
- Extreme scenarios are beneficial to spark new ideas, and gain information for management and mitigation plans. It is important that extreme scenarios remain plausible and based in logic, to avoid questions on the credibility of the assessment.
 - There is doubt about the efficacy of scenarios for social trends as they do not fit well with ecological computer-modelling activities (Mitchell and Parkins, 2011). Therefore, social cumulative modelling is typically more qualitative or descriptive.
- Thresholds or limits for VCs and associated indicators provide a definable or unambiguous signal that adaptive management is required. While there is a recognition of the need to identify benchmarks and thresholds for cumulative effect indicators, there is a lack of guidance on establishing thresholds (Christensen et al., 2010). Thresholds for VCs/indicators can focus on trends over long timescales or assess cumulative impacts by comparing the state of indicators pre- and post-development (Mitchell and Parkins, 2011).



1.8 Assessing and Managing HSE Cumulative Effects (Cont.)

- Alternatively, comparative trend analysis compares the current state of VCs or indicators within the affected community against the state of the VCs or indicators in a similar community without development (Mitchell and Parkins, 2011). The control community, enables the identification of cumulative impacts and enhances CEA practitioners understanding of the limits of acceptable change within the community.
- Management for cumulative effects guided through processes decided between all stakeholders, ensures an understanding of mutual goals and steps in decision-making (Jones, 2016). Where possible, the sources or pathways of negative impacts should be eliminated (MVEI, 2007). Mitigation can be based on previous successes but should be tailored to specific situations. Mitigation measures should be prioritized for activities with severe forecasted impacts. Mitigation should aim to increase beneficial HSE impacts instead of merely reducing adverse impacts. There must be parties responsible for enforcing and implementing mitigation.
 - This could include the developer, communities, regulators, and government departments. Thresholds, whether conceptual or precise, provide guidance to the responsible parties on when adaptive management and further mitigation measures should be implemented.





1.8 Assessing and Managing HSE Cumulative Effects (Cont.)

Health Values

- CEA methodologies rarely incorporate all types of stressors and vulnerabilities instead choosing to focus on populations or geographic areas, or on evaluating the impacts of pollutant sources (Solomon et al., 2016). There are six widely used approaches used to analyze cumulative health impacts: biomonitoring, health risk assessment, ecological risk assessment, health impact assessment, burden of disease, and mapping of cumulative impacts (Solomon et al., 2016). Each approach has its own limitations and is fitted to different stages of the CEA process or to different types of data. The use of cumulative effect methods increases the likelihood that communities, particularly disadvantaged communities, where environmental and social stressors converge, receive sufficient attention and resources through management practices (Solomon et al., 2016).
- With regards to mitigation of adverse health effects, health experts should be consulted for their recommendations, particularly if the impact assessors are not familiar with health policy and strategy (Bhatia, 2011). Policymakers, developers, and stakeholders should be consulted to assess the feasibility and prioritization of mitigation strategies. Management programs may include monitoring. These could be implemented by identifying key milestones or measures for health outcomes. Environmental management plans typically list a summary of potential impacts, mitigation measures, and contingency plans. With regards to health impacts, there are few published examples of mitigation management and monitoring (Bhatia, 2011). This represents a key deficiency in the assessment and management of cumulative effects on health.

Scenarios are variations of plausible future events or activities within a region that present opportunities to determine the cumulative impacts to VCs (Mahmoud et al., 2009). Scenarios can be exploratory or anticipatory (Mahmoud et al., 2009). Exploratory scenarios build descriptions by extrapolating based on known processes of change in the past. Anticipatory scenarios are built with a high degree of subjectivity, they are based on desired or feared versions of the future that may be achievable or avoidable.

1.8 Assessing and Managing HSE Cumulative Effects (Cont.)



Economic Values

- Economic VCs important to local communities or indigenous groups may include commercial fishing and housing costs. For commercial fishing, indicators that have been used are the annual value of harvests with the associated significance threshold being that annual revenues should be sufficient to retain boats, licenses, and crew (Joseph et al., 2017). If projects in the region cumulatively result in an increase of labour costs, and other businesses are unable to retain employees, then the community loses economic self-sufficiency as well as the cultural aspects of fishing. For housing, indicators that have been used are the average price of housing in the region of interest and the cost of construction labour (Joseph et al., 2017). Associated significance thresholds were that housing cost no more than 30% of the average household income and that hourly construction labour wages do not provide a barrier to construction. Thresholds were constructed based on values expressed by stakeholders and available scientific, traditional, objective knowledge. In these examples, some thresholds were conceptual while others were numerical. While there may be a desire for precise thresholds, it is not always possible, and even the use of conceptual thresholds, stated unambiguously, improve on current practice.
- Choice experiments or scenarios can be used to understand acceptable levels of change or thresholds for communities (Spyce et al., 2012). These can also look at different demographics in the communities to understand if there are any differences in values between groups (Spyce et al., 2012).
- With regards to mitigation, developers could discuss potential mitigation measures with impacted communities, governments and other stakeholders. Mitigation measures may include creating public reporting requirements which use thresholds to determine when adaptive management is required for additional mitigation (MVEI, 2007). Example mitigation measures to combat boom-bust cycles could include lowering production rates to lengthen the project development timelines, community development initiatives which provide development funds for small business or infrastructure improvements (MVEI, 2007). Preferential contracting policies of capacity building initiatives could also be put in place as mitigation measures to support small or local businesses which may be unable to compete with business from larger cities (MVEI, 2007).

1.8 Assessing and Managing HSE Cumulative Effects (Cont.)



Social Values

- Establishing thresholds for social values should incorporate public consultation with affected communities and indigenous groups. While there may be a desire to have a go-to science-backed principle, this is often an unrealistic expectation. Communities provide the best source of knowledge for what they consider to be acceptable change in their lives, particularly in regard to social values.
- The scientific uncertainty behind decision-making for determining thresholds should not be used as a reason to not set thresholds (Kennett, 2006). A refusal to set a limit that is not backed by scientific research only serves the interests of those who benefit from a lack of limits to manage cumulative effects. This is not to say that scientific information is not beneficial to the decision-making process but that a lack of scientific information is not sufficient reason to not establish thresholds.
- In these circumstances, and even in the presence of scientific information, traditional and community knowledge provide valuable insight in establishing thresholds. Thresholds based on indigenous knowledge and values has shown to be effective in project-level CEAs conducted for development in communities in northern, B.C (Joseph et al., 2017).

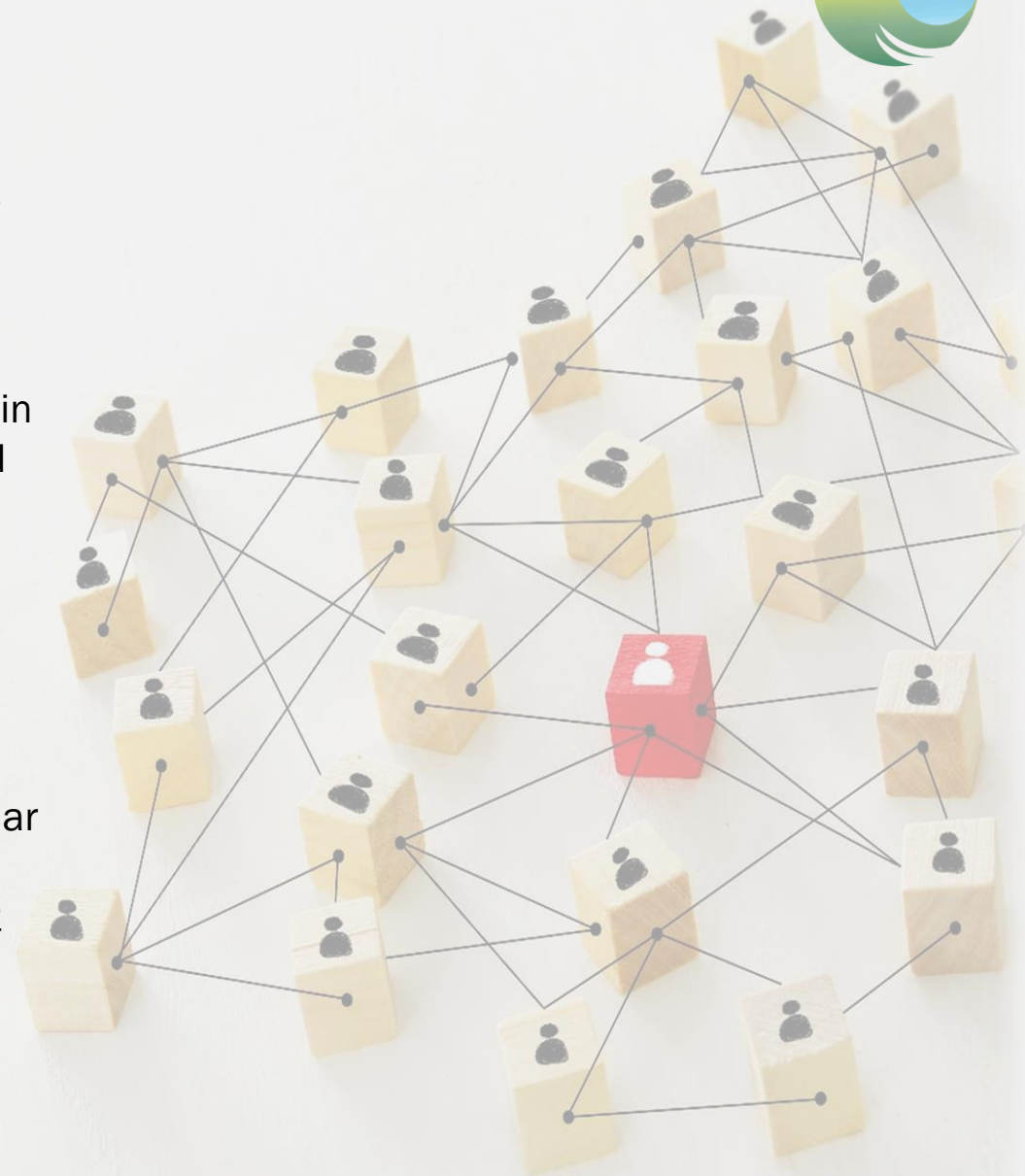


1.8 Assessing and Managing HSE Cumulative Effects (Cont.)



Social Values

- To maintain clarity, thresholds were discussed in terms directly related to the VC or associated indicators. Thresholds established at the scoping stage can guide the CEA process and better assess if the cumulative effects of a project are significant.
- While not established for CEA, indices such as the Resilience Capacity Index in the U.S. could be useful to estimate a region's capacity to manage acute and chronic stressors due to economic hardship, natural disasters, or rapid population influx (Scammell et al., 2014). The scores for this index combine economic (income equality, industrial diversification, housing costs), socio-demographic (poverty, disability, educational attainment), and community connectivity indicators (voter participation rates, homeownership, population density, and metropolitan stability).
- Establishing similar indices for regional capacity in Canada may provide similar insight into community resilience in Canada. Complex indices, such as the Resilience Capacity index, have been criticized because they make it difficult to determine the link between the social effect/indicator and a specific land use change. However, combined with community and indigenous knowledge, and community level scoping processes, the information gleaned from these sources could provide effective thresholds and limits for CEA and thereby result in more effective cumulative effects mitigation and management.



