

Evaluating Governance for its Contribution to Sustainable Development

Large-Scale Mining in the Yukon Territory, Canada

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Disclaimer

The views presented in this thesis are those of the author and are not intended to reflect the views of any parties interviewed for or discussed in this work.

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Abstract

Few industries have as profound an impact on the natural environment and local and regional development as mining does. This work is premised on the notion that sustainability principles can be applied to mining development toward ensuring it *contributes to and does not undermine sustainable development*. This research focuses on large-scale mining in the Yukon Territory of northern Canada. The Yukon has deep historical and societal roots in mining, which has persisted as a cornerstone of its economy. The Territory is also characterised by a legacy of unsustainable mineral development that has left its mark on the region's environment and people.

Amid increasing large-scale mining development and a legacy of impacts, decision-makers have committed to sustainable development of the Yukon's mining sector. Despite this, the governance regime for large-scale mining does not explicitly consider sustainability in its decision-making or management practice. In the context of the unique political, socio-cultural and institutional conditions that shape the Yukon, this research explores the planning, assessment and regulatory instruments of governance for major mines. It aims ultimately to provide insight into how successful the regime is at achieving progress toward sustainable development. It addresses the individual and collective contributions of the instruments and goes beyond the theoretical to understand the sustainability implications of the governance regime *in practice*.

Two sustainability frameworks are applied to evaluate the governance regime. Data collected through literature reviews and in-depth semi-structured interviews with key stakeholders inform the analysis. The analyses reveal some strengths and considerable shortcomings of the instruments in terms of their sustainability contribution. Overall, it is determined that the Yukon's governance regime is not successfully contributing to sustainable development of large-scale mining. Strong foundations in sustainability are recognised, however, and key considerations highlighted by the analysis guide the suggestion of measures for improving the regime's sustainability contribution.

Executive Summary

Few industries have as profound an impact on the natural environment and local and regional development as mining does. At first glance, *mining* and *sustainability* appear to be incompatible, since inherently mining involves extracting non-renewable resources over a finite period of time, and often permanently changes the landscape. Sustainability principles can, however, be applied to mining activities. Accordingly, it is not a question of attempting to *make mining sustainable*; rather in the context of this discussion, it is treated as a question of ensuring that mining *contributes to and does not undermine sustainable development*. This work considers sustainable mining development in terms of achieving balance among environmental, socio-cultural, polity and economic pillars and recognising the interlinkages among them. Its means accepting some costs, making trade-offs and ultimately, working to minimise risks, maintain or enhance ecological and socio-economic integrity and attain durable gains from mineral extraction activities.

Mineral development is important for the economic and industrial development of many countries. And while mining cannot leave the natural environment untouched, it can minimize its environmental and human impact, leave ecosystems functionally intact and return the land to a level of use suitable to stakeholders. Mining development has the potential to stimulate economic growth in a host country, contribute positively to community and regional well-being and development, and build people's capacity to improve their lives during the life of the mine *and* after it shuts down.

Canada is one of the world's leading mining nations, and produces more than 60 minerals and metals. This research focuses on the Yukon Territory of northern Canada. Mining has deep historical and societal roots in the Yukon and has long been a cornerstone of its economy. The Yukon is characterized by unique and vulnerable ecosystems, pristine wilderness, and vast expanses of sparsely populated land inhabited by aboriginal and non-aboriginal peoples. Many of its aboriginal peoples, called *First Nations*, still lead "traditional" lifestyles founded on their connection to the environment. The Territory is also characterised by a legacy of unsustainable mineral resource development that has left its mark on the region's environment, people and economy.

The Yukon has much to protect, and in the face of increasing large-scale mining development and a legacy of mining impacts, sustainable development of the mining sector has the potential to play an important role in protecting the Yukon's people and environment, and promoting positive community and regional development. Decision-makers have committed to sustainable development of the Yukon's mining sector. While the governing legislation supports the incorporation of sustainability constructs, the governance regime for large-scale mining does not explicitly consider sustainability in its deliberations or management practices. Moreover, it is not clear how successful the regime is at contributing to sustainable development, as no formal evaluation has been undertaken. Given this, the following research question emerges: *How well is the governance regime for large-scale mining in the Yukon contributing to sustainable development?*

In the context of the political, socio-cultural and institutional conditions that shape the Yukon, this research explores the planning, assessment and regulatory instruments of governance for major mines. It aims ultimately to provide insight into how successful the current regime is at achieving progress toward sustainable development and identifies key strengths and shortcomings. It addresses the individual and collective contributions of the

instruments and goes beyond the theoretical to understand the sustainability implications of the governance regime *in practice*.

Research Approach and Methodology

A multifaceted approach was used to conduct the research, involving a variety of data collected from several sources. Data assembled through a literature and material review were supplemented and triangulated by information gathered through a series of in-depth semi-structured interviews with informants representing multiple stakeholder categories. Two analytical frameworks developed specifically for mining in a North American context are applied in order to achieve a comprehensive assessment of the sustainability contribution of the governance regime. The first, *10 Sustainability Criteria*, is a framework used in a research project from 2000 investigating the same topic. Nearly a decade later, and following considerable governance reform, the 10 Sustainability Criteria are applied in this study to understand the sustainability implications of the regime today, and compare it with the previous findings. The regime is further analysed by assessing the first large-scale mine to undergo the reformed governance processes against the *Seven Questions to Sustainability* framework, developed through the global Mining, Minerals and Sustainable Development (MMSD) initiative.

Evaluating the Governance Regime

The analyses reveal that overall, the planning, assessment and regulatory mechanisms of the governance regime are not contributing to sustainable development effectively and that relatively little progress has been made since 2000. The evaluation focuses on the assessment and regulatory mechanisms, because of the limited implementation of the planning instruments in the Yukon.

Analysis using the 10 Sustainability Criteria reveals the assessment process to be a stronger contributor to sustainability than the regulatory process overall. The assessment process exhibits strengths in terms of its facilitation of stakeholder engagement, its level of integration within the regime, and its foundational sustainability ethic. It assesses a broad range of environmental effects, including cumulative effects, and attempts to incorporate First Nations traditional knowledge. The assessment process suffers from a lack of integrated approach to its impact assessment methods. While it does take socio-economic considerations into account to some extent, this element emerges as its greatest shortcoming. The assessment process attempts to consider some socio-cultural values and facilitate communication of First Nations and communities interests and values; however, it does not adequately address community well-being, self-reliance and benefits—largely because it does not explicitly consider positive socio-economic impacts. Economic analysis is also lacking.

The 10 Sustainability Criteria reveal both strengths and shortcomings in the regulatory process as well. The regulatory instruments also have a foundational sustainability ethic, but they additionally have some supportive strategies and policies. The regulatory instruments are reasonably well coordinated within the overall regime, and importantly, they include monitoring and enforcement provisions. Consideration of the socio-economic issues of large-scale mining development was found to be weak. Positive effects or benefits of mine development are not considered within the regulatory process. There are limited legislative frameworks for implementing socio-economic protection or enhancement measures, and managing socio-economic impacts of major mines.

Since the governance processes are designed to work together, analysis across the instruments reveals additional information about the overall regime. Across the mechanisms, some of the shortcomings of one instrument are addressed by the other. The comprehensive public policy framework aspect, outlined by the first three Sustainability Criteria, proves to be the strongest sustainability contributor. The instruments are lacking sustainability principles and objectives, however, as well as adequate supportive policies, plans and/or strategies. Ecological integrity is addressed by the regime, but there are considerable limitations, particularly with respect to consideration of the function of ecological systems and cumulative effects.

