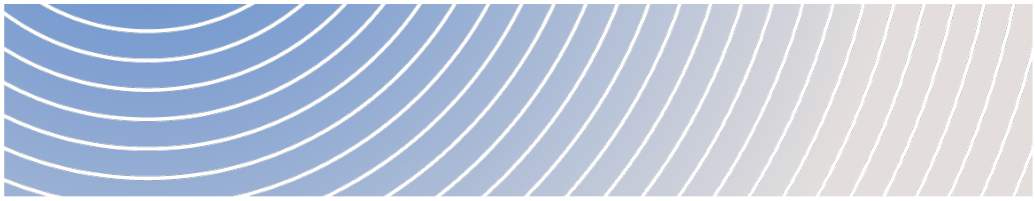
Guidance: Considering the Extent to which a Project Contributes to Sustainability



THIS GUIDANCE IS PART OF THE PRACTITIONER'S GUIDE TO FEDERAL IMPACT ASSESSMENTS UNDER THE *IMPACT ASSESSMENT ACT*

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The Practitioner's Guide is an evergreen document. Check it periodically, its contents may have been updated because of ongoing engagement and feedback received. If you have feedback, please send it to guidancefeedback-retroactionorientation@iaac-aeic.gc.ca.

Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

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Disclaimer

This document is for information purposes only. This document is not intended to fetter decision-makers. It is not intended to suggest that the Government can regulate matters of provincial jurisdiction. It is not a substitute for the *Impact Assessment Act* (the Act) or its regulations. In the event of an inconsistency between this document and the Act or its regulations, the Act and its regulations would prevail.

For the most up-to-date versions of the Act and regulations, please consult the Department of Justice website.

This guidance is for impact assessment practitioners: proponents, consultants and others participating in an impact assessment. The guidance applies to designated projects[1] under the Act.

[1] A designated project is a project that includes a) one or more physical activities that are designated by the *Physical Activities Regulations* (the Project List), or b) one or more physical activities that have been designated by an order of the Minister.

1. Introduction

1.1. Purpose

Under *Impact Assessment Act* (the Act), an impact assessment must consider "the extent to which a designated project contributes to sustainability."[2] Sustainability is "the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations." Considering the project's contribution to sustainability helps to provide a holistic understanding of the project's potential positive and adverse effects, the interactions between those effects, and their long-term consequences. This broader understanding of the project's potential effects will support informed decision-making.

This document provides an overview of the legislative provisions, key definitions and guiding principles that govern how sustainability will be considered in assessment and decision-making. It outlines the methodologies and considerations that practitioners can follow in describing a project's contribution to sustainability.

1.2. Context and relevant legislative provisions

Fostering sustainability is one of the purposes of the Act. The Act's preamble and the mandate it grants to the Government of Canada, the Minister of Environment and Climate Change (the Minister), the Impact Assessment Agency of Canada (the Agency), and federal authorities in the exercise of their powers refer to the commitment to:

- foster sustainability;
- respect the rights of the Indigenous peoples of Canada in a manner that fosters reconciliation; and
- apply the precautionary principle.

All impact assessments must take into account the extent to which designated projects contribute to sustainability, along with other important factors to consider.[3] Annex 1 outlines the specific legislated provisions related to this subject.

The Minister or the Governor in Council's public interest determination must also consider sustainability as one of five public interest factors to be considered in rendering a final decision on the project. See the *Policy Context: Public Interest Determination under the Impact Assessment Act* for more information on sustainability in decision-making.

[2] A designated project is a project that includes a) one or more physical activities that are designated by the *Physical Activities Regulations* (the Project List), or b) one or more physical activities that have been designated by an order of the Minister.

[3] See section 22(1)(h).

1.3. Explanation of key terms

As mentioned above, sustainability means the ability to protect the environment, contribute to the social and economic well-being of the people of Canada, and preserve their health in a manner that benefits present and future generations. Sustainability is contextual, tied to human-ecological systems, and is project dependent. It is important to understand the different perspectives and values of Indigenous peoples and communities involved in an impact assessment in order to properly assess the project's contribution to sustainability. There may be different perspectives or values in or among different groups and communities.

The **precautionary principle** is referenced in the mandate of the Act. The precautionary principle states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[4] In the context of impact assessment, all aspects of a project should be examined in a careful and precautionary manner to support decision-making.

[4] This definition is stated in the *United Nations Rio Declaration on Environment and Development (1992)* and in the *Canadian Environmental Protection Act, 1999*.

2. Guiding principles

Impact assessment requires:

- the examination of potential changes to the environment or to health, social and economic conditions[5]; and
- the identification of the positive and negative consequences of these changes.

In order to assess these effects holistically, a project's contribution to sustainability should be analyzed using a sustainability lens, guided by the principles set out below. This analysis will serve as the basis for assessing a project's contribution to sustainability. Applying the principles will result in better information on the project's effects (including long-term effects), and on how different groups or people may experience effects in different ways.

The sustainability principles developed for the purpose of implementing the Act follow:

1. Consider the interconnectedness and interdependence of human-ecological systems;
2. Consider the well-being of present and future generations;
3. Consider positive effects and reduce adverse effects of a designated project; and
4. Apply the precautionary principle and consider uncertainty and risk of irreversible harm.

[5] See Analyzing Health, Social and Economic Effects under the Impact Assessment Act.

3. General approach

While practitioners will analyze a project's contribution to sustainability after their assessment of the project's potential effects, information and data requirements for sustainability should be considered from the *outset* of an impact assessment. Contributions to the sustainability analysis should therefore be continuous and iterative throughout.

Proponents are to conduct early engagement with Indigenous peoples and the public during the Planning phase to facilitate the identification of key elements that will frame the sustainability assessment, and to anticipate potential positive and adverse sustainability effects. The Agency will use the information collected in the Planning phase to develop the Tailored Impact Statement Guidelines (TISG) for the project. This will outline the information and analysis required for the sustainability assessment in the proponent's Impact Statement. The level of effort required to assess a project's contribution to sustainability is scalable depending upon the phase of the process and should increase as practitioners proceed through the impact assessment phases. The level of effort should also be appropriate to the context of the project (e.g., in the case where there are predicted effects on future generations).