1.9 Recommendations from Literature Review

- There should be clear definitions for key terms in the Impact Assessment Act (health, social, economic) and CEA practice.
 - Leaving these up to individual interpretation leads to confusion and enables the exclusion of values/indicators important to local communities.
- More research and guidance is needed on the process and rationale behind VC selection, in particular the involvement of stakeholders in the process.
- There is need to improve data collection for social values.
- Better inclusion of social, economic, and health experts in the CEA process is needed.
- There is a need to develop better computer models which are targeted specifically to the assessment of social, health, economic values.
 - Issues may arise from trying to fit HSE values into an ecological environment-based model.
- Indigenous and public participation in CEA should be an iterative process.
- Regional scale environmental impact assessments may be better suited to CEA.
 - CEA within project-level IAs may enable a review which aims to simply get individual projects approved.
 - There is much potential for bias in project-level CEAs.
 - Project level CEA focus management of cumulative effects is mostly the responsibility of the project proponent.





Part 2: Practitioner Survey





2.1 Survey Design and Coding

- An online survey was designed to assess key guiding questions regarding the inclusion on social, health, and economic values in CEA.
- The aim of these questions was to understand if there is a consensus and approaches to assessing HSE values within CEA.
 - To identify what is done well, what needs to be improved and how the allocation of resources and research can be better managed in CEA.
 - Additionally, experts were asked to provide practical recommendations to improve CEA practice, with respect to HSE values.
- The survey was composed of 25 questions:
 - 7 were related to the expert's background and voluntary information
 - 18 were related to the inclusion, measurement, assessment and management of HSE values (9 multiple choice, 9 open-ended)
- Once questions were drafted, the IAAC committee and the Technical Advisory Committee (TAC) reviewed and provided feedback on the survey. The questions were revised to incorporate feedback and reviewed by multiple (5) consultants to ensure clarity. The survey received a 2nd review by the IAAC committee prior to survey coding.
- The survey was custom programmed using custom HTML and PHP libraries utilizing MySQL as the Database storage medium.
- Participants were assured anonymity in their participation and responses, encouraging honest feedback for CEA. For this reason, a list of participants cannot be provided.

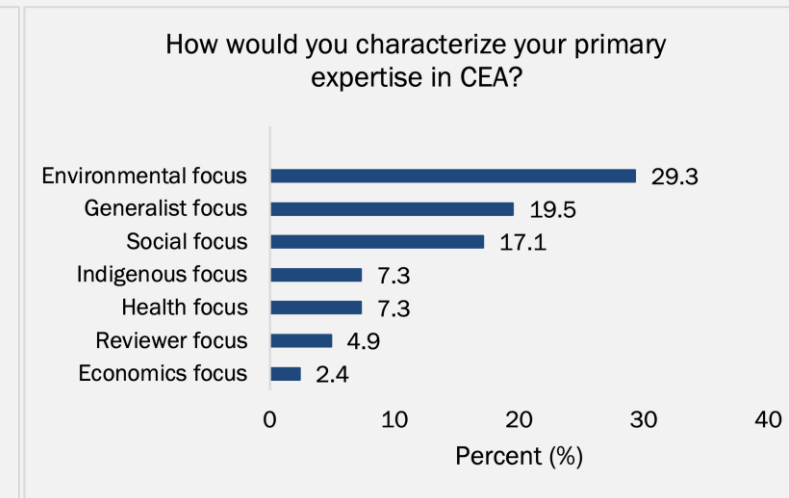
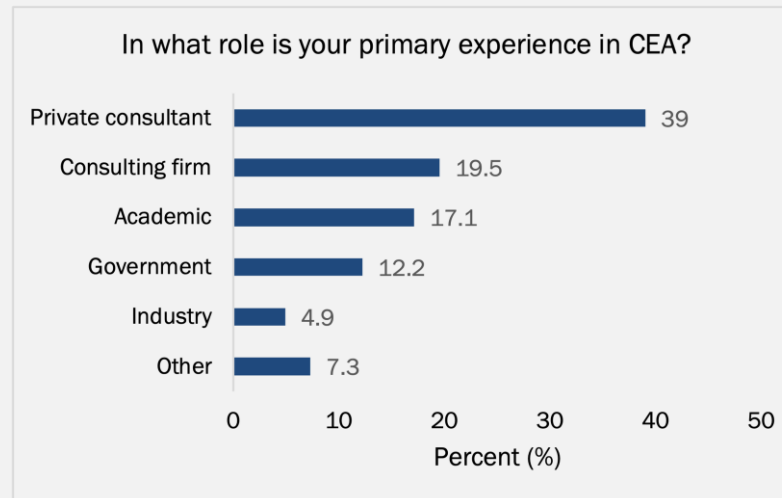
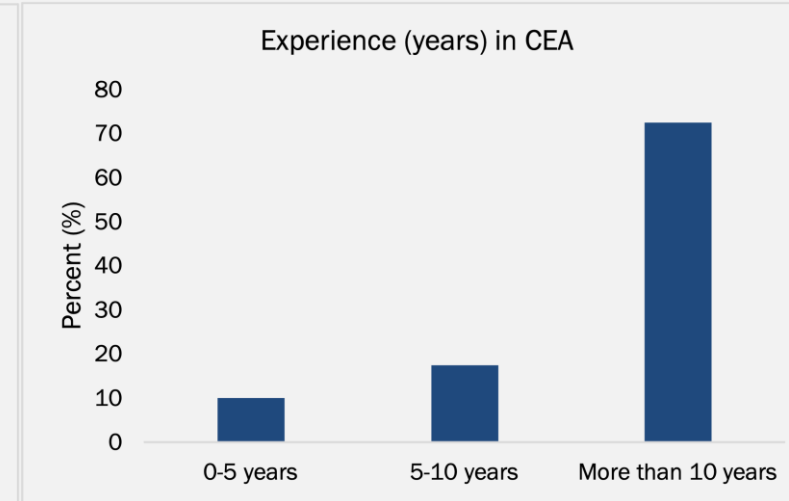
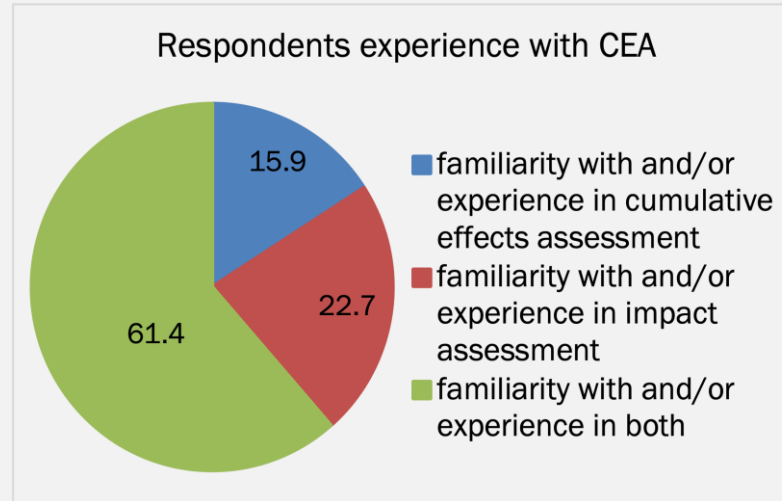
Guiding Questions

1. What is the sentiment towards the state of practice regarding the inclusion of social, health, and economic values and of these what are most overlooked?
2. How can HSE values be measured? What tools are effective?
3. What are effective tools to assess cumulative effects on HSE values?
4. What are effective CEA management techniques for HSE values?
5. Are there good case studies available of effective integration of HSE values?
6. How can we improve the CEA state of practice to incorporate HSE values?



2.2 Survey Population and Distribution

- In this type of review, it is critical to hear from people knowledgeable of the subject matter. As such, this is a purposively selected sample, not a random sample.
- A list was compiled with experts across industry, government, academia, and other sectors.
 - Included environmental, economic, social, Indigenous, and health experts
 - The list was compiled from known practitioners of CEA, personal contacts, a review of IAIA member list for interest in CEA, and references provided by TAC and IAAC upon review of initial sample list.
 - The initial list comprised of 144 experts, including 88 Canadians, and 55 internationals.
- To comply with the Canada’s Anti Spam Legislation (CASL), an email was first sent to everyone on the list asking if they would be willing to participate in the survey.
 - 77 people expressed interest in participating.
- The survey was distributed on February 1st, 2021, a reminder sent on February 9th 2021, and closed on February 15th, 2021.
 - By Feb 15th 2021, 44 responses were received.





2.3 Guidance for Data Analysis

- The response rate as a percentage of surveys sent out was high at 57%.
- Verbatim comments were coded into theme categories to allow an understanding of the most frequently mentioned themes.
- Data were analyzed using SPSS V23.
- Since the survey universe in this instance is unknown, data were not weighted.
- Furthermore, the sample size was too small to enable the determination of significant differences between subgroups.

One theme identified →

Consultation is a key activity, but social assessments should combine results of consultation with other data analysis

Three themes identified →

Current consultation efforts do not tend to use methods, involve practitioners, or engage community participants, in a way designed to bring forward a deep understanding of H,S,E conditions. There is minimal trust; there is cross-cultural dissonance, there are problems in the way data is collected and "reinterpreted", there is a lack of proper verification. Only the impacted peoples themselves can verify if an accurate assessment of their "condition" has been conducted, and they are rarely involved in this assessment process.

12. B) Consultation with stakeholders on selected social, economic and health VCs provides an accurate assessment of their condition? Please explain the basis for your rating above.

Codes	Theme
1	Depends on stakeholder knowledge in consultations
2	Stakeholders focus too much on one/certain issues
3	Needs inclusion of vulnerable/poor communities
4	Representation from all groups is needed for proper consultation/engagement
5	Consultation is important but needs to be coupled with data
6	Depends on level of trust between stakeholders and project proponents/ CEA practitioners
7	Conflicting priorities between stakeholders can pose problems
8	Depends on the VC/consultation methodology
98	Other
99	Not applicable



2.4 Survey Results

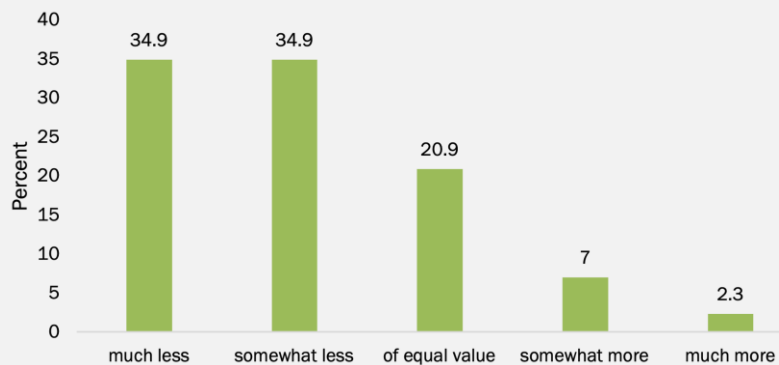
Question: How are social, economic and health valued components considered in relation to environmental/biophysical valued components in cumulative effects assessment?