Analysis of the first major mine to undergo the reformed governance process with MMSD's Seven Questions to Sustainability largely reinforces the findings of the 10 Sustainability Criteria analysis. The regime is found to be deficient in meeting the "test" for sustainability overall. The Seven Questions highlights the regime's strength as an integrated and coordinated process and in stakeholder engagement. It also emphasises the regime's weaknesses in addressing economic issues, including project economics, full cost accounting and cost-benefit analysis, as well as distribution of costs and benefits and equity effects. Here too, the lack of ecosystem-level assessment detracts from the regime's consideration of environmental aspects. The Seven Questions also find that the regime inadequately addresses social considerations of major mine development. The analysis stresses the regime's lack of overall integrated assessment, especially in terms of consideration of alternatives, and overall synthesis to ascertain a project's net effect on sustainability in the short- and long-term.

Several crosscutting and recurring issues emerge that undermine the sustainability contribution of the governance regime, including:

- Lack of explicit consideration of sustainability in deliberations; limited sustainability principles, goals and objectives in legislation and support mechanisms;
- Lack of consideration of enhancement of ecological or socio-economic integrity;
- Inadequate level of integration in assessment approach;
- Inadequate consideration of social, cultural, and economic considerations;
- Insufficient socio-economic and, to a lesser extent, environmental baseline information;
- Inadequate regulatory framework to implement and manage socio-economic measures;
- Inadequate cumulative effects assessment and management framework;
- Lack of regional land use or strategic planning; and
- Inadequate framework for feedback and continuous improvement.

A Way Forward

The analyses show that modifications to each mechanism are required to improve the respective instrument's contribution, and to add to the regime's overall sustainability input. Each governance instrument has a role to play in contributing to sustainable development of large-scale mining. If efforts to improve the processes are coordinated, synergies toward this aim may be achieved.

This work puts forth some preliminary suggestions for *operationalising sustainability* in the governance regime for major mine development in the Yukon. The following table

summarises the suggestions, which are based on the analyses, literature, and examples of approaches taken in neighbouring Canadian jurisdictions.

Instrument	Key Considerations	Suggestions
Planning	<ul style="list-style-type: none"> • Inadequate implementation of planning mechanisms to support sustainable mining development 	<ul style="list-style-type: none"> • Streamline land use and regional planning processes • Prioritise regions most affected by mining development for planning • Develop Special Management Areas
Assessment	<ul style="list-style-type: none"> • Lack of foundational sustainability principles and objectives and supportive policies, directives or strategies • Inadequate application of holistic and integrated assessment approach • Inadequate consideration of positive environment and socio-economic effects/ benefits 	<ul style="list-style-type: none"> • Establish principles and objectives; develop policies and strategies in support of sustainable development • Adopt sustainability-direct assessment approach • Consider modifications to the legislation
Regulatory	<ul style="list-style-type: none"> • Lack of foundational sustainability principles and objectives and supportive policies, directives or strategies • Inadequate consideration of socio-cultural and economic implications • Lack of Cumulative Effects Management Framework (CEMF) 	<ul style="list-style-type: none"> • Establish principles and objectives; continue to develop policies and strategies in support of sustainable development • Develop regulatory framework for socio-economic effects management; consider developing provisions for supra-regulatory agreements • Establish protocols for comprehensive economic analysis for major mining projects • Implement Integrated Resources Management (IRM) Strategy; especially the Cumulative Effects Management Framework (CEMF)

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Acronyms

BC	British Columbia (Canada)
CCM	Carmacks Copper Mine
CEMF	Cumulative Effects Management Framework
CYFN	Council of Yukon First Nations
EIA	Environmental Impact Assessment
EMR	Department of Energy, Mines & Resources (Yukon Government)
IRM	Integrated Resources Management
NWT	Northwest Territories (Canada)
QMA	Quartz Mining Act
SMA	Special Management Area
SRA	Supra-regulatory Agreement
UFA	Umbrella Final Agreement
YESAA	Yukon Environmental and Socio-economic Assessment Act
YESAB	Yukon Environmental and Socio-economic Assessment Board
YG	Yukon Government
YPAS	Yukon Protected Areas Strategy

1 Introduction

Few industries have as profound an impact on the natural environment and local and regional development as mining does (Hilson, 2006). Mineral exploration, extraction, and processing activities permanently alter vast areas of land and can result in a host of other environmental consequences, such as long-term water quality issues, soil contamination, erosion and sedimentation (Mining, Minerals and Sustainable Development Project (MMSD), 2002; Spitz & Trudinger, 2009). These effects, in turn, impact ecosystem function and the human societies and animals that inhabit the surrounding environment and rely on the services it provides. Mining also can have considerable direct and indirect impacts on social and economic systems. Mining's 'boom-and-bust' cycles can destabilize and displace communities, and stimulate economic dependence (The Pembina Institute, 2008). The boom during the mine life brings about changes to community structure and dynamics resulting from the influx of money and workers, which can have considerable socio-cultural and economic implications (Government of Northwest Territories (GNWT), 2007; Mackenzie Valley Environmental Impact Review Board (MVEIRB), 2004). At the bust—when commodities prices fall, or after the minerals are exploited and the mine shuts down—communities and regions face the impacts associated with unemployment, loss of income, and typically a marked population decline (Gibson, 2005; The Pembina Institute, 2008).

Mineral development is, however, important for the economic and industrial development of many countries (Rajaram & Parameswaran, 2005). Mining has the potential to stimulate economic growth in a host country, contribute positively to community and regional well-being and development, and build people's capacity to improve their lives during the life of the mine and after it shuts down (Peck & Balkau, 2005; Post-Mining Alliance, n.d.).

“Community development is the process of increasing the strength and effectiveness of communities, improving peoples' quality of life, and enabling people to participate in decision making to achieve greater long-term control over their lives. Sustainable community development programs are those that contribute to the long-term strengthening of community viability. Mining and mineral processing activities can play a central role in sustainable community development by acting as a catalyst for positive economic and social change in areas that may otherwise have limited opportunities for economic and social development.”
(International Council on Mining & Metals (ICMM), World Bank, & Energy Sector Management Assistance Program (ESMAP), 2005, p. i)

While mining development cannot leave the natural environment untouched, it can minimize its environmental and human impact, leave ecosystems functionally intact and return the land to a level of use suitable to stakeholders. Until relatively recently, the mining sector has fallen grossly short of meeting these goals and society's expectations generally (ICMM, 2009; MMSD, 2002). Increasingly, the mining industry's “social licence to operate” is being called into question. Stakeholders—communities, governments, aboriginal peoples, environmental and human rights organisations—expect more from mining activities and are demanding more of the mining industry in terms of environmental performance and positive contribution to the lives and livelihoods of affected stakeholders (ICMM, 2009; MMSD, 2002; Spitz & Trudinger, 2009). In the past few decades, the mining industry and stakeholders alike have been working to improve the situation around the globe – towards mining with *sustainable development* in mind.

Canada is one of the world's leading mining nations, and produces more than 60 minerals and metals (Natural Resources Canada (NRCan), 2000). This research focuses on the Yukon Territory of northern Canada (Figure 1-1). Mining has deep historical and societal roots in the Yukon and has long been a cornerstone of its economy. The Yukon is characterized by unique and vulnerable ecosystems, pristine wilderness, vast expanses of sparsely populated land, and is inhabited by indigenous peoples, *First Nations*¹, many of who still lead "traditional" lifestyles founded on their connection to the environment. The Territory is also characterised by a legacy of unsustainable mineral resource development that has left its mark on the region's environment and people (Box 1-1).