3.1. Key actions related to sustainability

Table 1 provides an overview of how a project's contribution to sustainability is considered throughout the impact assessment phases.[6]

Table 1: Key actions for assessing sustainability by phase

Phase	Key actions related to sustainability
Planning Phase	• The proponent conducts early engagement with Indigenous peoples and the public to identify key values and issues that will inform the assessment of a project's contribution to sustainability (see "3.2 Scoping"). • The proponent identifies valued components that should be carried forward into the sustainability assessment. • The Agency engages with Indigenous peoples, the public, federal authorities and other knowledge holders through discussions related to sustainability. • The Agency develops the **Tailored Impact Statement Guidelines** that outline the information and analysis required for the sustainability assessment in the proponent's Impact Statement.
Impact Statement Phase	• The proponent prepares an **Impact Statement** based on the project-specific Tailored Impact Statement Guidelines. The guidelines require an analysis of the extent to which the project contributes to sustainability. • The Agency continues to engage with Indigenous peoples, the public, federal authorities and other knowledge holders on sustainability-related matters. It provides guidance to proponents on the expert knowledge (including Indigenous knowledge), information and analysis required in the sustainability assessment. • The Agency ensures that the proponent's Impact Statement provides all of the required expert knowledge (including Indigenous knowledge), information and analysis in relation to sustainability, as set out in the Tailored Impact Statement Guidelines for the project.

[6] For a full account of the impact assessment process under the Act, see the Impact Assessment Process Overview.

Phase	Key actions related to sustainability
Impact Assessment Phase	• The Agency or a review panel considers, evaluates and analyzes the sustainability information in the proponent's Impact Statement, in conjunction with all information available, including Indigenous knowledge provided by Indigenous peoples, and information from the public, federal authorities and other knowledge holders. • Engagement with Indigenous peoples and the public on the sustainability assessment continues throughout this phase. • The **Impact Assessment Report**, prepared by the Agency or a review panel, sets out the extent to which the project contributes to sustainability. • The Impact Assessment Report informs the decision-making phase.
Decision-Making Phase	• After considering the Impact Assessment Report, the Minister or the Governor in Council makes a **public interest determination**. • This determination must be based on the Impact Assessment Report and the five public interest factors set out in the Act.[7] This includes a consideration of the extent to which the project contributes to sustainability.

Post-Decision Phase	• After the public interest determination is made, the Minister issues a **Decision Statement**.
	• If the decision is that the designated project is in the public interest, the Decision Statement will include conditions, the period in which the proponent must substantially begin the designated project, a description of the project, and reasons for the determination.
	• Conditions issued by the Minister may include mitigation measures that address adverse environmental, health, social or economic effects, or a follow-up program to monitor these effects over time.
	• Complementary measures may also be part of the Decision Statement. Examples include:
	  ○ federal action to address adverse residual effects; or
	  ○ measures to address impacts to the rights of Indigenous peoples that are outside the care and control of the proponent.

[7] Refer to the Policy Context: Public Interest Determination under the Impact Assessment Act for further information on the public interest determination.

3.2. Scoping

Defining the scope of an assessment is a central part of the Planning phase of an impact assessment. As part of this phase, Indigenous peoples, the public and other knowledge holders will be engaged to identify key issues of importance to them in the sustainability assessment, including the potential for interactions between project effects. This engagement will help to identify valued components (VCs) and their environmental, cultural and socio-economic functions. VCs may be defined as elements of the human and natural environment that are important to participants in an impact assessment process, and that should be carried forward into the sustainability assessment.

Sustainability is broadly defined through basic principles, is contextual and project dependent. As such, sustainability may be defined in different ways by communities or even groups within communities. The goal is not to seek consensus on areas of importance, but rather to document and understand the views expressed. Without knowing what is valued, it is not possible to analyze the right issues and the sustainability of these elements.

When identifying VCs that should be further assessed through the sustainability lens, in addition to those identified by participants, practitioners should also consider VCs that:

- could experience long-term effects;
- may interact with other VCs;
- may interact with potential effects of the designated project; or
- may interact with project activities.

During the Planning phase, proponents will identify the temporal boundaries, or time horizons, during which a project is expected to have potential effects on VCs and their systems. Proponents should describe VC-specific temporal boundaries relevant to the sustainability assessment, including the project's temporal limits (whether large or fine scale, such as construction, operation and decommissioning, or the timing of specific project activities), and temporal characteristics (when and for how long the project may affect certain VCs, such as economic cycles).

Consideration must be given to:

- the long-term positive and adverse effects on VCs and the interaction of these effects;
- how these effects could change over time; and
- how these effects could affect future generations (e.g., it may take several generations before effects become fully apparent).

A VC's systems and its components may also take generations to stabilize to a new state, or to recover from the impacts of a designated project. Selecting the appropriate temporal boundary involves considering the predicted amount of time for the VC to return to baseline conditions (if possible), the resilience of the VC, and whether the VC is expected to recover from the effects caused by the designated project.

Identifying key values and issues of importance for the sustainability assessment

During the Planning phase in a fictional case study, local community members based near the site of a proposed mineral mine indicated that they would support the project because of the potential for additional employment opportunities in their community. They also indicated that they wanted the benefits to be retained over a longer period, even if that meant there were fewer positions available per year. Local residents considered the long-term viability and well-being of their community to be of key importance.

In contrast, local entrepreneurs seeking business opportunities preferred to maximize contracting opportunities in the short term so that they could build up their business capacities and skills before moving on to other possible projects. These entrepreneurs identified the need to increase business opportunities and capacities as quickly as possible as most important. The proponent therefore included employment and economic benefits as key issues of importance in the sustainability assessment. The proponent noted these different perspectives in the Impact Statement.

4. Sustainability principles

To conduct the analysis, practitioners should describe how the sustainability principles were considered in the assessment of the project's potential effects:

1. Consider the interconnectedness and interdependence of human-ecological systems;
2. Consider the well-being of present and future generations;
3. Consider positive effects and reduce adverse effects of a designated project; and
4. Apply the precautionary principle and consider uncertainty and risk of irreversible harm.

Proponents, in their Impact Statement, should describe the context of a particular project, including the issues of importance to participants, the diversity of views expressed, and the selection of VCs carried forward into the sustainability assessment. As a best practice, proponents may wish to include information written from the perspective of the participants (see the example "Keeyask Generation Project: 'The Story We Tell Is Our Own'"). Proponents should explicitly refer to the sustainability principles in their assessment. Proponents will conclude by providing an analysis of the extent to which the project contributes to sustainability in relation to the sustainability principles and the conclusions drawn. The analysis should be qualitative, but may draw on quantitative data to support the conclusions. Recommended approaches for applying the sustainability principles are outlined in sections 4.1 to 4.4 below.

Keeyask Generation Project: "The Story We Tell Is Our Own"

In the environmental assessment for the Keeyask Generation Project, the Cree Nation Partners (Tataskweyak Cree Nation and War Lake First Nation), the Fox Lake Cree Nation and the York Factory First Nation submitted environmental evaluation reports written from their own perspectives. The Cree Nation Partners' Keeyask Environmental Evaluation Report outlines how "the story we tell is our own, as are the conclusions we have come to regarding Keeyask. The methods we used to assess the likely impacts on us are based on our traditions and our worldview, and our decision to approve Keeyask can be understood in this context." The report further describes the Cree worldview, the consultation process with their members and their conclusions.