Findings:

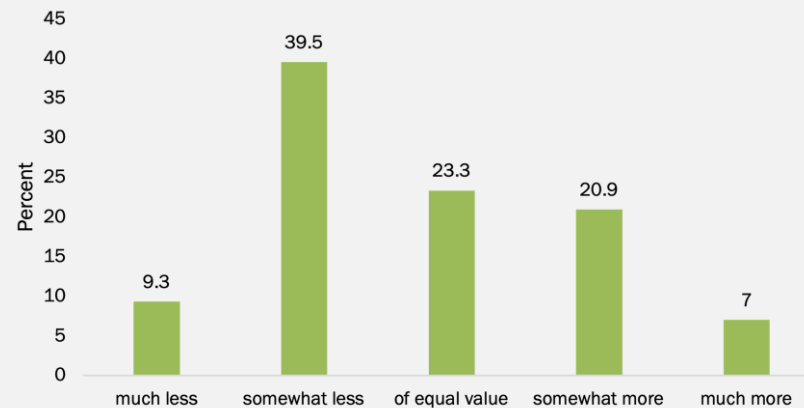
- Relative to environmental/biophysical VCs, health VCs are the least well considered in CEA, followed by social VCs.
- The consideration of economic VCs had the greatest spread of responses but there is still a left leaning spread indicating that they are generally considered less than biophysical VCs.

“For a long time, the focus has been on the engineering and environmental aspects of project impact assessments, and environmental in particular for CEA, with some inclusion of health. Now there appears to be a shift to focus more on the social and economic aspects but analysts and practitioners have less experience including this as part of the CEA”

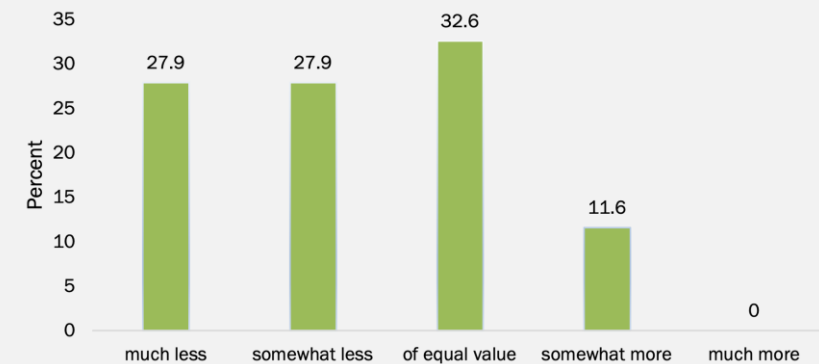
Health VCs are considered...



Economic VCs are considered...



Social VCs are considered



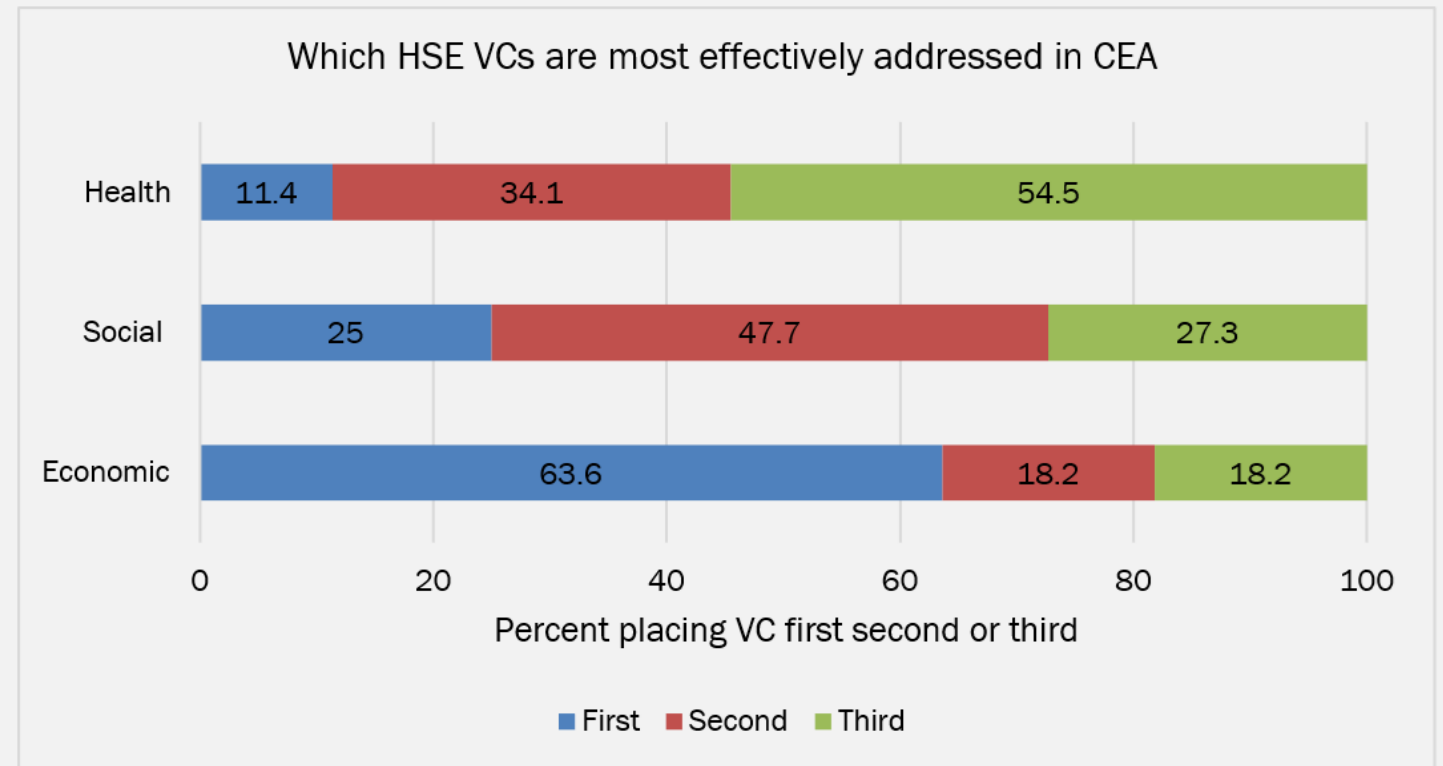


2.4 Survey Results

Question: Considering social, economic and health valued components, which of these are most effectively addressed in CEA?

Findings:

- Most effective consideration of economics.
- Health is least included.



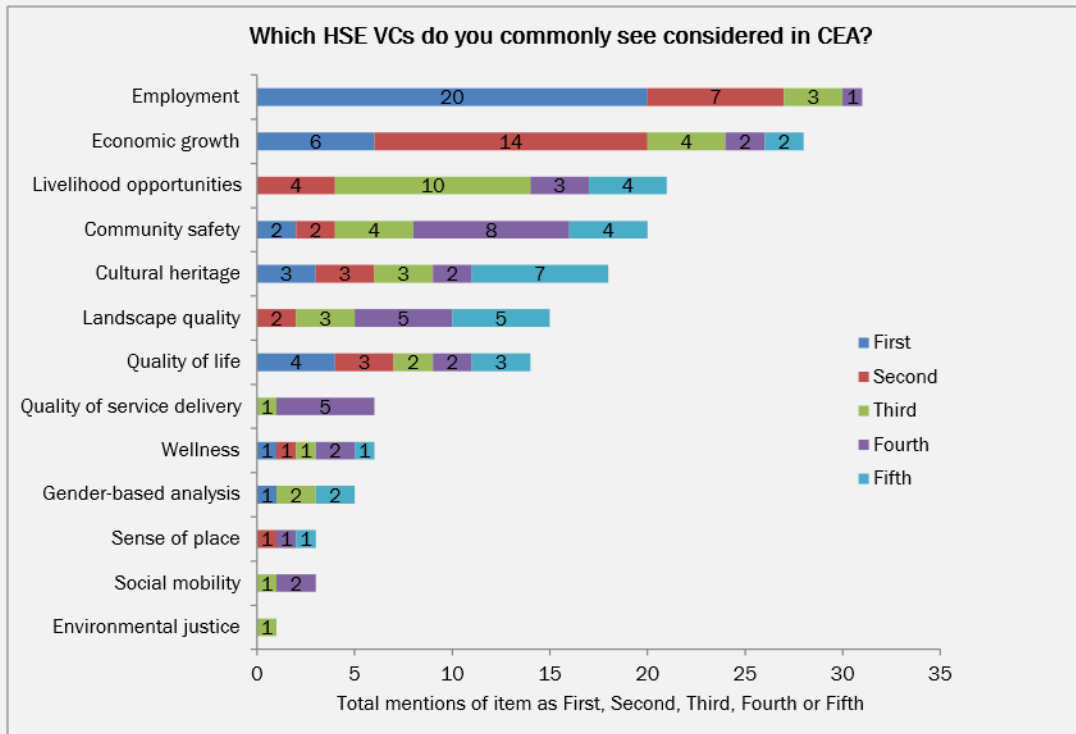


2.4 Survey Results

Question: Which social, economic and health valued components do you commonly see considered in CEA? (select 5)

Findings:

- Most common VCs used in CEA are employment and economic growth.
- Least chosen VCs were a sense of place, social mobility, and environmental justice.
- VCs suggested in open responses included community cohesion; social inclusion; indigenous rights; and mental health.



“The ones that typically appear relate to effects on infrastructure, housing, services, transportation. None of the companies I have ever worked for would entertain having quality of life or wellness adopted as VCs because there is no scientific basis for measuring them. These large companies are typically run by engineers or biologists who have no understanding of or interest in fuzzy social science stuff, and the regulators also typically have a poor understanding of socio-economic effects or what they mean. The only time concern is paid to socio-economic VCs if when a hearing goes to a joint review panel where the importance of socio-economic issues is more elevated.”

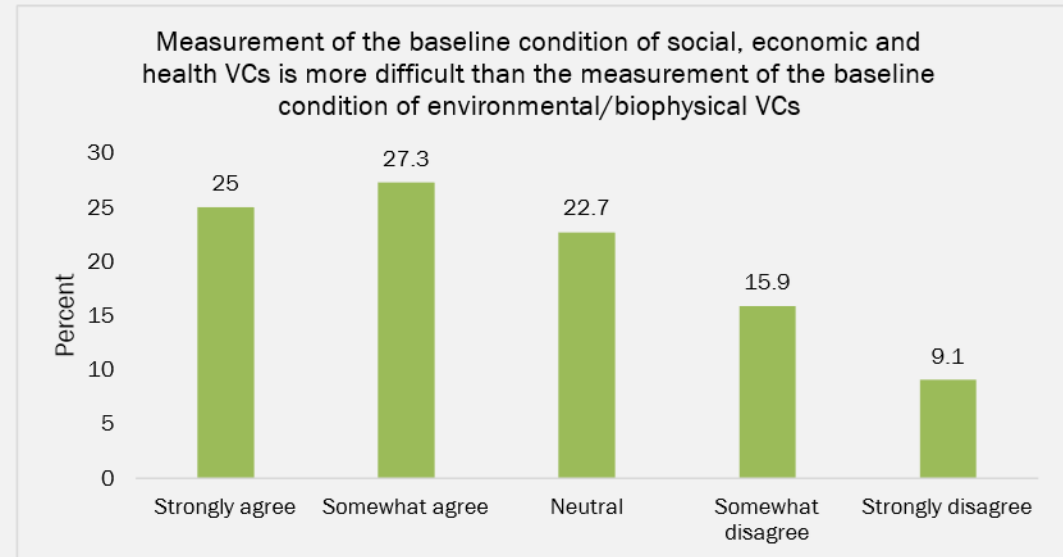


2.4 Survey Results

Topic: Measurement of the baseline condition of social, economic and health VCs relative to the measurement of the baseline condition of environmental/biophysical VCs.