Box 1-1 The Faro Mine Site

The now-closed Faro Mine in central Yukon is presently the federal government's single largest environmental liability in Canada. The mine produced lead, zinc, silver and gold. At its peak during the 1970s, it produced 10 percent of the world's zinc and represented over one-third of the Yukon's economy. It was at one point the largest operating open-pit lead/zinc mine in the world. The "boom" ended in the early 1980s when falling lead and zinc prices forced the mine to close. Several failed attempts at re-opening the mine were made until 1998 when the operating company was put into receivership and the mine was permanently closed.

The mine site, consisting of open pits, tailings ponds, processing areas and access roads, poses considerable risk to human health and the environment from contaminated water and soil, and the site continues to generate contaminants. Reclamation and remediation planning is underway and is anticipated to begin in 2014. Its estimated cost is CAD450 million – to be paid by Canadian taxpayers. The site will require perpetual water treatment and contaminant monitoring.

The small nearby community of Faro, built to support the mine, is still struggling with reduced financial, social and health services.

During a tour of the Faro Mine Site in July 2009, several participant First Nations representatives emphasised the importance of ensuring that "another Faro never happens again in the Yukon".

The Faro Mine is one of several abandoned large-scale mines in the Yukon requiring reclamation and remediation, primarily at the expense of Canadian taxpayers.

Sources: The Faro Mine Closure Office, 2009; Pembina Institute, 2008; M. Vainio, Mayor, Faro, personal communication, July 8, 2009.

Historically, lead, zinc, silver, gold, asbestos and copper mining have formed the Yukon's prominent industry (Yukon Government (YG) Energy, Mines and Resources (EMR), 2008). The Territory also hosts significant deposits of tungsten, coal and iron ore and lesser deposits of other minerals. "Since the Gold Rush of 1898, mining has featured prominently in building and defining the Yukon's economy, shaping its communities, and contributing to economic development" (YG, 2006, p. 1). Mining has served as a principal employer and source of income in numerous Yukon communities over the years, and the Territory has experienced several "boom-and-bust" cycles as mineral and metal prices have risen and fallen. While the sector has brought ephemeral prosperity to the Territory over the past 100 years or so, the region has also suffered—and continues to experience—considerable environmental, social and economic impacts from mining. Stakeholders, such as First Nations people, communities, environmental organisations and government sectors, are increasingly concerned about the impacts of mining, and focused on attaining local benefits from mining activities and ensuring the sustainability of the resource base.

¹ The indigenous peoples of the Yukon Territory are referred to as "First Nations".

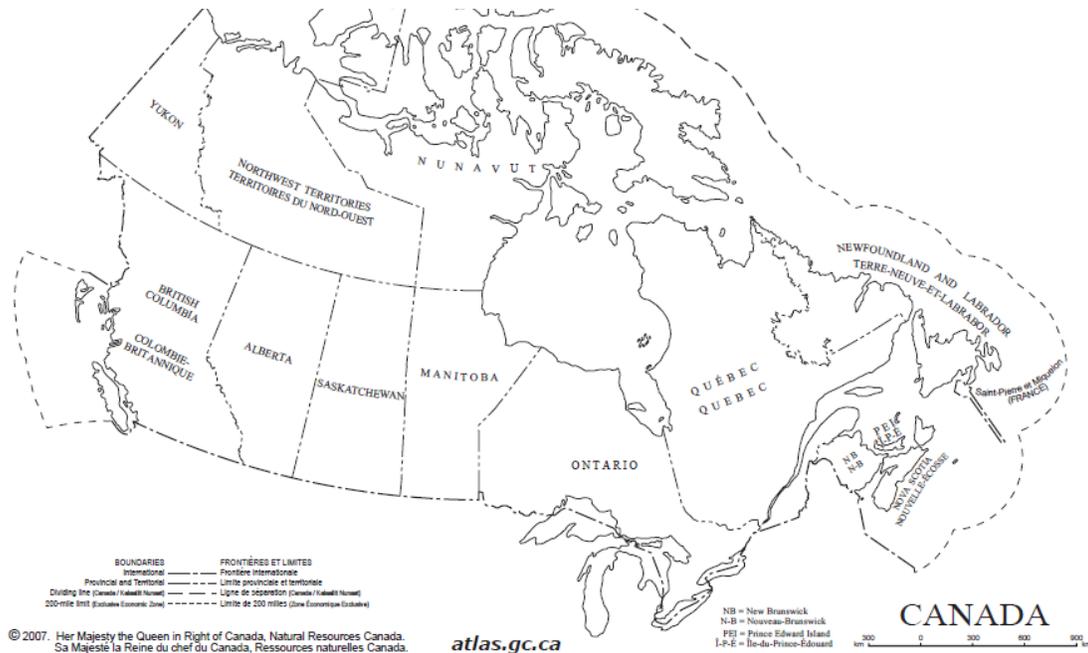


Figure 1-1 Yukon Territory of Northwest Canada

“The challenge facing the people in the North is to balance non-renewable resource development and the economic and social benefits that accrue from these activities, with conservation of the natural environment and the indigenous people’s unique social and cultural fabric that supports it” (Tapsell & MacDonald, 2007, p. 3).

Industrial development in northern Canada is on the rise. “A surge in demand for northern resources is evidenced in the planning of two gas pipelines, oil and gas exploration, renewed interest in mineral resources in Yukon and neighbouring [Northwest Territories], major infrastructure projects and growing demand for tourism” (YG Economic Development (EcDev), 2005, p. 10). Mining is identified as a key economic development sector for the Yukon through the next decades, driving economic growth (YG EcDev, 2005). The Yukon Territorial Government (YG) has projected that mining and oil and gas extraction industries will increase their contribution to Yukon gross domestic product (GDP) by 250 percent by 2025. There is currently one large-scale² mine operating and planning for expansion of operations and one under construction to be operational mid-2010. One mine is presently undergoing assessment and another is in the licensing phase. Five major mines, including two “mega-sized” mines, are anticipated in the next five to ten years (A. McCoy, Senior Assessment Officer, YESAB, personal communication, August 6, 2009). Two mines are soon to enter the closure phase. Additionally, the Territory hosts several abandoned mines requiring reclamation, as well as mines in “temporary closure” (YG EMR, 2009).

² For the purposes of this study, large-scale mines are those assessed at the YESAB Executive Committee or Panel of the Board levels, as described further in Section 3.3.4. The term *large-scale mining* is used interchangeably with *major mining* throughout this report.

1.1 Purpose and Significance

The Yukon has much to protect, and in the face of increasing large-scale mining development and a legacy of mining impacts, sustainable development of the mining sector has the potential to play an important role in protecting the Yukon's people and environment, and promoting positive community and regional development. The Federal Government has stated its commitment to developing Canada's mining sector in a sustainable way; likewise the Yukon Territorial Government and First Nations have expressed their intention to foster sound, sustainable mining development in the Yukon. Over the past decade, the governance regime³ controlling the development of major mines, consisting of planning, assessment and regulatory instruments, has undergone considerable reform. While the governing legislation supports the incorporation of sustainability constructs, the regime does not explicitly consider sustainability in its deliberations or governance, as some other jurisdictions in Canada now do. Moreover, it is not clear how successful the regime is at contributing to sustainable mining development, as no formal evaluation has been undertaken. Given this, the following research question emerges:

How well is the governance regime for large-scale mining in the Yukon contributing to sustainable development?