The objectives of the Environmental Evaluation Report by Fox Lake Cree Nation (FLCN) reflect the long-term goals of FLCN towards living *mino pimatisiwin*:

> "*Mino pimatisiwin* relates to the overall health of our people. *Mino pimatisiwin* includes the protection of *Aski*, our health and social well-being, socio-economic prosperity, integrity of culture and language, integrity of governance and autonomy, and healthy local ecosystems. Health is more broadly defined to include our physical, social, cultural, and spiritual well-being. We know what the environment should be like in order to provide all the things that we require to be healthy. Specifically, our lands and waters should be whole and healthy, both of which are the prerequisites of a peaceful existence. This concept of wholeness is expressed in one simple sentence: Everything is connected. The understanding of the world in terms of the relationships among all things is paramount to the philosophy of *mino pimatisiwin*, and links our well-being to our perception of our environment. The relationship our people have with the land is best understood through the definition of *Aski* provided by the FLCN Core Kitayatisuk and Harvesters Group as lands, waters, animals, plants, people and all of their interrelationships."

These reports helped decision-makers to understand potential effects to these Indigenous communities and more fully comprehend the context of the project.

Source: Keeyask Cree Nations Environmental Evaluation Reports

4.1. Principle 1: Consider the interconnectedness and interdependence of human-ecological systems

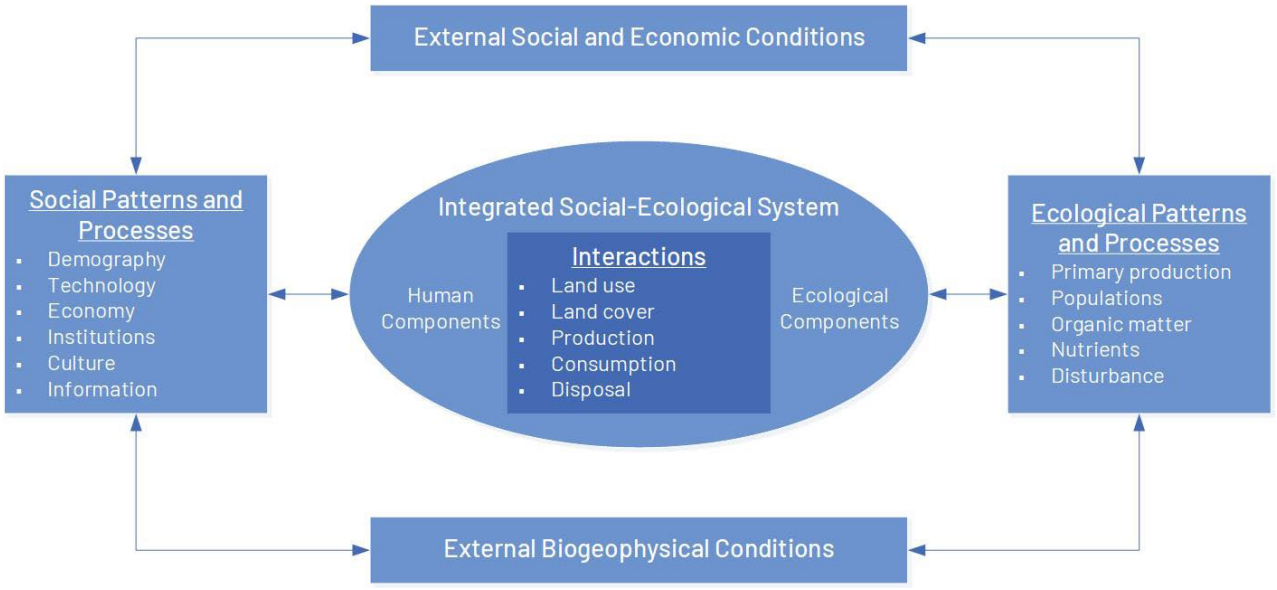
4.1.1. Understanding Principle 1

Environmental, health, social and economic effects are interrelated and complex, and are rarely experienced in isolation. Sustainability is not understood by looking at the potential effects of a designated project separately, but through a complex **systems approach**. This is because people and ecosystems do not experience impacts one at a time, or in "silos."

A systems approach focuses on interactions and facilitates a more complete understanding of a project's effects. It enables the degree of interconnectedness within processes or systems to be explored. The interconnectedness may be complex and direct, or independent and indirect. This is because systems are dynamic and change over time; they are greater than the sum of their parts.

A systems approach also examines **resilience**: the ability or inability of natural systems to recover from disturbances and to tolerate or adapt to change. Practitioners are encouraged to make the linkages with existing effects thresholds,[8] such as those identified through regional assessments, to anticipate system collapse and to outline prevailing uncertainties. As illustrated in Figure 1, proponents may wish to develop conceptual diagrams of systems to demonstrate the functioning of human-ecological systems that may be affected by the project. Such system models help to position VCs and effects in their broader context and facilitate understanding, dialogue and comprehensive assessment. System models also enable consideration of cumulative effects.

Figure 1: A model of a social-ecological system that demonstrates how people and nature are linked



Source: adapted from The Social-Ecological System Concept by Marta Pérez-Soba (of Wageningen Environmental Research) and Janet Dwyer (of Countryside and Community Research Institute), 2016

In Figure 1, humans are seen as a part of, not apart from, their social-ecological environment. The system model consists of biophysical, social and economic factors that regularly interact in dynamic and complex ways. Here, ecological, socio-economic and cultural components are affected by a combination of processes.

[8] For information on how regional assessments may help to inform impact assessment decisions, the management of cumulative effects, and the identification of effects thresholds, see Regional Assessment under the Impact Assessment Act.

4.1.2. Applying Principle 1

Proponents, in their Impact Statement, should examine how the elements in human-ecological systems relate to one another, and how they function in a dynamic way. Systems should be described in sufficient detail to understand the direct and indirect ways in which they may be affected by a designated project. All interactions, pathways and connections among effects to the environment, and to health, social and economic conditions, should be described, including how effects may diminish or become amplified over time. The description of the systems should not be an exhaustive list of all the potential effects of the designated project, but rather highlight those aspects that are important to communities, to the social-ecological system itself, and to the context of a project.

Indigenous knowledge is an important source of information when describing system-level interactions. Although there are many definitions of Indigenous knowledge by Indigenous peoples and organizations, and in academic literature, there is no single universally accepted definition.

For the purposes of impact assessment under the Act, Indigenous knowledge is considered a body of knowledge built up by Indigenous peoples through generations of living in close contact with the land, including the distinct knowledge systems of First Nations, Inuit and Métis peoples in Canada. While the term “traditional knowledge” is often applied, the Act uses the term “Indigenous knowledge” in order to recognize that knowledge systems evolve and are not set in the past (as the word “traditional” may imply). Proponents should ensure that the description of systems and their direct and indirect relationships is guided by input from Indigenous knowledge.