Findings:

- The majority (52.3%) of respondents somewhat agree or agree that it is more difficult to measure the baseline of HSE values.
- Challenges include the many variables that affect HSE values, the lack of HSE data or access to data (due to ethics or proprietary information), poorly defined HSE values, and poor practice by CEA practitioners



“There is nothing intrinsically more difficult in working in the human environment than on the biophysical environment. There are thousands of practitioners that do it all the time, just rarely are they integrated into current Canadian EA. It is failures of will, policy and imagination that have led to the poor integration of these fields into Canadian EA, not some inherent inability to do good work”

“Most of the information that would be required for social, economic and health VCs are available as long as the proponent can obtain appropriate access to the information. This often depends on the laws of the jurisdiction for the proposed project.”



2.4 Survey Results

Question: What are the barriers prohibiting the effective inclusion of social, economic and health valued components in CEA? Select 5.

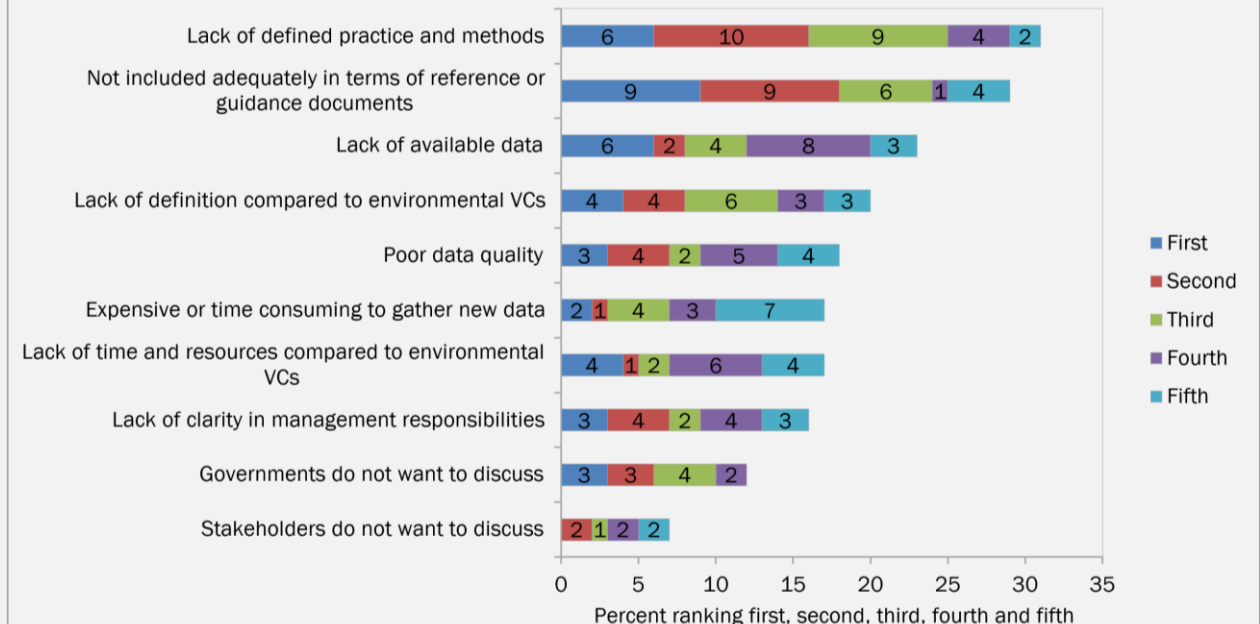
Findings

- Highest/most ranked barriers were lack of defined practice guidance and methods; inadequate HSE inclusion in TOR and guidance documents; lack of data; and poor VC definition
- Open-ended response VCs: apathy towards HSE by consultants and developers (13%); difficulty assessing subjective values (10%); and lack of HSE experience by practitioners (10%)

“Lack of desire by the large consultancies typically hired to develop Impact Statements to change their formula... lack of willingness to open “Pandora’s Box” of change that has occurred, especially on vulnerable sub-populations like Indigenous peoples, through EA.”



What are the barriers prohibiting the effective inclusion of social, economic and health valued components in CEA?



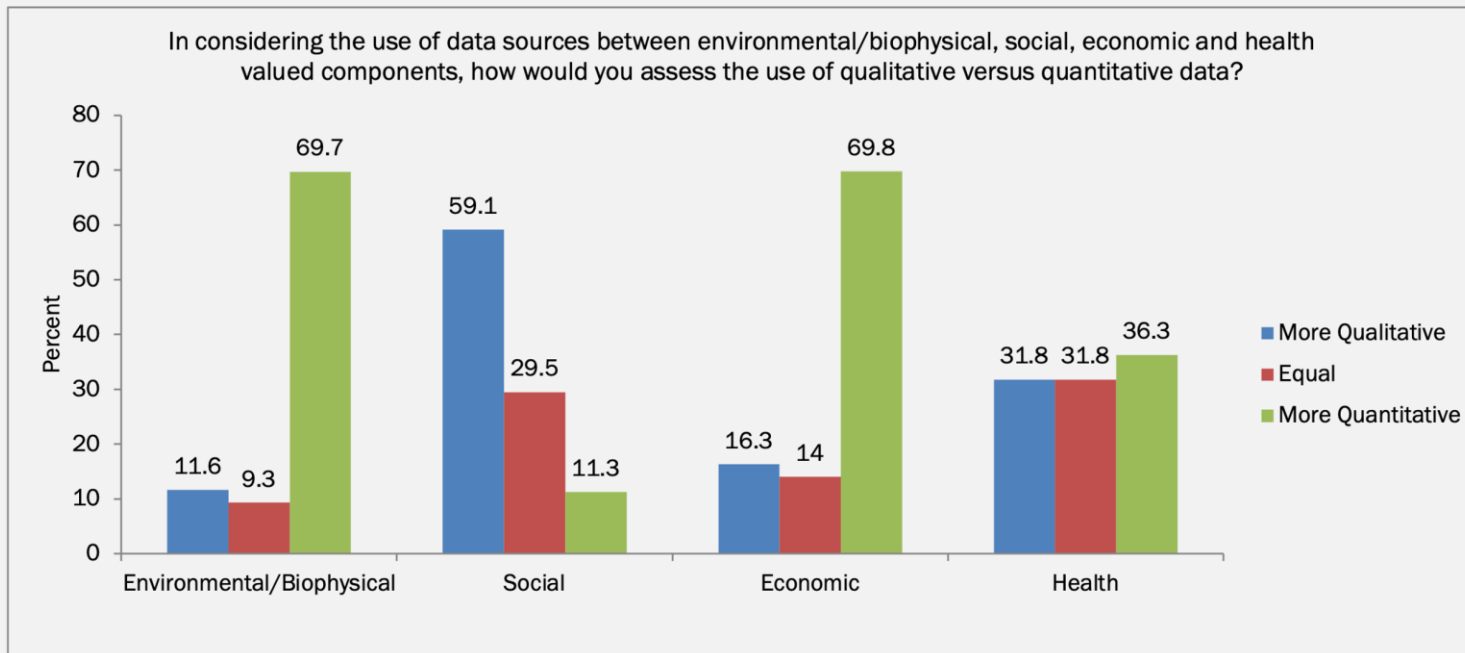


2.4 Survey Results

Question: In considering the use of data sources between environmental/biophysical, social, economic and health valued components, how would you assess the use of qualitative versus quantitative data?

Findings:

- Environmental/biophysical and economic values largely use quantitative data.
- Health showed a near equal mix
- Social showed a preference towards qualitative data



“Biophysical VCs are supported by highly quantitatively models (habitats, populations, etc.), as well as economic forecasts or assessments. Health assessment relies heavily on quantitative data for risk analysis, but also, in some cases be accompanied by case studies, explanations, personal stories of rare events (qualitative data). Social on the other hand uses more qualitative data, which requires more expertise not only for its design and collection but also for its analysis and interpretation.”

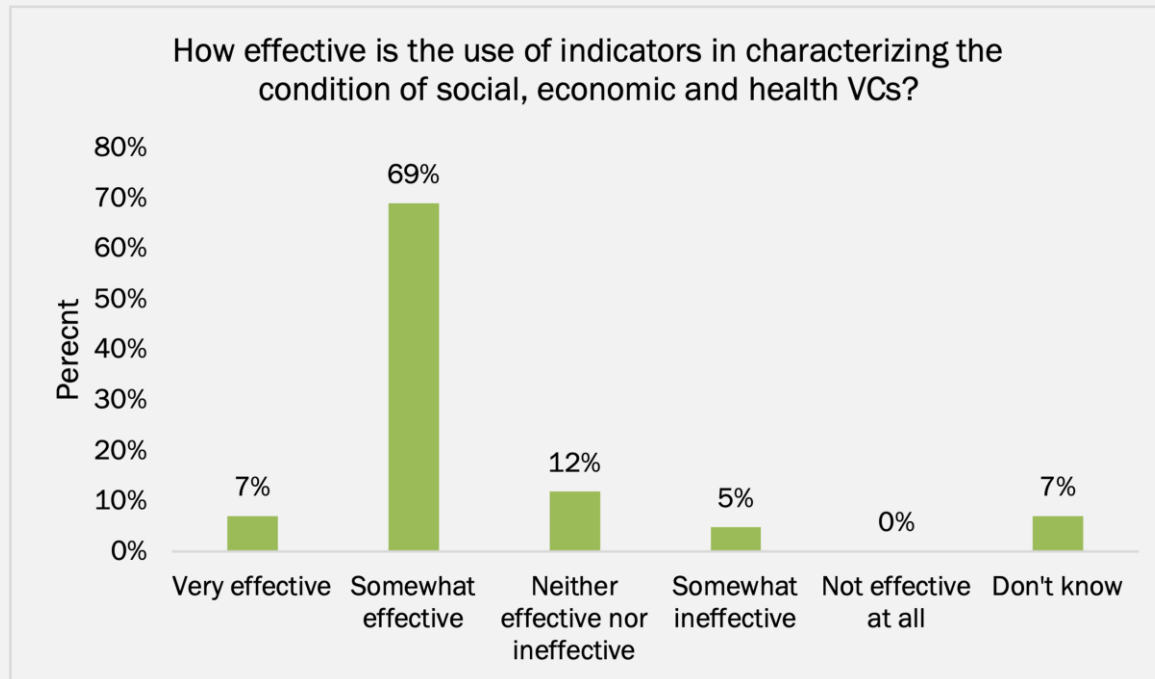


2.4 Survey Results

Question: How effective is the use of indicators in characterizing the condition of social, economic and health VCs?

Findings:

- Respondents predominately find indicators to be “somewhat effective” at characterizing HSE VCs.
 - Dependent on the indicator selected (noted by 44% of respondents); the data quality (11%); the understanding of the cause-effect pathway; and if they are selected in consultation with affected populations (11%).



“What is more important is the competence of people who know how to make sense of the indicators to inform a decision. With social indicators, a fully expert-led process of indicator selection is limited as the social indicators should represent stakeholder concerns and priorities.”

“Indicators are effective when designed for the purpose, clearly defined, measurable (sic) and combined with a qualitative approach. Indicators should be critically commented. The publication of indicators without explanations of the context can be misleading.”



2.4 Survey Results

Question: What are the main challenges in using indicators to assess the condition of social, economic and health VCs?

Findings:

- The challenges most mentioned by the respondents include:
 - Lack of guidance/experience in selecting/interpreting indicators (81%)
 - Poor data quality (31%)
 - Stakeholders/community not included in indicator selection (25%)
 - The lack of definition for indicators (25%)
 - The interconnectedness of indicators (14%)

“Reliance on available quantitative data means that essential indicators of well-being, quality of life, culture, etc. are almost completely glossed over, and there is a ton of assessment by proxy indicators that may have little to do with community H,S,E values and priorities.”