In the context of the political, socio-cultural and institutional conditions that shape the Yukon, this research explores the planning, assessment and regulatory processes that govern large-scale mining. It aims ultimately to provide insight into how successful the current regime is at achieving progress toward sustainable development and identifies key strengths and weaknesses. It addresses the individual and collective contributions of the instruments and moves beyond the theoretical to understand the sustainability implications of the governance regime *in practice*.

This research is, in part, based on my professional experience with the governance processes operating in northern Canada for both mining and oil and gas sectors. I have worked primarily as an environmental and socio-economic impact assessment practitioner within the planning and regulatory frameworks of the Northwest Territories and the Yukon. I formerly worked for the Yukon Environmental and Socio-economic Assessment Board (YESAB) and played a substantive role in the screening of the first large-scale mine assessed under the recently promulgated Development Assessment Process (see Section 3.3.4).

This research is intended to inform actors in the Yukon involved with public policy related to mineral resource development and is directed primarily at land and resources managers and planners, and impact assessment practitioners responsible for mining development. The findings provide a foundation for further public policy research and development toward the meaningful incorporation of sustainability constructs. A subsidiary aim of this work is to raise awareness among stakeholders of the successes and shortcomings of the governance processes in achieving sustainable mining development.

The Yukon's Development Assessment Process (see Section 3.3.4) pursuant to the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) (hereinafter referred to as the "YESAA Process") is still relatively young, having been in practice for only five years. The findings of this study are timely with respect to the release of the comprehensive, independent, *YESAA*

³ For the purposes of this thesis, the term, *governance*, is the process of decision-making and management. *Governance Instruments* are the tools that support decision-making and management.

Five-Year Review. The Yukon Umbrella Final Agreement (UFA)⁴ requires the completion of a review of the YESAA Process within five years of its institution (s. 12.19.3). This Review will likely result in some modifications to the YESAA Process—through changes to practice and possibly to legislation—thus it is an opportune time to present this research. This thesis has been developed with practical application of its analyses, findings and suggestions to the YESAA Process in mind.

One way of understanding how successful the governance regime for major mines is at promoting sustainable development is to directly assess mines presently operating in the Yukon. There is one mine presently operating in the Territory; however, it was assessed and permitted under the previous assessment regime⁵—prior to devolution and promulgation of the YESAA Process—and although some aspects of the former regime still apply, the relevance of analysing the mine would be limited. Therefore, it has been chosen in this analysis to assess the current regime using a theoretical approach in order to ascertain its potential contribution to sustainability. One major mine has undergone the YESAA Process under the current regime, although it is not yet permitted or operational. Thus, the YESAA Process *in practice* is scrutinized in this work.

To my knowledge, there has been only one similar analysis of the Yukon’s mining development process conducted to date (Craig, 2000). Importantly, this study was conducted *prior* to a major governance transition in the Yukon, *devolution*, through which control over land and resources was transferred to the Territorial Government, and prior to the enactment of the YESAA (Section 3.3.2). A subsidiary purpose of this work is to build on the work of Craig (2000) and compare the current governance regime with the one previously operating to understand what progress has been achieved with respect to overall sustainability contribution in mining and where further improvements can be made.

In addition to the aims cited above, this work fulfils the requirements of the Thesis Block of the Masters of Science in Environmental Management and Policy (EMP) Programme of the International Institute for Industrial Environmental Economics (IIIEE) at Lund University in Sweden. The Thesis Block is 30 ECTS⁶ credits and approximately 600 hours.

1.2 Scope and Limitations

The focus of this research is on the governance of large-scale mining in the Yukon. The scope includes the major mine screening and licensing processes, consisting of planning, assessment and regulatory instruments. The stages of mine development addressed include, construction, extraction operation, closure and post-closure. Exploration activities are not addressed in this work.

The scope of this work is limited to major mines in the Yukon—that is, those screened at the YESAB Executive Committee level (levels of screenings are described in Section 3.3.4). Small-scale mines are prominent in the Yukon and represent an important issue in the overall discussion of sustainability of the mineral sector; however, small-scale mining is outside the scope this study.

⁴ The UFA is comprehensive aboriginal land claim settlement legislation operational in the Yukon. It is described further in Section 3.3.3.

⁵ The *Yukon Environmental Assessment Act* and the *Canadian Environmental Assessment Act*

⁶ European Credit Transfer System (ECTS)

This work does not explicitly address placer mining⁷ in the Yukon. Placer mining is subject to different legislation (i.e., the Yukon Placer Mining Act and Land Use Regulations), guidelines and best management practices, and royalty regime than quartz mining⁸. In the Yukon, placer mining is also predominantly conducted at a smaller scale. Many of the sustainability issues associated with placer mining are similar to quartz mining, however, and some of the findings of this research can be readily applied to placer mining development.

While the mining industry is a key actor in sustainable development of the sector, the scope of this research is limited to the role of governance instruments and processes. As explained in the following section however, material from the mining industry was incorporated to provide context for the study.

This thesis does not address global mining sustainability issues, such as consumption patterns, or minerals recycling or reuse.

This study only minimally addresses mineral economics issues, such as royalties, taxes and resource revenue distribution.

The political and institutional conditions that shape the Yukon are in many ways unique from other parts of the world and indeed from other jurisdictions in Canada. The circumstances of other similar Canadian jurisdictions, such as the Northwest Territories (NWT) and British Columbia (BC)⁹, which neighbour the Yukon, are similar enough in terms of their socio-political and geographical conditions and mineral resource potential to make comparisons with the Yukon and case studies are included in this report to illustrate approaches taken in other provinces and territories, in order to compare and contrast them. The findings of this study are specific to the Yukon, but likely have some application in similar jurisdictions, such as the other northern territories, Northwest Territories and Nunavut, and northern British Columbia. The application or relevance of the findings of this study to other parts of the world is likely to be more limited.

Sustainability and sustainable development are generally considered at a project-level in this research. While the contribution of one or more mining projects to the overall sustainable development of the Yukon is indirectly addressed, it is the sustainability of a single project that is the focus of this thesis.

This study does not explicitly consider the contribution of First Nation governments to sustainable development. As explained in Section 3.3.3, the Final Agreements establish First Nations as independent governments and regulatory authorities in the Yukon. Eleven of 14 Yukon First Nations have signed Final Agreements and some have developed legislation to guide land and resource management, and some have developed supportive policies, protocols and strategies. The processes established by First Nations to govern land and resource management have a considerable potential to contribute to sustainability. For the purposes of this study, however, these processes are not directly considered for two primary reasons: 1)

⁷ Placer mining refers to the mining of precious metals (like gold and gemstones) found in sand and gravel on stream banks.

⁸ Also referred to as hard rock mining; refers to metallic and industrial minerals distinguished from "soft metals", such as coal (McElfish, Bernstein, Bass, & Sheldon, 1996).

⁹ While the southern part of British Columbia is densely populated and faces very different conditions than the Yukon, the northern part of the province is very similar to the Yukon. I reviewed cases and plans relevant to northern British Columbia only, in the context of the provincial legislation and policies.

First Nation governments exercise decision-making authority for mining projects *only* when the project is proposed on parts of their Settlement Lands—the majority of the land in the Yukon is non-Settlement Land and indeed the majority of proposed mineral projects are proposed on non-Settlement Land, for which the YG (and potentially the Government of Canada) has decision-making authority; and 2) First Nations governments each develop their governance systems independently, creating a myriad of instruments and approaches, the scope of which are beyond the time and resources available for this study to investigate.

It was not possible to consult all mining development stakeholder groups due to the limited timeframe for interviewing. Moreover, it was not feasible to interview *several* representatives from each stakeholder category, so in many cases, only one informant representing a stakeholder group was interviewed.