How Indigenous knowledge may inform social-ecological models

A fictional gold mine project involves the conversion of a natural water body into a mined waste storage impoundment. The lake supports surface and groundwater resources considered important to an Indigenous community's health and well-being. The lake sustains fish and fish habitat of importance to the Indigenous community's culture, and to traditional and economic activities and values. Wildlife areas associated with the watershed are of socio-economic and cultural importance to the community, and are a component of traditional Indigenous activities, such as hunting, fishing, trapping and the gathering of country foods for subsistence or medicinal purposes. The lake is also a sacred landscape with a long history of spiritual meaning and cultural connection.

Based on information collected during the Planning phase, the proponent described the interconnectedness of the lake with other VCs in the system as follows:

- **Fish and fish habitat**: the conversion of the lake into a tailings and waste rock storage impoundment may result in the irreversible loss of its functioning ecosystem. Key effects are the permanent loss of fish, fish habitat and aquatic resources, and the alteration of the watershed caused by lake dewatering during the project construction phase. Traditional fishing and harvesting depend upon a healthy aquatic system, and in turn support cultural well-being and the health of the Indigenous community.
- **Physical and cultural well-being**: culture is integral to the exercise of the rights of Indigenous peoples and is tied to a sense of place. The loss of the lake has the potential to affect culture by altering the lands and waters with which the community has a relationship. Indigenous processes of sharing and applying Indigenous knowledge and opportunities to transmit this knowledge may be altered by changes to the landscape, to the biophysical environment, and to spiritual connections to place, including sites of importance for the exercise of rights and culturally important practices (such as fishing and hunting camps, and travel routes).
- **Health and socio-economic conditions**: the loss of the lake and changes to the surrounding watershed may result in significantly reduced fishing, harvesting of game and fur-bearing animals, berry-picking and gathering of medicinal plants. Potential project effects link to the status of food security within the Indigenous community, as well as to long-term health through the consumption or use of country foods and medicinal plants exposed to contaminants from the project. Impact inequity and socio-economic disparities may arise from increased reliance on commercial as opposed to traditional subsistence foods, due to real or perceived contamination or reduced availability of country foods.

The sustainability analysis concluded that the project's environmental effects would affect the Indigenous community the most since they are the region's primary residents and users, and that the extent to which the project contributes to sustainability is low. As proposed, the project's economic and social benefits are outweighed by the risk of adverse environmental, social and cultural effects, some of which may not emerge until hundreds of years after mining operations cease. The primary concerns noted in the sustainability analysis relate to the creation of a substantial long-term environmental management legacy at the site, and the loss of a natural lake attributed with spiritual and cultural values that are important to the Indigenous community affected by the project.

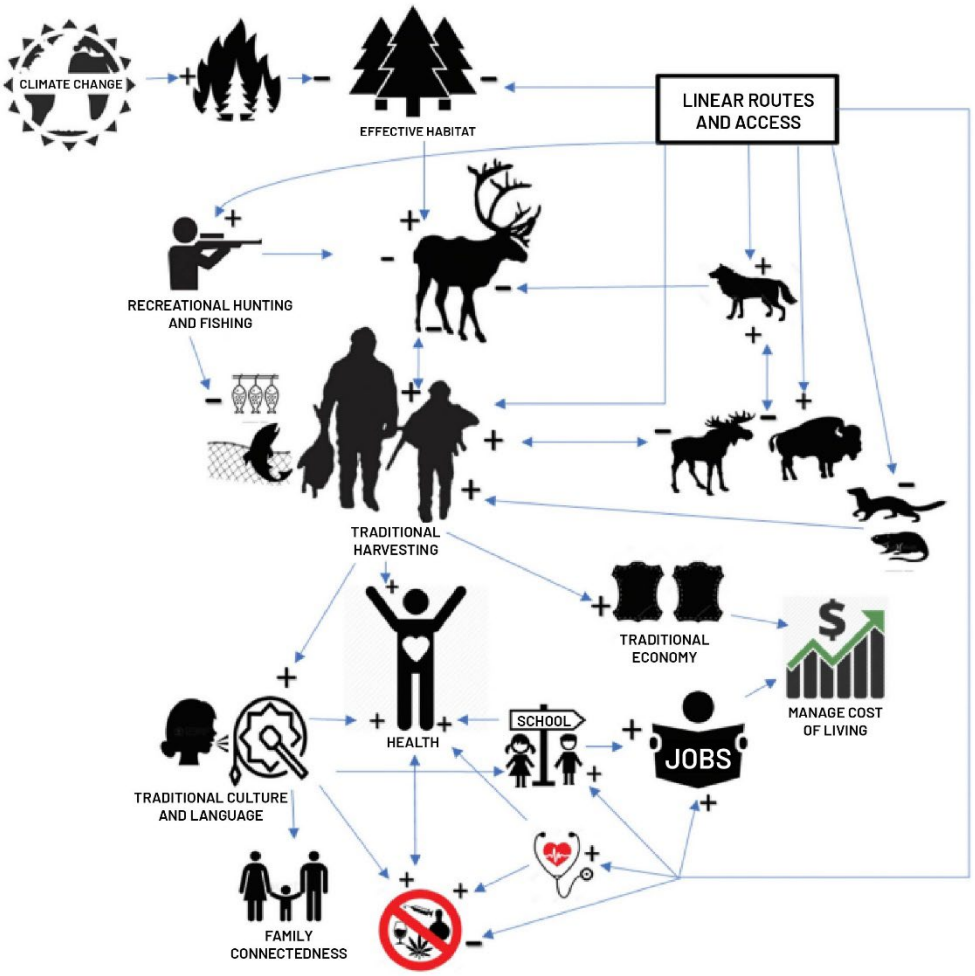
As a best practice, Indigenous communities and the public should be engaged to describe where they see areas of interconnectedness. Practitioners may develop simple images to visually represent the connections between human and ecological systems. These images may be helpful to use in engagement or to inform decision-makers.

An integrated system of people and the land

In the Environmental Assessment Report for the Tłı̨chǫ All-Season Road Project, the Government of Northwest Territories, the proponent and the Mackenzie Valley Review Board visually represented the connections between parts of the human-ecological system in the area of a proposed highway in Canada's subarctic. The arrows indicate major connections, while the plus or minus signs indicate whether the connection increases or decreases that part of the system. The illustration is not intended to be complete or exhaustive, but to highlight interactions. For example, an increase in linear routes and access may result in higher wolf predation and recreational hunting, which may lead to decreasing caribou numbers, affecting traditional harvesting and traditional culture. Traditional culture and language can promote good health and family connectedness and reduce addictions, while addictions can harm family ties and health. Access to medical and health services promotes recovery from addictions and supports cultural well-being.