“An indicator is good to measure something, but most of the time what is missing is the context of the data gave by the indicator.”

“Actual outcomes and impacts of CEAs is not often published/available to determine whether the right indicators were applied/chosen. Need for this information/lessons learned to be able to consider for similar projects”

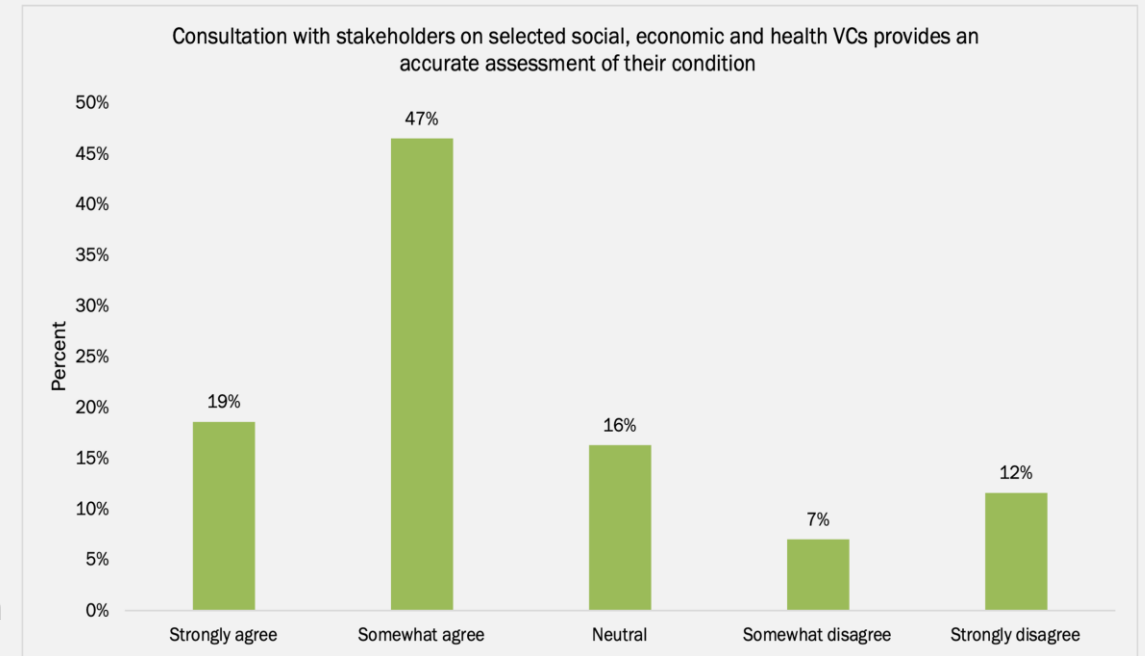


2.4 Survey Results

Topic: Consultation with stakeholders and assessment of social, economic and health VCs

Findings:

- Majority (66%) agreed/somewhat agreed that stakeholder consultations provides an accurate assessment of HSE VCs.
- In open-ended responses
 - 31% noted that consultation needs to be coupled with data
 - 28% said that it depends on the VC or the consultation methodology
 - 17% said that it depends on the stakeholder knowledge
 - 17% said that representation is needed from all groups for proper consultation/engagement
 - 14% said that stakeholders focus too much on one/certain issues



“It depends on how effectively consultation has been done, and how stakeholders have been defined. Have the worst-off members of society been considered? Has the future generations been considered? Has community engagement been done in ways that are compatible with/sympathetic to the many different stakeholder groups? Probably not! In principle (theory) it should, but in reality, consultation is never good enough. In fact, in the social sphere the word 'consultation' is very negative word. You should be talking about real genuine engagement.”

“In my experience some stakeholders are not sufficiently aware of the larger picture to contribute effectively, sometimes they need to be capacitated on certain issues so that they may be better equipped to participate. Not in all cases, but in some. Perhaps it is also a lack of familiarity that creates strain or cultural barriers.”

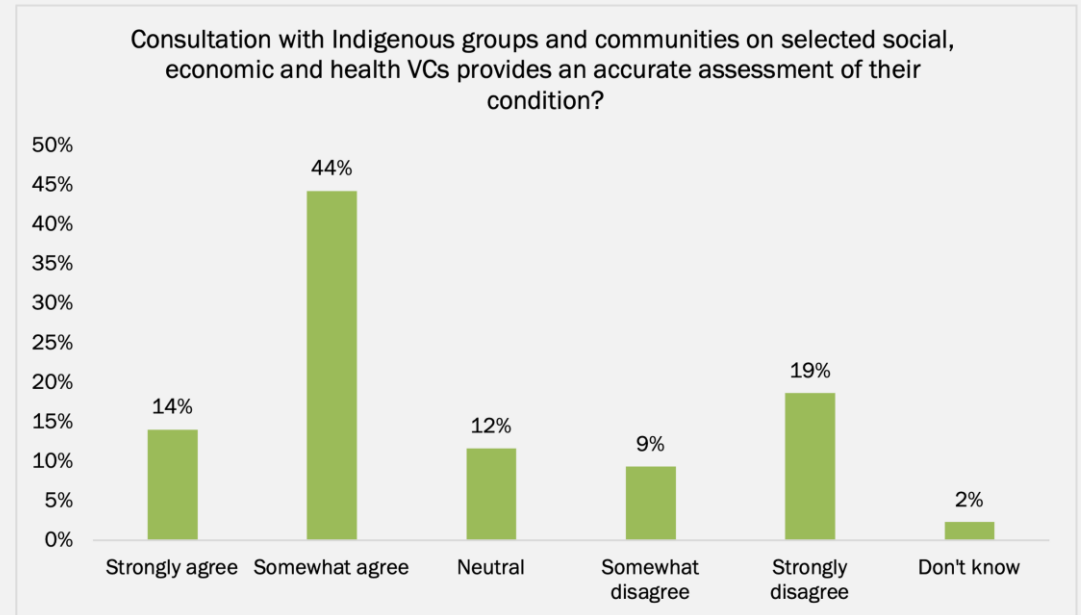


2.4 Survey Results

Question: Consultation with Indigenous groups and communities on selected social, economic and health VCs provides an accurate assessment of their condition? Do you -

Findings:

- 58% of respondents agreed/somewhat agreed that consultation with indigenous groups on HSE provided an accurate assessment of their condition.
- Open-ended responses:
 - 33% said that consultation is important but needs to be coupled with data
 - 33% said its important for perception and to gain insight into indigenous knowledge
 - 18% said there is a need to understand community dynamics
 - 15% said there is a need for trust and understanding between indigenous communities and CEA practitioners/process



"This depends on the impact practitioner's expertise and experience working with Indigenous (sic) communities and being aware of the history and inter-disciplinary complexity of the issues facing these communities. Also, while conducting this work in a respectful and ethical manner. This may depend on the tone set by the proponent and nature of their relationship with communities."

"It depends on who is consulted and the dynamics of the community. Different leaders, groups, and families have different issues, and their issues and agendas may or may not be fully disclosed. Leadership also changes and will change the prominent issues."

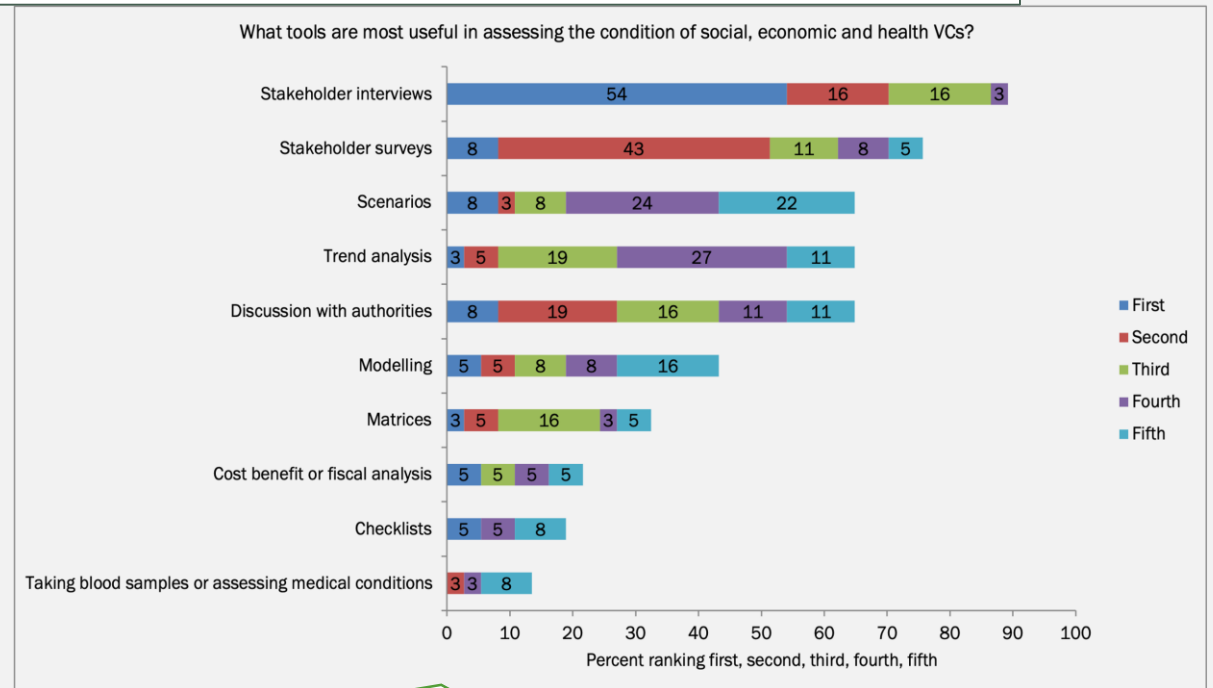


2.4 Survey Results

Question: What tools are most useful in assessing the condition of social, economic and health VCs?

Findings:

- Stakeholder interviews (89%), surveys (75%), scenarios (65%), trend analysis (65%), and discussions with authorities (65%) were the most popular tools selected
- Other tools in open-ended responses:
 - Focus groups and participatory consultation (23%)
 - Other projects and case study examples (12%)
 - Supporting HIA/SEHIA (12%)
 - Regional planning (4%)
 - Community-based research (4%)



“Looking at proposed project design and mitigation and enhancement strategies from other projects to see what has worked and what has failed and using this real experience to develop effective management actions. Unfortunately, not enough documentation of the effectiveness of past strategies is available.”

“Community-based research methods to capture unique conditions for Indigenous (sic) communities. These could include ethnographic research (i.e. baseline or pre-baseline conditions); Indigenous (sic) knowledge and cultural studies including country food studies; Review of community development plans.”