It is worth noting that given sufficient time and resources, it would have been optimal to interview several representatives from each First Nation, and to interview them over a longer period. It is common practice in the Canadian North to consult First Nations people more than once over a certain period to build relationships, gain trust, and collect information as they are willing to provide it. The duration of this study did not allow for such an approach, thus, only few First Nations stakeholders were consulted once.

The tacit knowledge I possess of the subject matter, founded in my professional experience in this field, has informed this research.

Section 4 includes several tables containing the bulk of the analysis. This tabular form was chosen as the most appropriate means of presenting the analysis for several reasons. The main reason is the compartmentalised nature of the criteria and questions of the 10 Sustainability Criteria framework, which are more readily addressed in point form. This format also facilitates easier comparison of the results for each of the instruments. The tables have broken up based on categorisation, as described in the respective analysis sections, to improve their accessibility.

1.3 Research Approach and Methodology

Research for this thesis followed an interdisciplinary approach, involving the collection of data from a variety of sources and subsequent analysis using two frameworks. Information was derived from several sources, including primary data collected from interviews with key stakeholder representatives, peer-reviewed literature on a variety of related topics, material from non-governmental and industry organisations, as well as government legislation, policies, plans, and other material. Data were sought from these sources in order to:

- Obtain thorough coverage of the topic;
- Formulate a balanced view of the issues from stakeholders;
- Understand the implications for the Yukon;
- Review practices from other Canada jurisdictions; and
- Triangulate the data.

Development of major mines in the Yukon, while guided by legislation and regulations, is a highly complex process in practice, involving a number of stakeholders with competing

interests, and influenced by several political, cultural, societal and institutional factors. Information on the details and functioning of the processes are dispersed. Thus, a necessary underlying aim of this research was to develop a comprehensive understanding of the governance regime and its processes.

The data are applied to two sustainability frameworks to analyse the governance regime for large-scale mining for its contribution to sustainable development. From this analysis, areas of strengths and weaknesses with respect to sustainable development are identified and discussed.

1.3.1 Data Sources and Collection

Literature and Document Review

The literature/material review process was conducted during the period from mid-May through September 2009. The primary databases used for searching literature were the Lund University library catalogue (LOVISA) and online database (ELIN). The Web of Knowledge database was the primary database within ELIN searched for relevant literature. The United Nations Environment Programme database, and United States Environmental Protection Agency database were also searched. The Canada Thesis Portal was also reviewed. Search terms included:

- “sustainability” and “mining”
- “sustainable development” and “mining”
- “sustainability framework”
- “sustainable development framework”
- “sustainability” and “impact assessment”
- “mining” and “closure”
- “social licence to operate”
- “mining” and “corporate social responsibility”
- “mining” and “environment”

General terms for mining and sustainability were used to start the search process and the search was gradually refined using key terms and concepts from the literature identified.

Government material was primarily sourced from the Yukon Territorial Government (YG), the federal Government of Canada, as well as from the neighbouring jurisdictions of the Northwest Territories (NWT) and British Columbia (BC). I consulted material from several Yukon Government departments, including Energy Mines and Resources, Economic Development and Environment. Documents produced by Yukon First Nations Governments were also examined.

I reviewed relevant legislation, policies, plans and case studies from NWT and BC, because these neighbouring Canadian jurisdictions are similar to the Yukon in several ways. For example, they possess considerable mineral resource potential, and are characterised by past and present mineral development; First Nations peoples are key stakeholders and possess special rights as land and resources users and self-governments; and they have similar northern environments and climates, sparse populations, and vulnerable societies and ecosystems.

Material from non-government organisations in Canada was reviewed (MiningWatch Canada, Pembina Institute, and the Yukon Conservation Society). Material from the mining industry,

industry organisations, companies regarded as environmental, corporate social responsibility, or sustainability leaders, and especially the global Mining, Minerals and Sustainable Development Project (MMSD), led by the International Institute for Environment and Development (IIED) and the World Business Council for Sustainable Development (WBCSD), was consulted primarily for context. The annual corporate social responsibility reports of several large-scale mining projects in the NWT were also reviewed, because they were highlighted in literature as examples of mining projects making positive contributions to sustainable development. Other organisations' websites and available publications and materials consulted include:

- Mining Association of Canada
- International Council on Mining & Metals (ICMM)
- International Institute for Sustainable Development (IISD)
- International Association of Impact Assessment (IAIA)
- Prospectors and Developers Association of Canada (PDAC)
- Global Mining Initiative

Critically, information was also extracted from the *Draft Observations and Conclusions Report of the YESAA Five-Year Review* (SENES Consultants Ltd, 2009). The findings of the *YESAA Five-Year Review* are based on an extensive information gathering process whereby views were collected from a broad range of groups, including, First Nation governments and citizens; Yukon Government; Government of Canada, UFA boards and councils; municipal councils; business and industry organisations; non-governmental organisations; and the general public. The *YESAA Five-Year Review* addresses *all* projects reviewed under the Act. I extracted the findings relevant for large-scale mining projects for use in this study.

As appropriate, and especially in the context of understanding governance conditions required to support sustainable mineral development, legislation and policies from other mining countries, such as Australia, were also surveyed. A global perspective was taken in understanding sustainability-based assessment trends and practices; however cases from Canada were ultimately chosen for their regional relevance.

Qualitative Interviews

Qualitative interviews for this research were conducted with a variety of stakeholders. The interviews were conducted to serve several purposes, including to:

- provide general context for understanding the Yukon's mining development and governance processes and important contributing factors;
- provide specific background and information to be able to comprehensively analyse the governance instruments using the analytical frameworks; and
- triangulate the data collected—both to supplement data sourced from literature and documents and to corroborate the comments from other informants.

The rest of this section provides rationale for the choice of informants interviewed and overviews the interview process.

Stakeholders

Stakeholders involved with mining development in the Yukon include industry, governments, First Nations, non-governmental organisations (NGOs), the Yukon Environmental and Socio-economic Assessment Board (YESAB), affected communities (including their municipal governments) and the general public. I interviewed representatives from First Nations governments and organisations, YG, the YESAB, a local NGO and one municipal government. Two main considerations were taken into account in choosing the stakeholders to interview: *salience* in the Yukon mining development process and *relevance* to the governance process and its outcomes, and the focus of this research.

Mitchell, Bradley & Wood (1997) describe the *salience* of stakeholders based the relationship attributes of *power* (stakeholder claims have influence and authority), *legitimacy* (stakeholder claims are considered appropriate and legitimate based on social and cultural norms) and *urgency* (stakeholder claims call for immediate attention)¹⁰. Table 1-1 shows an overview of Yukon mining development stakeholders in terms of their respective power, legitimacy and urgency. The results are subsequently discussed in further detail.

Table 1-1 *Salience of Yukon Mining Development Stakeholders*

Stakeholder Group	Power	Legitimacy	Urgency
First Nations	Yes	Yes	Yes
YG	Yes	Yes	Yes
YESAB	Yes	Yes	Yes
Industry	Yes	No	Yes
Government of Canada	Limited	Yes	Yes
Communities	Limited	Yes	Limited
NGOs	No	No	Limited
General Public	No	No	Limited
Academia	No	No	No

For this work, I considered *key* stakeholders as those possessing two or more salience attributes. Not all key stakeholder groups were interviewed as part of this study and one “non-key” stakeholder was interviewed. After having assessed the relative stakeholder salience, I scrutinized their respective relevance in the decision-making and governance process for mining in the Yukon context. The most relevant stakeholders have *power* to directly influence the governance process; these include First Nations, YG, YESAB and industry. While the mining industry wields considerable influence in the governance process, it is not the focus of this research, as explained above; consequently, mining companies were not consulted.