Source: Report of Environmental Assessment Tłı̨chǫ All-Season Road Project

Figure 2: Illustration of an integrated system of people and the land



Source: Report of Environmental Assessment Tłı̨chǫ All-Season Road Project

4.1.3. Key considerations for applying Principle 1

In applying Principle 1, practitioners should consider the following guiding questions:

- What are key environmental, health, social and economic components that should be included in the system?
- Has Indigenous knowledge informed the selection of VCs that make up the human-ecological system?
- What are the interactions between the environmental, health, social and economic components of the system?
- What are the potential pathways?
- What are the direct and indirect interactions?
- How do the interactions change over time?
- How do cumulative effects affect the systems and what are the different system thresholds?
- Has Indigenous knowledge informed the analysis?
- Will the system, or parts of the system, recover or adapt to change caused by the project?

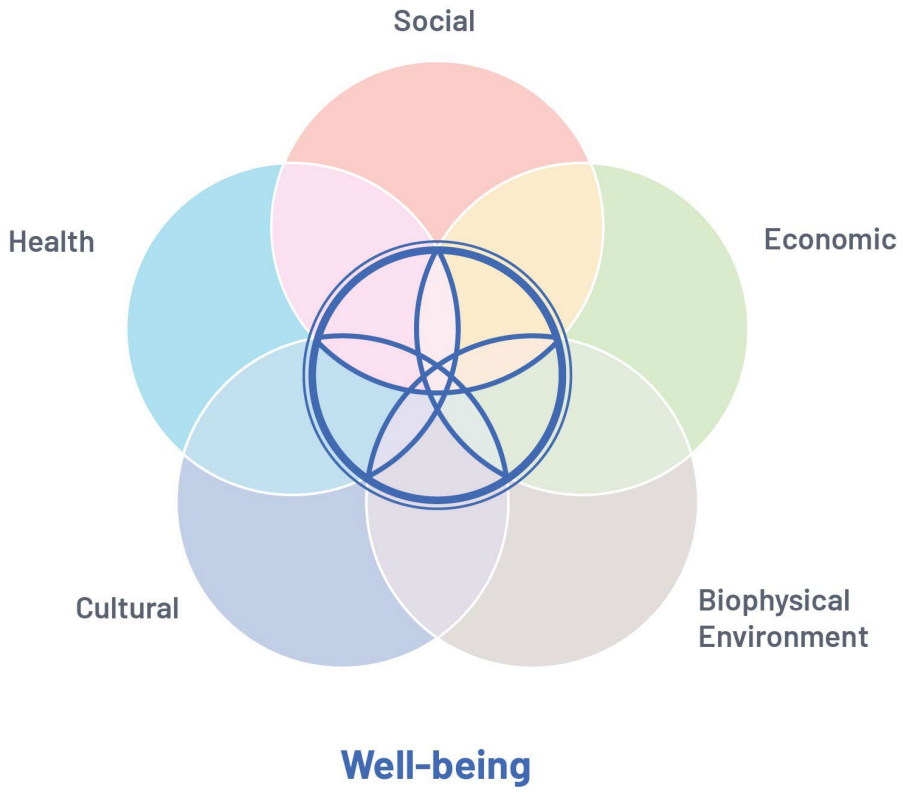
4.2. Principle 2: Consider the well-being of present and future generations

4.2.1. Understanding Principle 2

The concept of well-being includes the relationships between many tangible and intangible aspects of human health and the social, economic, cultural and biophysical environment (see Figure 2). Individuals and communities can experience well-being differently, based on their own unique set of cultural, historical and geographic circumstances.

Proponents should consider how environmental, health, social and economic effects on well-being could change over time and affect future generations beyond the lifecycle of the project. Indigenous knowledge and local community knowledge are important sources of information since such knowledge is acquired through generations of people living in a project area. Indigenous peoples and local communities should be engaged in order to determine how effects on future generations are considered.

Figure 3: Well-being in relation to human and biophysical elements



Source: Adapted from Evolving Environmental Impact Assessments in the Mackenzie Valley and Beyond

Community well-being plans

Indigenous peoples and local communities may have established community well-being plans that provide a framework for elements that support well-being. These plans may address contingencies and provide recommendations, progress reports and desired outcomes. When these plans exist, proponents are encouraged to use them as part of their analysis.

For example, as part of the Comprehensive Community Planning for First Nations in British Columbia, the T'Sou-ke Nation participated in the comprehensive community planning process where sustainability was a central theme:

"The theme respected First Nations traditional values of honouring Mother Earth, all living creatures and the elements: the sun, the wind and the sea. By adopting these values, the community felt it could work towards creating a more sustainable life for generations to come. To incorporate the overall objective of sustainability, the T'Sou-ke Nation expanded their planning horizon from 20 years to include the next seven generations, or 100 plus years. They began asking themselves what kind of community they wanted to create and leave behind for the seventh generation. This led to the development of four broad objectives around which their plan was based. They called these the Four Pillars of Sustainability: Energy Autonomy, Food Self-Sufficiency, Cultural Revival, and Sustainable Economic Development."

Source: Comprehensive Community Planning for First Nations Handbook, Indigenous Services Canada, 2018

4.2.2. Applying Principle 2

To conduct an analysis of the well-being of present and future generations, proponents should first work with Indigenous peoples and communities to define their concept of well-being and its key components, including the values and interests of future generations. This definition will frame the analysis of a project's long-term effects on environmental, health, social and economic conditions. The analysis is conducted by comparing the current or baseline state (health, status or condition) to the predicted future state with the project in place. Proponents should then assess how these long-term effects could affect future generations. To do this, the temporal boundaries of VCs may need to be extended beyond the lifecycle of a project.

Data collection and/or generation are important components of assessing the well-being of present and future generations. At times, it may be challenging to obtain or generate data to support the analysis. Potential effects on future generations should be considered with the supporting data, and any uncertainty associated with the analysis should be documented. Indigenous knowledge and community knowledge are important sources of information for this type of assessment as this knowledge is built up through generations of people living in a project area.

Inuit *Qaujimajatuaqangit*: The Indigenous Knowledge of the Inuit

Inuit *Qaujimajatuqangit* is the term used to describe Inuit epistemology or the Indigenous knowledge of the Inuit. Inuit Elders in Nunavut have identified a framework for Inuit *Qaujimajatuqangit* that is grounded in four big laws, or *maligait*. One of these *maligait* is "continually planning and preparing for the future." Inuit *Qaujimajatuqangit* is defined as the Inuit ways' past, present and future.