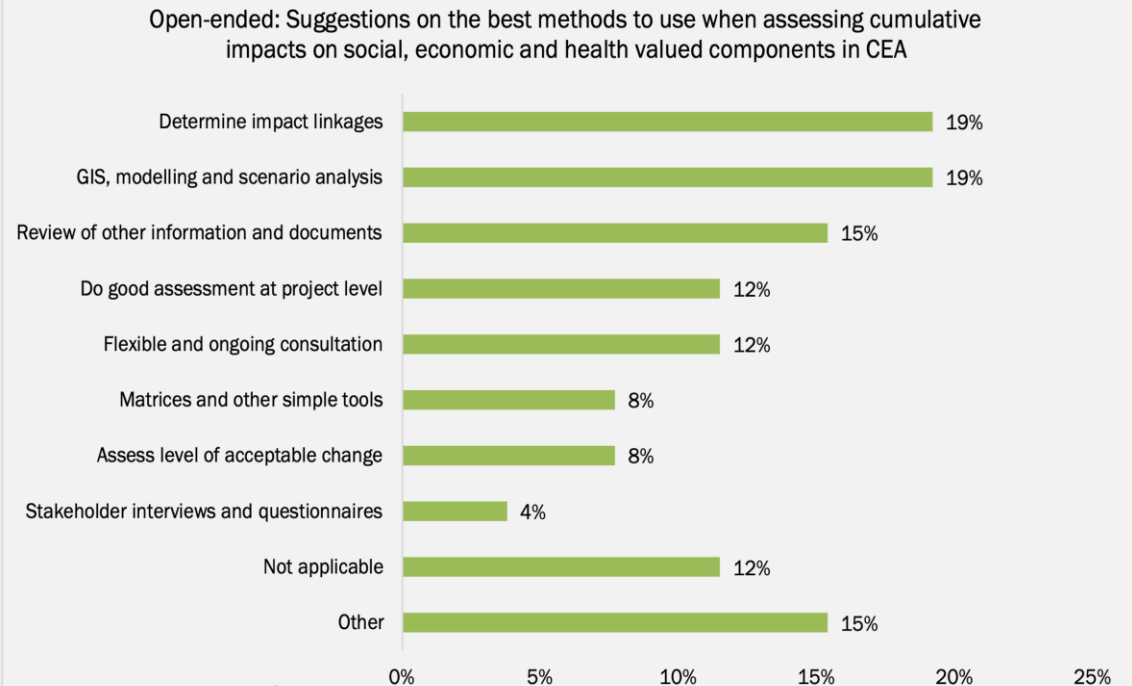
2.4 Survey Results

Question: Suggestions on the best methods to use when assessing cumulative impacts on social, economic and health valued components in CEA?

Findings:

- Open-ended. Suggestions for methods/tools included:
 - Determining impact linkages (19%)
 - GIS, modelling, and scenario analysis (19%)
 - Review of information/documents (15%)
 - Flexible and ongoing consultation (12%)

“The process of doing an assessment may be (sic) more important than the results of the assessment. Ongoing consultations provide opportunities for two-way education a community, a project and its potential effects, and mitigation and enhancement strategies that would make things better for everyone. Our current system is too adversarial from the outset. Proponents should be encouraged to undertake ongoing consultations throughout the assessment process, even sharing preliminary drafts of the assessments, so that if a project is approved the proponent it (sic) is seen as a welcome addition to a community.”



“Cannot overstate the importance of scoping and selecting good quality VCs to every later step of assessment. Clear articulation of thresholds of significance provide transparency to participants and serve as a basis for dialogue regarding what is acceptable change.”



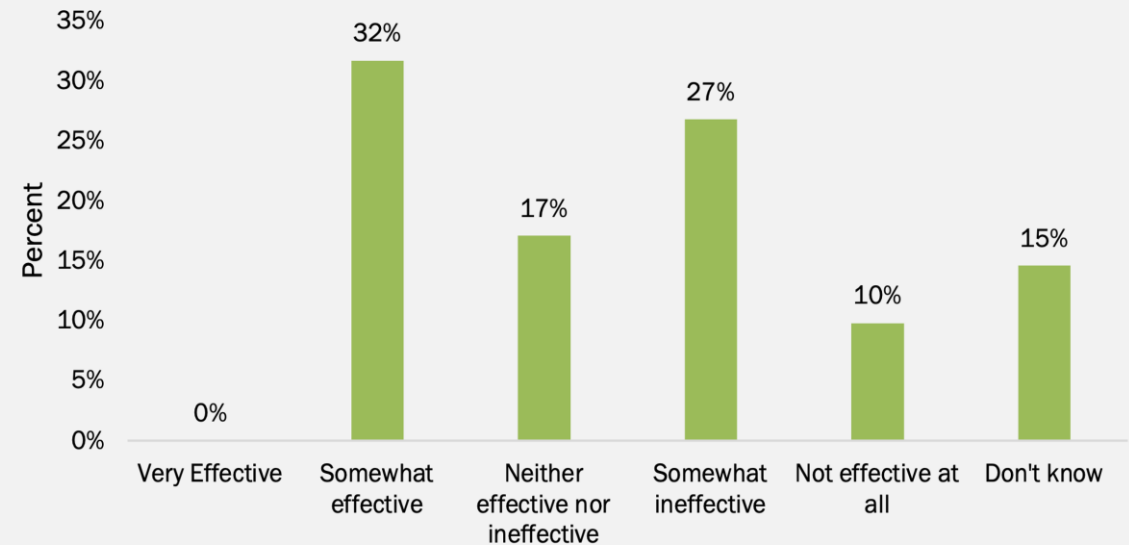
2.4 Survey Results

Question: How effective is CEA in managing cumulative impacts on social, economic and health valued components?

Findings:

- 37% of respondents believe management of cumulative effects on HSE values to be somewhat ineffective or not at all effective
- Open-ended responses:
 - CEA does not adequately address management of cumulative effects (40%)
 - The efficacy depends on the quality of CEA data and assessment (20%)
 - Management of cumulative effects must use tools such as strategic effect assessment or regional strategic effect assessment (20%)
 - Only government can manage cumulative effects (14%)

How effective is CEA in managing cumulative impacts on social, economic and health valued components?



“Project-based CEA do not work well as the burden is on the proponent - Regional CEAs (Or SEAs) are better at capturing the complex interactions between various stakeholders, multiple developments and activities - Issue of funding can affect effectiveness: who is (or should be) funding the CEA: government or project proponents? - Oversight and governance of CEA will affect effectiveness - should it be overseen by proponent(s), government or a neutral body?”

“Project specific CEA is not effective at managing cumulative impacts on these VCs. Most of the existing issues are beyond the scope of influence of a project being assessed. A better venue for managing these types of impacts is RSEA or Strategic EA.”

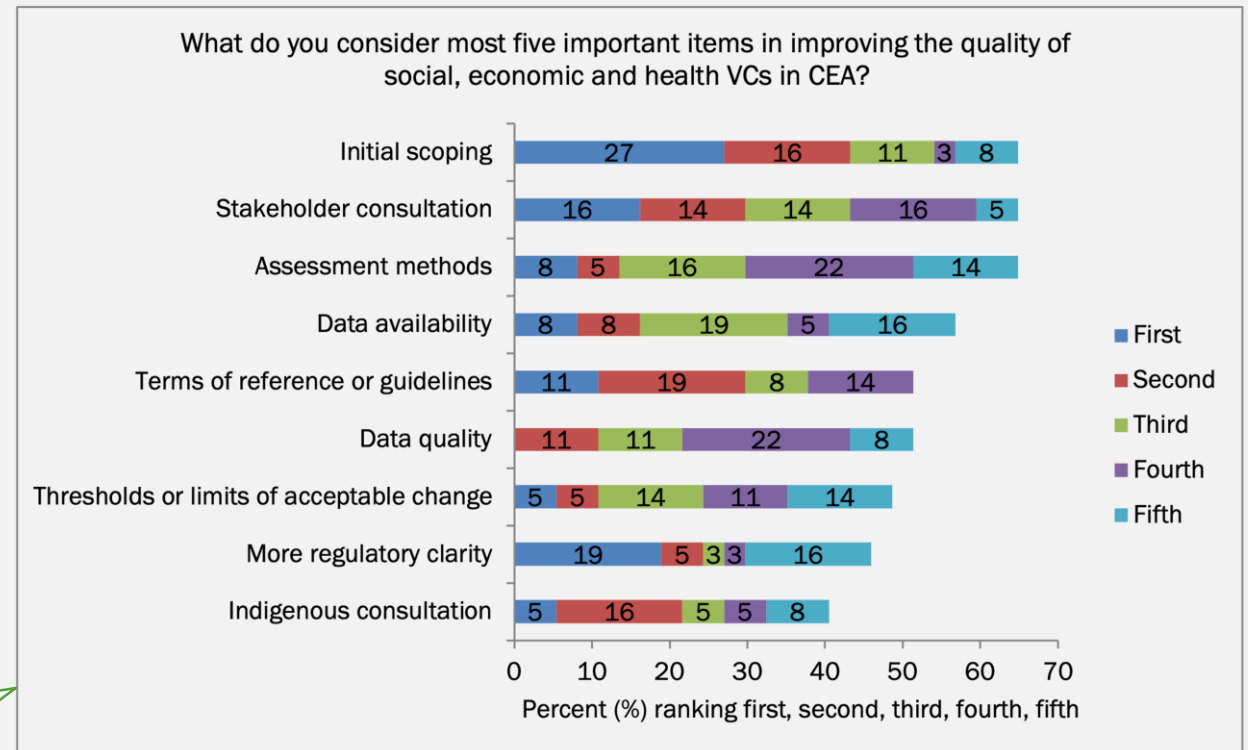


2.4 Survey Results

Question: What do you consider most five important items in improving the quality of social, economic and health VCs in CEA?

Findings:

- Initial scoping (65%), stakeholder consultation (65%), assessment methods (65%), data availability (56%), terms of reference/guidelines (52%)
- Open-ended response suggestions:
 - Improve training and interaction between practitioners, regulators and reviewers (22%)
 - Engagement and co-development not consultation (17%)
 - More government clarity (13%)
 - More clarification on CEA methodology (9%)
 - Improve the CEA baseline (9%)



“Define what is to be assessed not from the point of view of the academic theoretician but by the EA practitioner in consideration of that theory and practice-based realities.”



2.5 Recommendations from the Survey

Themes in recommendations for CEA Practice	% Response
Better guidance and training on cumulative effects assessment is needed	56
Better definition on the selection of HSE values in CEA is required	48
Improvements are needed in stakeholder engagement and community participation in CEA	44
Improved integration of environmental, health, social and economics values is needed so that the outcomes of CEA are more holistic rather than focused on single VCs	40
Better define indicators, thresholds and limits of acceptable change	28
CEA should be considered as a stand-alone instrument apart from project level EIA and better integrated with SEA and regional assessments	24
Improved integration of indigenous peoples' health, social and economic values is needed in CEA	20
Increase time allocated to CEA and complete early in the EIA	8
Improve management of cumulative effects	8
Improve CEA ToR	4



Part 3: Key Findings and Recommendations



Key Finding 1

On Guidance

- There is a gap between project application standard practice and best practice/emerging methodologies and academic research in CEA.
 - Project based CEA practice has not yet been able to integrate new methodologies, particularly for the inclusion of HSE values.
 - CEA practice in Canada is influenced by project level EIA requirements.
 - This may be partially due to the evolving nature of CEA, and the recent changes to the EIA/CEA process in Canada.



Recommendation 1

- Develop improved general CEA guidance for proponents, stakeholders, governments and CEA practitioners; this was seen in the literature review and is a recurrent theme from the survey.
- It includes practical advice for how to do CEA including methodologies and processes and on CEAM.
- A focus of guidance should be directed to improving inclusion and assessment of HSE values.
- Guidance should be prepared for and oriented towards a new generation of CEA practitioners.
- Guidance should not just be directed to CEA practitioners but all stakeholders including the affected public and communities, project proponents and government agencies and decision-makers.
- Perhaps is it time for a reboot of the 1999 guide?





Key Finding 2

On Training

- Beyond the preparation of guidance documents and materials there should be a concerted effort given to training in cumulative effects assessment for a range of participants and interests on a regional basis across Canada
- There has been a loss of key CEA practitioners in the field particularly on the social side
- After 50 years of CEA practice, there is still a call as “how to do CEA within EIA”.