In 2003, the process of devolution transferred responsibility for land and resources management from the federal Government of Canada (GC) to the YG (see Section 3.3.2 for further details). While a few GC agencies remain *Decision Bodies* in the YESAA Process¹¹, the GC retains relatively little *power* in the Yukon’s mining development process. Natural Resources Canada, for example, may be a Decision Body on a mining project because the project requires an authorization to use explosives for excavation—their involvement in this

¹⁰ Note that it was *not* my intention to conduct a detailed analysis; however, I wanted to justify my choice of informants. It

¹¹ *Decision Bodies* refers to government authorities responsible for administering the legislation pursuant to an authorisation triggered by a project. As Decision Bodies in the YESAA Process, approval from these agencies is required for the project to be allowed to proceed.

capacity has little bearing on sustainability issues, even though their consent is required for the project to proceed. GC agencies do inform the YESAA Process, however, by providing important input to it as environmental experts.

While communities are a key stakeholder in mining projects, limited resources prevented community perspectives from being obtained. It would have been necessary to organise community meetings and meet with municipal government and council representatives from several communities in order to obtain a balanced perspective—that level of involvement was not possible for this study. Rather, I tried to integrate the community perspective by incorporating issues related to sustainability that are generally raised by communities during large-scale extraction projects, as ascertained through my own experience working with communities on mining and oil and gas projects. Importantly, communities do not have *power* as decision-makers on mining projects affecting their communities (assuming the project is not within the municipality boundaries). Rather they are consulted by the mining company and have the opportunity to provide input to the YESAA process, as other stakeholders do.

While in general NGOs are not considered a key stakeholder because they lack power and legitimacy, the Yukon Conservation Society (YCS), a well-established local NGO, plays a notable role in the major mine development process. The organisation actively participates in the YESAA process by submitting comments on mining projects, it solicits input from communities and other stakeholders on mining projects, and it conducts awareness-raising activities to inform the public about mining issues. Thus, in seeking to balance the perspectives solicited on mining issues, a representative of the YCS was contacted.

In the Yukon, with a small population and close connections among people and communities, the general public sometimes demonstrates *urgency* as a key stakeholder—particularly with respect to raising their voices about large and controversial projects, like mines. Since the views of the general public are specific to each project and subject to other political and societal conditions, obtaining public perspectives would likely not have added value to this research; thus they were not solicited.

There has been very limited academic work done on mining development in the Yukon. In the Yukon context, it was judged that academia currently lacks power, legitimacy and urgency and therefore cannot be considered a key stakeholder.

The YG Development Assessment Branch, responsible for coordinating the YG's input to the YESAA Process, and the agency responsible for conducting assessments for major mining projects prior to the enactment of the YESAA, refused to participate in this research¹². This is unfortunate as the Development Assessment Branch has direct experience conducting assessments pursuant to the previous regime, under which the current mines operating in the Yukon were assessed. The Council of Yukon First Nations also refused to participate, explaining that it would be more appropriate for me to contact First Nations affected directly by mining projects.

¹² YG DAB explained that, "To obtain a corporate [i.e., YG] view requires a significant commitment of public resources to undergo collection of data and internal review of perspectives. Any specific position put forward would require the support of the government and the corresponding process requirement for obtaining that approval."

Process

Data were derived from interviews conducted intermittently from 18 June through 29 July, 2009 with Yukon mining development stakeholders. The interviews were predominantly in-depth semi-structured and conducted in person (see Appendix X for interview list) and lasting 60 to 150 minutes. A few impromptu unstructured interviews were conducted during research visits to Yukon communities. In general, I began by contacting the informants I knew from my professional experience as an Assessment Officer for the YESAB, and subsequently employed the “snowball” method, whereby informants suggested additional people to interview.

Several informants from the YESAB were interviewed, including an Executive Committee member ultimately responsible for projects screened at the Executive Committee level, Senior Assessment Officers who work on larger-scale projects assessed at the Executive Committee level, and the Project Assessment Manager, responsible for overseeing YESAB project assessments. These representatives are responsible for carrying out assessments, have considerable expertise in impact assessment, regulatory processes and the general dynamics of the Yukon. I sent questions and background material to all the participants prior to the interview (see interview questions in Appendix B). The draft *YESAA Five-Year Review* was released after my interviews with the YESAB, so I did not have the opportunity to question them directly on the findings.

Upon the suggestion of the Council of Yukon First Nations, and in consideration of the fact that it was not possible to speak to all Yukon First Nations (as there are 14), I focused on the First Nations currently affected by major mining projects—whether in the planning or implementation stages. These First Nations include the Selkirk First Nation (affected by the nearby Minto Mine currently in operation); the Ross River Dena Council (Kaska First Nation) (affected by the nearby Wolverine Mine currently under construction); and the Little Salmon/Carmacks First Nation (affected by the Carmacks Copper Mine presently undergoing permitting). I sent questions to the First Nations prior to the interview. See Appendix B for a list of the questions asked.

Time constraints also prevented me from speaking with all relevant departments within YG. I chose to speak with several representatives from the Department of Energy, Mines and Resources (EMR), because they wield considerable influence on resource development, as the predominant legislation guiding mining development is administered by EMR. EMR is responsible for promoting mineral development in the Yukon; developing legislation, regulations and policies that directly inform mining development; issuing authorisations for mining works and land use; conducting mine site inspections and monitoring; reviewing and approving closure and reclamation plans; determining and collecting financial security; issuing closure certificates freeing the mining company from liability at closure; and are the primary liaison with the mining company throughout the project life. I also interviewed the Department of Health & Social Services, because the social issues associated with mining projects were consistently cited by interviewees as being inadequately understood and addressed. I sent questions to all the informants prior to the interview; their specific nature depended on the informant to whom I was speaking. See Appendix B for the list of questions asked.

All the interviews, with the exception of those with the First Nations representatives, were recorded and subsequently comprehensively summarised to ensure accuracy of the information.

1.3.2 Analysis Approach

Two analytical frameworks are applied in this study to provide insight in to how successful the current regime for large-scale mining is at contributing to sustainable development, and to identify what is and is not working in the planning, assessment and regulatory instruments toward this aim. In part, two frameworks were applied to increase the rigour of the analyses. As explained below, the shortcomings of one framework are largely addressed by the other.

10 Sustainability Criteria

The Yukon's governance regime for hardrock mining was analysed previously for its potential contribution to sustainable development in a Master of Environmental Studies thesis study conducted by Lois Craig, under the supervision of Robert B. Gibson and Robbie Keith at the University of Waterloo, Ontario, Canada. The thesis, entitled, "*Sustainable Development, Hardrock Mining and Instruments of Governance in the Yukon*" (Craig, 2000), presents an analysis of governance requirements for quartz mining development in the Yukon in the late 1990s (Craig, 2000). Lois Craig had 22 years of federal and territorial government experience related to mining development in the Yukon when she undertook the research. Lois Craig granted permission to use and develop the 10 Sustainability Criteria framework for the purposes of this research.

Table 1-2 presents the 10 Sustainability Criteria used in Craig (2000) to assess mining governance system operating to the late 1990, as well as proposed modifications to the existing regime. This analysis framework was intended to provide one form of indication regarding the extent to which each instrument of governance contributes to sustainable development (Craig, 2000).