"Inuit *Qaujimajatuqangit* encompasses the entire realm of Inuit experience in the world and the values, principles, beliefs and skills which have evolved as a result of that experience. It is the experience and resulting knowledge/wisdom that prepares us for success in the future and establishes the possible survival of Inuit. The time continuum is not viewed as entirely linear. However, Inuit Elders have used the bow and arrow analogy to explain the relevance that this life view, established over centuries, has for the future of Inuit. They say that if you do not draw back the arrow in the bow, it will drop a short distance in front of you. In other words, the level of our understanding of the views and values of our past helps determine the degree of success we have with our future: the better our understanding, the greater our success. This conceptually iterative approach of past informing present and future is a critical underpinning of Inuit worldview."

Source: National Collaborating Centre for Aboriginal Health

4.2.3. Key considerations for applying Principle 2

In applying Principle 2, practitioners should consider the following guiding questions:

- How do communities define well-being? What elements are valuable to them?
- Are there existing community well-being plans?
- Have diverse groups and different perspectives been included in the definition of well-being?
- What are the potential effects to the elements described as valuable?
- How many future generations were considered and how were their interests defined and included?
- What are the long-term effects on well-being? Will the effects change over time?
- How will these long-term effects affect future generations?
- What are the likely futures that would be foregone with the project in place?
- Have you proactively sought out Indigenous knowledge to inform the analysis?
- Has scientific and community knowledge informed the analysis?

4.3. Principle 3: Consider positive effects and reduce adverse effects of the designated project

4.3.1. Understanding Principle 3

Impact assessments require the consideration of the positive and negative consequences of changes to the environment and to health, social or economic conditions. When considering positive effects in the sustainability assessment:

- Positive effects should be considered in relation to biophysical, social, economic, health, and the rights of Indigenous peoples and cultural conditions.
- A sustainability effect would be positive for a VC if the VC would, on balance, be better with the project in place than without. A description of the positives and negatives that contribute to that balance should be included in the assessment, and the groups who experience them identified.
- Where differing groups of people are subject to differing effects, positive and adverse, this should be identified in the sustainability assessment.
- Identification of positive effects should be considered from the outset of the impact assessment, and iteratively throughout the sustainability assessment, to afford all participants an opportunity to encourage and enhance them.
- Engagement with Indigenous peoples on positive effects should be collaborative, just as with all aspects of the sustainability assessment.
- Positive effects should be assessed with the same rigour as adverse effects in the sustainability assessment, and all uncertainties and assumptions identified.
- The information presented on positive effects should:
  - demonstrate that the effect is positive (for whom and where);
  - describe the magnitude and likelihood of the effect; and
  - describe how the effect would be expected to change over time (as with adverse effects).

In order to mitigate or reduce the adverse effects of a project, impact assessments require proponents to consider mitigation measures that are technically and economically feasible. Mitigation measures include measures to eliminate, reduce or control the adverse effects of a designated project, as well as restitution for damage to the environment through replacement, restoration, compensation or other means.

4.3.2. Applying Principle 3

After considering Principles 1 and 2, the sustainability analysis may determine that additional evidence-based mitigation measures for effects within federal jurisdiction are required that maximize benefits in all areas. For example, an adaptive water management plan might be identified as necessary if impacts on the rights of Indigenous peoples and water quality issues for fish and fish habitat emerge as key concerns in the sustainability assessment. The proponent should describe such additional measures in the Impact Statement.

Project activities may also cause different effects for diverse subgroups in a community and may be more serious for vulnerable populations within that community. As part of the Act's requirement for **gender-based analysis plus (GBA Plus)**, proponents are required to consider the project's effects on diverse populations. This includes considerations of who will receive benefits, who may be adversely affected, and how this relates to a community or group's overall well-being, including across future generations.[9] For example, project activities may result in disproportionate impacts to the intergenerational transfer of Indigenous knowledge. In this case, while the project may have near-term benefits, it may result in longer-term adverse effects to future generations who depend upon this knowledge transfer.

The potential positive effects of the Kemess Underground Project

The Environmental Assessment Report for the Kemess Underground Project, prepared by British Columbia's Environmental Assessment Office, describes how the project has the potential to produce substantial long-term benefits for the Tsay Keh Nay (TKN) First Nations. TKN is of the view that these benefits (if they were actualized) outweigh the risks associated with the potential adverse effects. Some of the positive effects described in the report include:

- school-based initiatives to improve educational outcomes for TKN members;
- a broad range of employment and training initiatives for TKN members;
- business opportunities for TKN businesses during construction and operation of the Kemess Underground Project.

Source: Kemess Underground Project Assessment Report

4.3.3. Key considerations for applying Principle 3

In applying Principle 3, practitioners should consider the following guiding questions:

- Are additional mitigation measures required to mitigate effects within federal jurisdiction?
- Have positive effects been identified?
- Can positive effects be maximized?
- Does the direction of the impact (i.e., positive or adverse) shift between different groups and sub-populations?
- Do some benefit while others do not?
- Are there particular strengths or vulnerabilities in the potentially affected communities that may influence impacts?
- Do the impacts cause regional inequities?
- Do the near-term benefits come at the expense of further disadvantages for future generations?

[9] See Guidance: Gender-based Analysis Plus in Impact Assessment.

4.4. Principle 4: Apply the precautionary principle and consider the uncertainty and risk of irreversible harm

4.4.1. Understanding Principle 4

One of the mandates of the Act is that "The Government of Canada, the Minister, the Agency and federal authorities, in the administration of this Act, must exercise their powers in a manner that fosters sustainability, respects the Government's commitments with respect to the rights of the Indigenous peoples of Canada, and applies the precautionary principle" (section 6(2)).

Proponents, in their Impact Statements, should clearly describe and document all uncertainties and assumptions underpinning an analysis and identify information sources. This includes documentation of the uncertainty, reliability, sensitivity and conservativeness of models used to reach conclusions. Significant gaps in knowledge and understanding related to key conclusions, and the steps taken to address these gaps, should be identified. For example, if there is uncertainty surrounding effects to a future generation's ability to engage in traditional practices, these uncertainties should be identified and described.

A precautionary approach should be applied in cases where there is risk of irreversible harm. **Irreversible harm** includes project-related effects from which a VC is not expected to recover. Irreversible harm may also result from cumulative and combined effects to VCs. **Reversibility** is influenced by the resilience of the VC to imposed stresses and the degree of existing stress on that VC. In cases where there may be a risk of irreversible harm, it is important to exercise precaution by assuming that adverse effects are more rather than less.

Practitioners should consider the following key principles for precautionary measures in the sustainability assessment:

- Precautionary measures should be subject to reconsideration (on the basis of science, Indigenous knowledge, technology, public engagement, and collaboration with Indigenous peoples) to reflect evolving science or value-based thresholds or standards about appropriate levels of protection.
- Precautionary measures should be proportional to the potential severity of the risk being addressed and to science or value-based thresholds or standards about appropriate levels of protection.
- Precautionary measures should be non-discriminatory and consistent with measures taken in similar circumstances.
- Where more than one option reasonably meets the above characteristics, then the measure that causes the least harm (to environmental, health, social and economic conditions) should be applied.