Recommendation 2

- Training should be prepared for and oriented towards a new generation of CEA practitioners.
- Training will need to go beyond existing practitioners to include specialists from a wide range of HSE disciplines assuming they will be on future teams.
- Special training will be required for indigenous participants different from traditional training methods.
- Training and guidance is will not happen quickly and will require extensive resources to undertake and continue towards building a solid practitioner base.
- Ongoing implications of COVID will affect training. Ideally regional workshops would be prepared but maybe not possible given current conditions. Virtual training is the “new” norm.





Key Finding 3

On Improving Consideration of HSE Values

- There still is a predominant focus on environmental and biophysical VCs in CEA which is reflective of its practice origin but also that it is easier to take a quantitative approach when assessing environmental VCs compared to more qualitative methods used for HSE VCs.
 - HSE values are difficult to measure and not clearly understood.
 - Economic values in CEA outweigh social and health values.
 - There is a lack of standardization in the definition of HSE VCs.



Recommendation 3

- Clear definition of health, social and economic values is needed in CEA legislation and/or supporting guidance.
- More guidance is required for the selection and characterization of health, social and economic valued components in CEA.
 - Guidance on the selection of HSE VCs and their measurement
 - Guidance on the selection of indicators, application of thresholds and limits to acceptable change for HSE values
 - Look for case study examples of good practice where HSE values have been fully considered
 - Consult HSE practitioners in preparation of guidance through a workshop
- More involvement of health practitioners is needed to improve CEA guidance.
 - Inclusion of all definitions of health, including mental health
 - Consider workshop approach involving range of health practitioners interested in community health, development impacts and CEA



Key Finding 4

On Consultation and HSE Values

- Improvements are needed to public consultation in how stakeholders understand and participate in CEA particularly in the identification of HSE valued components.



Recommendation 4

- Improve early scoping processes by proponents and CEA consultants/practitioners to “kick off” EIA and CEA with affected communities and stakeholders. This will not only inform stakeholders to the CEA process, allow them to fully participate in the VC selection process but it will also improve overall confidence in CEA processes and outcomes.
- More effort is required to better define HSE values with stakeholders and incorporate means for their measurement and assessment.
- Public and stakeholder consultation needs to be re-formulated as “engagement, not consultation.”



Key Finding 5

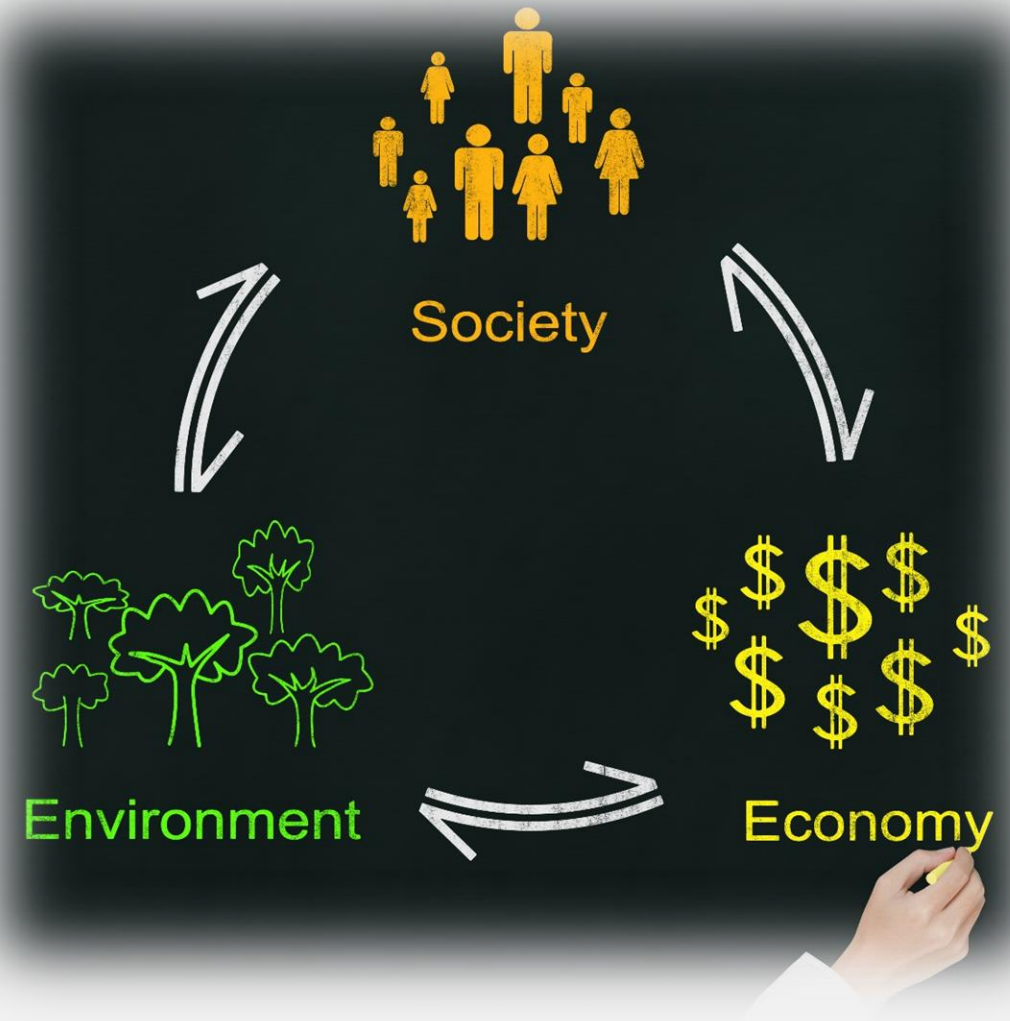
On Making CEA More Holistic

- There is a need for more comprehensive integration of health, social and economic VCs with environmental and biophysical VCs reflecting a more holistic approach to CEA/EIA outcomes.



Recommendation 5

- At Project CEA level
 - Improved integration of environmental, health, social and economics values is needed so that the outcomes of CEA are more holistic rather than focused on single VCs.
 - How to do when this practically changes the current CEA practice?
- At REA/SEA level
 - Better integration of regional and strategic assessments with project level CEAs is needed. Top-down planning meets bottom-up assessments.
 - Find a pilot study or studies to do so – at provincial and federal levels.





Key Finding 6

On Improvements to CE Management of HSE Values

- Management of cumulative effects on HSE VCs is more difficult to do than for environmental or biophysical VCs as these initiatives extend far beyond the project application level and the responsibility of the project proponent

Recommendation 6

- Preparation of CEA guidance materials should also include processes and specific recommendations for managing cumulative effects on HSE values.
- Governments, at all levels, must take responsibility for managing regional health, social and economic cumulative effects and effective implementation and follow-up of mitigation measures.
- A greater use of scenario approaches for possible alternative futures regarding HSE values could lead to their better inclusion in decision-making processes – this will always be limited by data.
- Again, case study examples could be useful to disseminate approaches to CE management.





Key Finding 7

On CEA Terms of Reference

- There is a need for improved terms of reference for CEA at both the federal and provincial levels that includes greater consideration of health, social and economic valued components.

Recommendation 7

- Specific guidance on improving CEA terms of reference for greater emphasis and inclusion of HSE VCs should be developed for provincial and federal agencies.
 - This should be prepared separately from general guidance.
 - A training module should be available for anyone preparing a CEA TOR.
 - Guidance preparation should involve consultation with a wide range of stakeholders as to what should be contained in CEA TORs.





Key Finding 8

On Data Quality

- Respondents commented on both the lack of available HSE data and also the quality inconsistency of that data contribute to problems in CEA. The lack of a good comparative baseline also adds to this data challenge.

Recommendation 8

- Regional baselines could be one solution, but the overriding question is who pays for it, who collects the data and is it available because of privacy issues.
- This will be a continued challenge for consideration of HSE values in CEA.
- Practitioners have to make do with the best that they can and be cautious when doing so.



Key Finding 9

On Case Studies

- A total of 11 case studies (in and outside of Canada) were suggested.
- Other respondents commented on the lack of good case studies.



Case Studies

Trans Mountain Pipeline and wildlife habitat in the North Thompson Watershed. Adams Lake Indian Band. BC

Great Sandhills Regional Environmental Study. AB

Northern River Basins Study. AB & NWT

Consolidated Goldwin Ventures Mineral Exploration Program. NWT

Effects on Host Communities: Siting and Effects of Wastewater Facilities. NZ

Carrier Sekani Cumulative Effects of Coastal Gas Line on Rights. BC

Potential Cumulative Impacts Of Hydropower Development In The Kuri-Gongri Basin. Bhutan

Beaufort Regional Strategic Environmental Assessment. The Inuvialuit Settlement Area in the Canadian Western Arctic.

Milton Logistics Hub Project. ON

Northern Gateway. AB & BC

Hydropower Development in The Trishuli River Basin. Nepal

Recommendation 9

- Further analysis of case studies is recommended as this will be valuable for guidance and training materials.
- Time was not available to do so but should be a follow-up to this work.
- Lessons learned from case studies should be applied.



Key Finding 10

On Monitoring and Follow-up

- Survey finding indicate a continued lack of monitoring and follow-up in CEA.

Recommendation 10

- Training and guidance should also include monitoring and follow-up in CEA.
- It is something not done well in EIA/CEA.





To help assist IAAC/TAC on guidance and future initiatives to improve CEA practice and to promote greater inclusion of health, social and economic values, a series of next steps are presented for follow-up and further action

Part 5: Next Steps

Next Steps 1



Action	Description
Develop TAC/IAAC working group on HSE values in CEA/EIA.	IAAC/TAC should develop a working group to oversee research and development applications that focuses on improving the inclusion of health, social and economic (HSE) values in CEA. A diversity of backgrounds in each of the HSE areas plus some with overall experience would be valuable.
Prepare specific guidance on inclusion of HSE values in cumulative impact assessment.	<p>There is specific need to develop a guidance note for CEA practitioners, stakeholders, reviewers, and other interested parties as to how to scope, assess and manage cumulative effects on HSE values. The guidance note should consider the following elements:</p> <ul data-bbox="774 811 2448 1122" style="list-style-type: none">▪ Guidance on the selection of HSE VCs and their measurement.▪ Guidance on the selection of indicators, application of thresholds and limits to acceptable change for HSE values.▪ Guidance on how to engage stakeholders, communities and the public when doing CEA.▪ Guidance on assessment of cumulative effects on HSE values.▪ Guidance on management of cumulative effects on HSE values. <p>Preparation of guidance materials should be prepared by HSE practitioners. Guidance should be structured to provide general guidance applicable to all three values and further specific separate guidance chapters on health, social and economic values as these are often lumped together but are very different in terms of scope and context. Preparation of this guidance material should also be integrated into the knowledge-based training program.</p>

Next Steps 2



Action	Description
Update general guidance on CEA.	<p>There is need for the preparation of new guidance material in an easy to use and practical format for the assessment and management of cumulative effects in Canada.</p> <p>The existing web-based material on the IAAC website is not conducive to this purpose for the following reasons:</p> <ul style="list-style-type: none">▪ The 1999 guidance note is now more than 20 years old.▪ The March 2018 web-based version is not useful from a practical “how-to-do” perspective and is for CEAA 2012.▪ Guidance should be updated for a new generation of practitioners and in a format more directed to a learning and implementation experience.▪ It is recommended that guidance be updated in the form of a new manual for assessing cumulative effects under the Impact Assessment Act and to form a technical basis for the preparation of training materials.
Improve CEA terms of reference to better include HSE values.	Review federal and provincial terms of reference for inclusion of health, social and economic values in cumulative effects assessment and make suggested improvements.