Table 1-2 10 Sustainability Criteria Used in Craig (2000)

10 Sustainability Criteria
1. Incorporates a foundational sustainability ethic in legislation.
2. Integrates planning, assessment and regulatory framework including monitoring and enforcement.
3. Ensures effective citizen participation and decentralised decision-making.
4. Assesses alternatives and technology.
5. Adopts adaptive and interactive approaches and addresses maintenance or enhancement of ecological functions.
6. Respects uncertainty and risks.
7. Assesses transboundary and cumulative effects.
8. Promotes community self-reliance and benefits.
9. Respects First Nation as well as community interests and values.
10. Contributes to economic diversification and stability.

The 10 Sustainability Criteria framework is used in the present study because of its broad representation of sustainability concepts relevant for mining development from the literature, as well as its suitability for application to government processes and mining development in the Yukon context. Craig's research additionally serves as a useful comparison tool to understand the evolution of the governance regime since 2000, and the outcomes of

modifications made to governance from a sustainability perspective. Craig assessed the regime operating at the time, and also analysed the Development Assessment Process outlined in the Umbrella Final Agreement from a theoretical perspective, as it was not yet in place.

The set of criteria were identified “[d]rawing from global, national and Yukon sustainable development imperatives and priorities... [t]he 10 have been selected as a comprehensive suite to cover the most significant sustainability issues relevant to hard rock mining in the Yukon” (Craig, 2000, p. 26). The criteria, developed nearly 10 years ago, are still relevant when compared to several sustainable development initiatives and strategies at global, national and regional levels. Appendix C provides the rationale and sub-questions for each of the 10 sustainability criteria.

Craig’s 10 Sustainability Criteria are comprehensive and, in general, cover the gamut of sustainable development issues pertinent to Yukon mining development. The framework does, however, exhibit some limitations. With respect to economic sustainability considerations of mining development, this framework does not directly address the economic feasibility of a mining project, or matters such as ‘bonding’ or ‘closure-related financial assurance (Peck & Sinding, 2009). The criteria also do not directly take into account ecological, social or economic capacity, vulnerability, and resilience, or sustainable levels of resource use—although “maintenance or improvement of ecological function” in the longer term is considered, as well as cumulative effects. Related to this, there is also little direct attention paid to implications for future generations. The considerable lack of environmental and socio-economic baseline information available in the Yukon and the absence of established thresholds are issues that prevent these factors from being accurately assessed, and which permeate many aspects of sustainability, as addressed further in Sections 4 and 5. Notably, while “adaptive and interactive approaches” are addressed in criterion 5, continuous learning and improvement through feedback loops to facilitate iterative and responsive processes for decision-making, are not specifically tackled. As explained below, several of these shortcomings are addressed by the *Seven Questions to Sustainability* framework also applied in this work.

Seven Questions to Sustainability

The MMSD North America Work Group developed a framework, called the *Seven Questions to Sustainability* (Table 1-3), to guide the assessment of a project’s net contribution to sustainability ([International Institute for Sustainable Development (IISD), Mining, Minerals and Sustainable Development North America (MMSD-NA), & World Business Council for Sustainable Development (WBCSD), 2002]. It was developed specifically for mineral development in North American conditions, but broad enough to suit different types of mining projects and different stages along the decision-making path. Hodge (2004) states that the Seven Questions encompass four insight categories: relationships (#1); ends (#2 & 3); means to the ends (#4, 5 & 6) and feedback (#7).

The first major mining project to undergo the YESAA and regulatory (i.e., licensing) processes, the Carmacks Copper Mine, is assessed by the *Seven Questions to Sustainability* framework in this work to further highlight the strengths and weaknesses of the governance instruments in contributing to sustainability. I chose the Seven Questions framework for application in this study, because it was created specifically for mining development in a North American context. Moreover, it was designed for practical application at the project-level over the entire project lifecycle (IISD et al., 2002). The Seven Questions framework has been applied to projects and plans related to mining (e.g., Gibson, 2005; Hodge, 2004; (IISD & The

Tahltan First Nation, 2003); (Richards & Peel, 2003)). It was applied to large-scale mining development in northern British Columbia (IISD & The Tahltan First Nation, 2003), a region that demonstrates many similar characteristics to the Yukon, as previously described. This work provided a useful example to guide the analysis for this study. The Seven Questions framework was also adapted in the review process for the Kemess North Copper-Gold Mine in British Columbia (see Box 5-2, Section 5.2).

Table 1-3 Summary of the Seven Questions to Sustainability Framework¹³

Questions
1. Engagement. Are engagement processes in place and working effectively?
2. People. Will people's well-being be maintained or improved?
3. Environment. Is the integrity of the environmental assured over the long term?
4. Economy. Is the economic viability of the project of operation assured?
5. Traditional and Non-Market Activities. Are traditional and non-market activities in the community and surrounding area accounted for in a way that is acceptable to the local people?
6. Institutional Arrangements and Governance. Are rules, programmes and capacities in place to address project or operational consequences?
7. Synthesis and Continuous Learning. Does a full synthesis show that the new result will be positive or negative in the long term, and will there be periodic reassessments?

The Seven Questions framework was chosen for this study, in part, because it addresses several of the shortcomings of the 10 Sustainability Criteria. In particular, project economics are addressed; for the purposes of this study, I have assumed that question 4 includes assessment of closure financial assurance. There is also a more direct focus on effects on traditional and non-market activities. Question 7 addresses continuous learning and a more comprehensive overall assessment of a project in the context of sustainability, although it does not directly consider feedback and improvement measures to respond to changing conditions and toward informing decision-making. While the Seven Questions framework assesses long-term ecological function, vulnerability and resilience to a greater extent, it does not directly address environmental, social or economic capacity or sustainable resource use levels at a regional level.

In order to analyse the Carmacks Copper Mine project, I reviewed documentation on its assessment and regulatory process, and drew on my experience with the YESAA assessment of the project. Informants were not questioned specifically for information about the Carmacks Copper Mine project.

1.4 Report Organisation

The next section presents context for understanding mining and sustainable development. Section 3 outlines the political and governance factors influencing large-scale mining development in the Yukon. Evaluation of the governance regime using two sustainability frameworks is presented in Section 4; analysis results are discussed and synthesised. Section 5 identifies the salient sustainability issues identified by the analysis and offers suggestions of

¹³ The full questions and criteria are presented in Section 4.2.1.

ways forward based on the literature, interviews and examples from neighbouring Canadian jurisdictions. Conclusions are presented in Section 6.

2 Mining and Sustainable Development

This section provides a context for understanding *sustainable mineral resource development*. It provides the specific interpretation of the term for the purposes of this research, and then elaborates on the definition and conceptualisation of mining and sustainability.

2.1 Sustainable Mining?

Minerals are essential to contemporary society. Many basic needs could not be met today without metals and minerals and the products and services they provide. Putting aside the debate of whether or not we “need” metals and minerals to the extent we demand them, and the current drive to increase mineral reuse and recycling¹⁴, mining for these commodities continues in order to meet the currently growing market demand and it is likely to persist for some time (MMSD, 2002; Spitz & Trudinger, 2009).