Voisey's Bay Mine and Mill Project

The environmental assessment for the Voisey's Bay Mine and Mill Project – conducted by a joint review panel under the *Canadian Environmental Assessment Act* (2012) and the Newfoundland and Labrador Environmental Assessment Act – Included a consideration of the extent of the precautionary principle's application to the project.

The panel considered that the precautionary principle or approach requires a proponent to demonstrate that its actions will not result in serious or irreversible damage. The panel asked the proponent to take a conservative approach to its predictions by, for example, setting out worst-case scenarios, where appropriate. The panel sought assurance that if there was great uncertainty about the seriousness and irreversibility of the effects of any project component, the proponent could reduce this uncertainty, correct the problem or suggest a viable alternative to that component.

The proponent outlined to the panel the ways in which it had incorporated the precautionary principle into the project's design to prevent adverse effects, prevent pollution, deal with unplanned events, develop monitoring and follow-up programs, and ensure that the company's liability and insurance regime would hold the proponent accountable for damages.

Source: Voisey's Bay Nickel Mine and Mill Panel Report

4.4.2. Applying Principle 4

When determining the level of uncertainty associated with the sustainability analysis, practitioners should consider the **cumulative magnitude** of all associated uncertainties. The cumulative magnitude may be used as an index of the likelihood that a claim in question is true. For example, it would be important to determine the nature and level of uncertainty in the claim that "the timing of project activities is highly likely to mitigate against adverse effects to a species at risk". If the level of uncertainty is low, then the claim is more likely to be true than if the associated uncertainty is high. When determining the magnitude of uncertainty, practitioners should consider the validity of relevant findings (i.e. the type, amount, quality and consistency of evidence) and the extent of agreement across participants. Generally, uncertainty is lowest when there are multiple and consistent independent lines of high-quality evidence.

Claims about the magnitude of uncertainty are themselves scientific claims and should be evaluated on the basis of evidence provided. Depending on the type of claim, there are methods of varying applicability and rigour that can be employed to provide either qualitative or quantitative estimates of uncertainty. For issues that have been assessed using quantitative or statistical methods, it may be appropriate to describe confidence levels associated with predictions of uncertainty. The approach used to determine the level of confidence should be explicitly stated and documented. When statistical methods are used, it is important to consider the nature and quality of the data, the scientific validity of the hypotheses, and statistical significance. Statistical significance is characterized by a low probability of error and a high confidence level. The sources of uncertainty should also be clearly described to provide a basis for the stated level of confidence.

In the absence of statistical methods, professional judgement and the knowledge of practitioners are often applied to characterize the level of confidence in uncertainty with qualitative terms such as “low,” “moderate” and “high.” The criteria for determining the level of confidence should be defined and documented to enable consistent interpretations by reviewers. Qualitative descriptions of uncertainty should also identify sources of uncertainty and data gaps, and describe where and how professional judgement was used.

The practice of considering uncertainty in the sustainability assessment must include Indigenous knowledge. Indigenous knowledge can provide evidence and understanding of the interconnected nature of human-ecological systems and of the uncertainties of associated potential effects.

4.4.3. Key considerations for applying Principle 4

In applying Principle 4, practitioners should consider the following guiding questions:

- What uncertainties are associated with the sustainability analysis?
- Is there high uncertainty around mitigation effectiveness? If so, consider the need or benefit for reducing uncertainty through mechanisms such as adaptive management plans.
- Is there a risk of irreversible harm?
  - What measures have been taken to address these risks?
- Has Indigenous knowledge informed the identification of uncertainties and risk? If so, how?

5. Considering alternatives

The Act requires the consideration of:

- alternatives to the designated project that are technically and economically feasible and that are directly related to the project; and
- alternative means of carrying out the designated project.

Practitioners should apply the sustainability principles to the assessment of those alternatives, where applicable.

The consideration of alternatives is an iterative process that begins in the Planning phase and continues throughout the impact assessment. It provides a way of evaluating the effects of the project relative to those that would result from other options. Each alternative to the project should be comparatively assessed in relation to the extent to which it contributes to sustainability. For example, in comparison with the alternative of no project, there may be no local and regional economic benefits, as well as no associated environmental, health, social and cultural risks, for present and future generations. The **"no-action" (null) alternative** serves as the benchmark for assessment, as well as a means to assess predicted future conditions without the project in place. Comparing the project to the null alternative helps to frame the analysis of the project's *net* contribution to sustainability in the future.

A cornerstone of the sustainability assessment is the recognition that present and future generations have **the right to benefit equitably** from ecological and socio-economic capacity. It is not possible to understand the extent to which a project may contribute to the well-being of present and future generations without considering the present and future distribution of positive and adverse effects, risks and uncertainties. For example, intergenerational inequity may arise when present actions determine the economic or ecological resources that future generations will inherit. In this example, inequities between generations may occur because future generations do not participate in decisions that will affect them.

Practitioners should therefore consider the following in their assessment of project alternatives:

- Are the benefits and costs associated with project alternatives fairly distributed amongst potentially affected communities or interests?
- Will the economic and social benefits associated with project alternatives accrue without compromising the environmental, health, social and economic needs of future generations?
- Will future generations incur substantive costs in order for present generations to enjoy substantive benefits?

Proponents and practitioners should refer to the project-specific TISG for detailed requirements on describing the alternative means of carrying out the project and the project alternatives. See also the Policy Context: "Need for", "Purpose of", "Alternatives to" and "Alternative means" for more information.

Black Point Quarry Project: Assessment of alternatives

In the Environmental Assessment Report for the Black Point Quarry Project, the Agency described how the proponent's assessment of alternatives considered what communities identified as valuable and how this contributed to the selection of alternatives.

Local fishers recommended that the marine terminal be located as far west as possible to increase the sheltering effect from wind and strong currents off Black Point, and to avoid shrimping grounds. The proponent noted that waters to the west are not sufficiently deep for the terminal. Following discussions with local fishers, the proponent altered its shipping route to avoid preferred shrimping grounds between the established shipping lanes and the proposed marine terminal, minimizing potential impacts on fishing while retaining the original location for the terminal.

Source: Voisey's Bay Nickel Mine and Mill Panel Report

6. Analysis of the extent to which a project contributes to sustainability

In their Impact Statement, proponents must provide an analysis of the extent to which the project contributes to sustainability. The analysis should be qualitative, but may draw on quantitative data to provide context. The analysis must describe:

- the project-specific context, including key issues of importance to Indigenous peoples such as the sustainability of Indigenous livelihood, traditional use, culture and well-being;
- how the sustainability principles were considered in the assessment of the project's positive and adverse environmental, health, social and economic effects, with emphasis on potentially affected Indigenous peoples, local communities and disadvantaged populations;
- all uncertainties and assumptions underpinning the analysis;
- how the precautionary principle was applied where there may be risk of irreversible harm; and
- how monitoring, management and reporting systems consider the sustainability principles and attempt to ensure continuous progress towards sustainability.