Next Steps 3



Action	Description
<p>Develop a knowledge-based training system for CEA particularly regarding HSE values. There is a need for a “new” approach to training and capacity strengthening.</p>	<p>It is recommended that a companion training initiative be developed in conjunction with preparation of guidance materials. This will not only increase the value of guidance materials, but it will also extend the reach of its content to a wide group of stakeholders and the public.</p> <p>The training materials should be a modular flexible web-based system that offers users a breadth of training opportunities from general considerations in CEA to specific practice elements that stem from the detailed guidance document materials.</p> <p>Content of the training materials should consider the following:</p> <ul style="list-style-type: none">▪ Overall generalized training in cumulative impact assessment from non-technical stakeholders and practitioners.▪ Detailed online training modules on “how-to-do” steps involved in CEA.▪ Practical case study experiences and other experiential learning processes.▪ Access to a mentor or “live” web-based training experience.▪ Specific training on the inclusion of health, social and economic values.▪ Online conferences or webinars on specific topics in CEA and in particular on HSE values.

Next Steps 4



Action	Description
Prepare white paper series on key issues in CEA.	<p data-bbox="774 334 2484 429">Develop a series of white paper best practice research reviews of key issues in CEA which could form part of a CEA guidance and training series. Topics follow below.</p> <ul data-bbox="774 519 2397 1076" style="list-style-type: none"><li data-bbox="774 519 1493 558">▪ Integration of CEA with SEA and REA.<li data-bbox="774 582 2313 729">▪ Monitoring and follow-up in CEA – complete a review of monitoring and follow-up of recommended actions for management of cumulative effects on health, social and economic values.<li data-bbox="774 748 2313 895">▪ Incorporating thresholds and limits of acceptable change in CEA – update existing documentation on limits of acceptable change as they pertain to health, social and economic values.<li data-bbox="774 913 2397 952">▪ Improving management of HSE values in CEA beyond project proponent responsibilities.<li data-bbox="774 971 1582 1009">▪ Data quality and availability issues in CEA.<li data-bbox="774 1033 1510 1072">▪ Privacy legislation as it relates to CEA.
Complete a CEA case study lessons learned review.	<p data-bbox="774 1162 2484 1258">Eleven case studies were recommended for further consideration as examples of good practice for consideration of health, social and economic values in CEA.</p> <p data-bbox="774 1290 2466 1386">A “lessons-learned” further review of this and other case studies is recommended for inclusion into guidance and training materials.</p>

Next Steps 5



Action	Description
<p>Prepare guidance on public engagement in CEA.</p>	<p>There is a need to improve early scoping processes by proponents and CEA consultants/practitioners to “kick off” EIA/CEA with affected communities and stakeholders. More effort is also required to better define HSE VCs with stakeholders and to improve their involvement as to how these values are measured and assessed.</p> <p>Consideration should be given to preparing a specific guidance document for project proponents and their consultants to effectively engage communities and stakeholders early in the EIA/CEA preparation process, to assist participants in the understanding of EIA/CEA concepts and to improve their contribution towards the identification and selection of valued components in particular those health, social and economic values of concern.</p> <p>The expected result of this guidance will inform stakeholders to the CEA process, allow them to fully participate in VC selection and their prioritization and lead to improved confidence in CEA and its management outcomes.</p>



Some Final Thoughts:

The survey findings confirm that CEA/EIA remains a divisive, complex and often overcomplicated process for practitioners, project proponents, stakeholders and governments. Any solutions to improving the consideration and inclusion of health, social and economic values must heed the continued call for greater simplicity and clarity in CEA to avoid further practice confusion and add to preparation time and costs.



Part 5: Literature Cited



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Part 6: Appendices



A.1 Survey Questions



Improving the Inclusion of Social, Economic and Health Values in Cumulative Effects Assessment (CEA)

Your Progress



Your Experience in Working with Social, Economic and Health Valued Components (VC) in CEA

1. Do you have familiarity and knowledge of, or experience working with, social, health and economic valued components in cumulative effects assessment, impact assessment or both? Please select the most appropriate response below and answer the questions that follow accordingly to the best of your abilities.

Select a response

- Yes – familiarity with and/or experience in cumulative effects assessment
- Yes – familiarity with and/or experience in impact assessment
- Yes – familiarity with and/or experience in both
- No

Inclusion of Social, Economic and Health Valued Components (VC) in CEA

The following questions concern how social, economic and health VCs are considered for inclusion in cumulative effects assessments.

2. For the majority of projects, how are social, economic and health valued components considered in relation to environmental/biophysical valued components in cumulative effects assessment?

	much less	somewhat less	of equal value	somewhat more	much more
Health VCs are considered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic VCs are considered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social VCs are considered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Can you provide reasons as to why this is the case?

3. Which of the following five social, economic and health valued components do you commonly see considered in CEAs? Please drag your top five items above the line, in order from highest to lowest. You can drag the items and reorder them once they are placed above the line]

Drag above this line

- Quality of life
- Employment
- Wellness
- Economic growth
- Community safety
- Cultural heritage
- Landscape quality
- Livelihood opportunities
- Social mobility
- Sense of place
- Quality of service delivery
- Environmental justice
- Gender-based analysis

Is there another social, economic or health valued component not listed above, that you would suggest being considered?



A.1 Survey Questions (Cont.)

4. Considering social, economic and health valued components, which of these are most effectively addressed in CEA?

Rank the following in order of priority:

Please drag the items in order from highest to lowest.

Highest

‡ Economic

‡ Social

‡ Health

Lowest

5. Can you comment on what methodologies you would use when selecting social, economic and health valued components for inclusion in a CEA?

Measurement of Social, Economic and Health Values in CEA

The following questions concern how social, economic and health VCs are selected and measured in CEA.

6. Measurement of the baseline condition of social, economic and health VCs is more difficult than the measurement of the baseline condition of environmental/biophysical VCs. Do you

- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Don't know/ not sure

Can you provide reasons in support of your selection above?

7. What are the five barriers prohibiting the effective inclusion of social, economic and health valued components in CEA? Please drag your top five items above the line, in order from highest to lowest. You can drag the items and reorder them once they are placed above the line

Drag above this line

‡ Not included adequately in terms of reference or guidance documents

‡ Lack of defined practice and methods

‡ Lack of available data

‡ Poor data quality

‡ Lack of definition compared to environmental VCs

‡ Lack of time and resources compared to environmental VCs

‡ Lack of clarity in management responsibilities

‡ Stakeholders do not want to discuss

‡ Governments do not want to discuss

‡ Expensive or time consuming to gather new data

Are there other barriers not listed above that are prohibiting the effective inclusion of social, economic and health valued components in CEA?



A.1 Survey Questions (Cont.)

8. What are the main challenges when assessing current and future condition of social, economic and health VCs? In each answer, please also indicate why it is a challenge.

Challenge 1

Challenge 2

Challenge 3

Measurement of Social, Economic and Health Values in CEA

9. In considering the use of data sources between environmental/biophysical, social, economic and health valued components, how would you assess the use of qualitative versus quantitative data?

	1	2	3	4	5
Environmental/Biophysical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain the basis for your response above.

10. How effective is the use of indicators in characterizing the condition of social, economic and health VCs?

- Very effective
- Somewhat effective
- Neither effective nor ineffective
- Somewhat ineffective
- Not effective at all
- Don't know/ not sure

Please explain the basis for your response above

11. What are the main challenges in using indicators to assess the condition of social, economic and health VCs?

Challenge 1

Challenge 2

Challenge 3

The following questions concern how social, economic and health VCs are considered when assessing impacts and prescribing management actions in CEA.

A.1 Survey Questions (Cont.)

12. Consultation with stakeholders on selected social, economic and health VCs provides an accurate assessment of their condition? Do you

- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Don't know/ not sure

Please explain the basis for your rating above.

13. Consultation with Indigenous groups and communities on selected social, economic and health VCs provides an accurate assessment of their condition? Do you -

- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree
- Don't know/ not sure

Please explain the basis for your rating above.

14. What five tools are most useful in assessing the condition of social, economic and health VCs?

Please drag your top five items above the line, in order from highest to lowest. You can drag the items and reorder them once they are placed above the line)

Drag above this line

- * Checklists
- * Matrices
- * Modelling
- * Stakeholder interviews
- * Stakeholder surveys
- * Discussion with authorities
- * Trend analysis
- * Scenarios
- * Cost benefit or fiscal analysis
- * Taking blood samples or assessing medical/health conditions

Are there other tools not listed above, that you would suggest being considered?

15. Do you have any other suggestions on the best methods to use when assessing cumulative impacts on social, economic and health valued components in CEA?

16. In your opinion, how effective is CEA in managing cumulative impacts on social, economic and health valued components.

- Very effective
- Somewhat effective
- Neither effective nor ineffective
- Somewhat ineffective
- Not effective at all
- Don't know/ not sure

Please explain your reasoning for your above response.

A.1 Survey Questions (Cont.)

Case Studies

17. We are looking for examples of good case studies where social, economic and health valued components have been incorporated in cumulative effects assessment. Can you suggest a case study and provide the following information below?

Name of Project

Location/Region

Date

URL link- website if Available

Why this case study is important from your perspective?

Improvements to CEA Practice

The following questions provide recommendations as to how you would improve CEA practice concerning the inclusion of social, economic and health valued components.

18. What do you consider most five important items in improving the quality of social, economic and health VCs in CEA? Please drag your top five items above the line, in order from highest to lowest. You can drag the items and reorder them once they are placed above the line

Drag above this line

- More regulatory clarity
- Initial scoping
- Stakeholder consultation
- Indigenous consultation
- Data quality
- Terms of reference or guidelines
- Data availability
- Assessment methods
- Thresholds or limits of acceptable change

Is there another reason not listed above, that would improve CEA practice concerning the inclusion of social, economic and health VCs you would suggest being considered?

19. Do you have other specific recommendations regarding how the assessment of social, economic and health VCs in CEA can be improved? In your response, please provide your reasoning.

Recommendation 1

Recommendation 2

Recommendation 3

A.1 Survey Questions (Cont.)



Your Involvement with Cumulative Effects Assessment (CEA)

The following questions address your background and experience in CEA.

20. In what role is your primary experience in cumulative effects assessment?

- Academic
- Private consultant
- Consulting firm
- Government
- Non-government organization
- Industry
- Indigenous community/organization
- Other (please specify)

21. How long is your experience in cumulative effects assessment?

- 0-5 years
- 5-10 years
- More than 10 years

22. How would you characterize your primary expertise in CEA?

- Environmental focus
- Social focus
- Health focus
- Economics focus
- Indigenous focus
- Generalist focus
- Reviewer focus
- Other (please specify)

23. In consulting such knowledgeable experts as yourself, we find it helpful to be able to probe some matters more deeply, would you therefore be willing to participate in a practitioner's group to provide valuable follow-up inputs to IAAC?

- Yes
- No

24. Please provide the best way to contact you (phone, email, zoom)

Your Involvement with Cumulative Effects Assessment (CEA)

24. Do you know of anyone else you would suggest being included in this practitioner's group? Please provide their name(s) and any contact information if you have it:

Person One

Name

Organization

Phone

Email

Person Two

Name

Organization

Phone

Email

Thank you for your time and consideration in completing this survey. If you would like to receive a copy of the final report, please indicate so below.

- Yes, I would like to receive a copy of the report