Where there are relevant regional or strategic assessments, these should also inform the proponent's analysis of the extent to which the project contributes to sustainability.

The Agency or a review panel will undertake consultations and analysis in order to describe the project's contribution to sustainability in the Impact Assessment Report, and will consider and evaluate the proponent's analysis of sustainability in their Impact Statement.

7. Sustainability considerations in decision-making

The Minister or Governor in Council determines whether the adverse effects identified in the Impact Assessment Report are in the public interest. One of the factors that the Minister or Governor in Council must take into account in making the public interest determination is the extent to which a designated project contributes to sustainability. The Impact Assessment Report presents the findings of the impact assessment and summarizes the views expressed by communities. This provides decision-makers with a more comprehensive picture of a project's contribution to sustainability. The Decision Statement issued by the Minister will include the reasons for that determination.[10] See Policy Context: Public Interest Determination under the *Impact Assessment Act* for more information on sustainability in decision-making.

In the case where the project may proceed, the Decision Statement will also contain enforceable conditions that are technically and economically feasible. **Conditions** are the requirements with which the proponent must comply. Conditions may be developed to address any adverse effects within federal jurisdiction that were identified in the assessment of a project's contribution to sustainability. Furthermore, in making the public interest determination, the decision-maker may also consider **complementary measures**. Complementary measures are additional initiatives undertaken under federal programs or under the authority of a federal minister or department, beyond those stated in the Act, which may also be used to mitigate effects. Complementary measures may be used to address issues outside of the care and control of a proponent, for cross-cutting issues requiring an integrated response, or to accommodate impacts to section 35 rights held by Indigenous peoples. Examples of complementary measures may include skill development and training programs or social programs. For instance, funding for a health-monitoring program could be proposed to address concerns of uncertainty related to the long-term health effects caused by a project.

[10] See paragraph 65(1)(a) of the Act.

8. Post-decision

Where a designated project is found to be in the public interest, the subsequent conditions of its approval must include the implementation of a follow-up program.[11] The Act also permits the Agency to establish monitoring committees for matters related to the implementation of follow-up programs. Follow-up programs verify the accuracy of the impact assessment of a designated project and determine the effectiveness of any mitigation measures established in relation to effects within federal jurisdiction. They can be used to verify predictions, identify if any unanticipated effects are occurring, and require or facilitate suitable responses to emerging problems or opportunities. When mitigation is found to be ineffective, or when effects do not occur as predicted, follow-up programs may signal the need to adjust mitigation or add additional mitigation. As part of follow-up programs, enforceable conditions in the Minister's Decision Statement require the proponent to adjust or replace mitigation measures when they do not perform as expected.

Follow-up programs are also one mechanism under the Act to deal with uncertainty in predicting the outcomes of potential projects. In circumstances where there is higher uncertainty around the effectiveness of specific mitigation measures, an adaptive management plan may be appropriate to supplement a follow-up program.

[11] See paragraph 64(4)(b) of the Act.

Annex 1: Specific legislative requirements

The *Impact Assessment Act* has several provisions that reference sustainability and how it will be considered in the impact assessment process.

Paragraph 6(1)(a) states that one of the purposes of the Act is to foster sustainability.

The Preamble of the Act and **subsection 6(2)** confer mandates on the Government of Canada, the Minister, the Agency and federal authorities (in the administration of this Act). The sections indicate that these bodies must exercise their powers in a manner that "fosters sustainability, respects the Government's commitments with respect to the rights of the Indigenous peoples of Canada, and applies the precautionary principle."

Paragraph 22(1)(h) states that one of the factors that must be considered in an impact assessment of a designated project, whether it is conducted by the Agency or a review panel, is "the extent to which the designated project contributes to sustainability."

Paragraph 63(a) states that one of the public interest factors that must be considered when the Minister or Governor in Council makes a public interest decision is "the extent to which the designated project contributes to sustainability."

Additional legislative requirements will contribute to operationalizing the sustainability approach. Some of these supporting requirements that are linked to sustainability are found in the following.

The purposes of the Act **(subsection 6(1))**, which are to:

- **(b)** protect the components of the environment, and the health, social and economic conditions that are within the legislative authority of Parliament from adverse effects caused by a designated project;
- **(b.1)** establish a fair, predictable and efficient process for conducting impact assessments that enhances Canada's competitiveness, encourages innovation in the carrying out of designated projects and creates opportunities for sustainable economic development;
- **(c)** ensure that impact assessments of designated projects take into account all effects – both positive and adverse – that may be caused by the carrying out of designated projects; and
- **(k)** ensure that an impact assessment takes into account alternative means of carrying out a designated project, including through the use of best available technologies.

Subsection 22(1) states that the impact assessment of a designated project, whether conducted by the Agency or a review panel, must take into account the following factors:

- **(a)** the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including (ii) any cumulative effects that are likely to result from the designated

project in combination with other physical activities and (iii) the result of any interaction between those effects;

- (Under the Act, effects means, unless the context requires otherwise, changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes.)
- **(c)** the impact that the designated project may have on any Indigenous group and any adverse impact that the designated project may have on the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the Constitution Act, 1982;
- **(d)** the purpose of and need for the designated project;
- **(e)** alternative means of carrying out the designated project that are technically and economically feasible, including through the use of best available technologies, and the effects of those means;
- **(f)** any alternatives to the designated project that are technically and economically feasible and are directly related to the designated project;
- **(h)** the extent to which the designated project contributes to sustainability;
- **(i)** the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change;
- **(j)** any change to the designated project that may be caused by the environment;
- **(k)** the requirements of the follow-up program in respect of the designated project; and
- **(s)** the intersection of sex and gender with other identity factors.

Section 63 states that the Minister and Governor in Council must take into account factors in making the public interest decision. These factors are:

- **(a)** the extent to which the designated project contributes to sustainability;
- **(b)** the extent to which the adverse effects within federal jurisdiction (and the adverse direct or incidental effects that are indicated in the impact assessment report in respect of the designated project) are significant;
- **(c)** the implementation of the mitigation measures that the Minister or the Governor in Council, as the case may be, considers appropriate;
- **(d)** the impact that the designated project may have on any Indigenous group and any adverse impact that the designated project may have on the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the Constitution Act, 1982; and
- **(e)** the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change.

Paragraph 65(1)(a) states that the Minister must issue a Decision Statement to the proponent of a designated project that informs the proponent of the determination in relation to that project and the reasons for the determination. The reasons for the determination must demonstrate that the Minister or the Governor in Council, as the case may be, considered all of the required factors.