Box 2-1 MMSD North America's Case for Sustainability

The North American Working Group of the Mining, Minerals and Sustainable Development (MMSD) project developed the following list of outcomes and benefits of incorporating sustainability into mining practice:

Environment

- Reduced environmental stress during all project phases
- Greater and more effective effort to maintaining/improving biophysical system integrity
- Enhanced ecosystem security and reduced risk

Communities and First Nations

- Reduced booms and bust effects
- Enhanced assurance that a desirable mix of traditional, non-market and market activities will be maintained or developed
- Enhanced assurance that adequate resources will be put to bridging to post-closure in a way that enhances community well-being
- Greater understanding and less suspicion of the project and ongoing knowledge of evolving project conditions
- Enhanced assurance that communities and First Nations will have the opportunity to participate in decisions that affect its future; greater confidence in the future as a result
- Greater confidence that those who carry the social and environmental risks will share in the benefits
- Enhanced education, health and social capital for current and future generations
- Improved security and reduced risk for communities and First Nations

Government

- Improved confidence that a greater range of values have been factored into project-related decision-making processes
- More efficient mix of regulatory, economic and voluntary incentives to achieve policy objectives
- Improved relations between regulators, companies and other stakeholders
- Enhanced respect for government

Industry

- Improved relationships between the company and stakeholders
- Aligned expectations between the company and the community and First Nations
- Avoidance of delays in regulatory approval process
- Avoidance of costly delays due to conflict with stakeholders
- Enhanced respect for company and industry
- Enhanced pride on the part of employees and shareholders
- Greater clarity and security in terms of land access
- Improved access to equity and capital
- Stronger social licence to operate
- Improved overall company security and reduced risk

Source: MMSD, 2002

¹⁴ While these issues are key in addressing the sustainability of mining, they are outside the scope of this paper and will thus not be addressed.

At first glance, *mining* and *sustainability* appear to be incompatible, since inherently mining involves extracting non-renewable resources over a finite period of time, and often permanently changes the landscape. In the context of mining, the concept of sustainability “encompasses many more values than the continuing availability of the resource being developed” (Pring, 1998, as cited in Rajaram & Parameswaran, 2005, p. 2). In view of the relatively short lifetime of mining activities, and the significant long-term impacts they can have on ecosystems, economies and communities, it is imperative that mining projects be designed and implemented to incorporate sustainability considerations. Indeed, the IISD (2002, p. 8) holds that “limited-term mining projects can serve sustainability objectives if they are designed and implemented in ways that build viable long-term capacities, strengthen communities and rehabilitate damaged ecosystems”. Box 2-1 presents some advantages for communities, First Nations, governments and industry of incorporating sustainability into planning and implementation of mining projects.

Sustainability principles can thus be applied to mining activities, and accordingly, it is not a question of attempting to *make mining sustainable*, rather in the context of this discussion it is treated as a question of ensuring that mining *contributes to and does not undermine sustainable development*. Throughout this report, the terms *sustainable development* and *sustainability* are used interchangeably and are intended to be interpreted in this context.

2.2 Defining Sustainability in Mining

Most discussions of sustainable development begin by citing the Brundtland Commission, which defines the concept as, “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (United Nations World Commission on Environment and Development (WCED), 1987). Despite considerable debate about what sustainability is and how it should be achieved, the concept has persisted and disseminated across the world. Subsequent definitions have built from the Brundtland Commission’s starting point.

In the Yukon, the concept of sustainable development has been widely adopted (see also Section 3.2.2). Sustainable development “*means beneficial socio-economic change that does not undermine the ecological and social systems upon which communities and societies are dependent*”, according to the Yukon Umbrella Final Agreement between the federal government, YG and Yukon First Nations (UFA, 1993, p. 7). Sustainability has also been defined in the first Yukon State of the Environment Report 1995 as “*the ability of an ecosystem to maintain ecological processes and functions, biodiversity and productivity over time*” (YG, 1995, p. 132). As stated in the YG’s Integrated Resource Management (IRM) Work Plan, “Sustainable development requires the incorporation of activities which have economic and social value... into overall strategies for land and resource usage”¹⁵.

Sustainable development is often described in the context of three pillars: economy, environment and society. This view considers sustainable development as a three-legged stool—each leg must be long and sturdy enough for the stool to stand on its own (Morrison & Therivel, 2006). Jenkins & Yakovleva (2006) elaborate on the pillars and define sustainability-based development as ensuring that long-term progress is achieved through *appropriate economic development* – investment of generated revenues from mining to ensure the

¹⁵ From *Integrated Resource Management Work Plan (draft)*, prepared by YG IRM Core Team, dated 27 July 2007.

livelihood and development of communities; *environmental protection* – minimization of environmental impact, maintenance of ecosystem integrity, and reclamation of land to allow successive use; and *social cohesion* – minimization of social and cultural impacts, enhancement of benefits, and meaningful stakeholder engagement and participation. A fourth pillar of sustainable development, *governance* or *polity*, is particularly important for mining development. Indeed, although it is not referred to explicitly as sustainable development, the YG has stated its intention to support Yukoners’ growth and prosperity in four key areas: quality of life, a pristine environment, a diversified private sector economy, and good governance (Yukon Government (YG) Finance, 2007, 2009). Good governance means an open, transparent, and accountable system, which promotes participatory decision-making conducted to the greatest extent possible at the local or regional level, and cooperation among stakeholders (MMSD, 2002). The *culture* pillar is also sometimes added to the sustainable development construct to create a five-pillar model of sustainable development (Gibson, 2005) (Figure 2-1).

The five pillar depiction is arguably the most appropriate picture of sustainable development of mining in a northern Canadian context. Mining can have considerable short- and long-term implications for the environment, society and economy. Particularly for large-scale mining, projects require political support, and sustainability depends heavily on fair and stable governance. Furthermore, the potential impacts of mining development activities on First Nations culture is of particular relevance for mining in northern Canada. It is standard practice in several jurisdictions in Canada to consider the impacts of mining development on culture as part of the deliberation process (e.g., Yukon, NWT, Nunavut, and BC). In the NWT, recent initiatives have emphasized the significance of cultural impact assessment in project review and decision-making (see Ehrlich & Sian, 2004; Mackenzie Valley Environmental Impact Review Board (MVEIRB), 2009).

The North America Working Group of the global Mining, Minerals and Sustainable Development (MMSD) project describes sustainability in mining as “*a positive concept that has as much to do with achieving well-being for people and ecosystems as it has to do with reducing stress or impacts... it implies the need to achieve a net environmental and human benefit (or in other words, to maintain or improve human and ecosystem well-being) if mining is to be considered as contributing positively to sustainability*” (MMSD-NA, 2002, p. 7). As Hodge (2004, p. 7) puts it, “the success of a mine... should be judged in terms of its contribution to human and ecosystem well being together. From the perspective of ‘results-based’ management, this is the result to be tested for”.

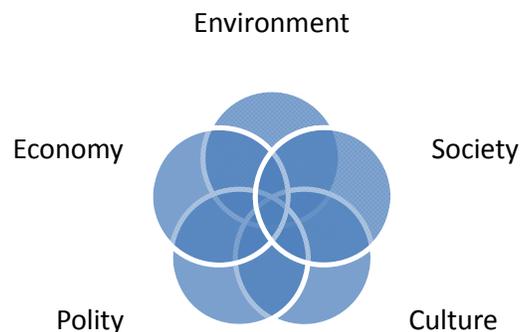


Figure 2-1 Intersecting Pillars of Sustainable Development

Most informants interviewed for this study questioned whether mining projects can be considered sustainable under any circumstances, since they are finite undertakings based on

finite resources. When questioned further, informants consistently defined “appropriate” mining development in the Yukon as development that minimises environmental risks; does not negatively impact the environment in the long term; contributes meaningfully to the local and regional economy; provides jobs and training; respects First Nations culture, way of life and authority; provides direct and spinoff benefits to local communities; and does not leave behind the negative environmental, socio-cultural and economic legacy that mines have left in the past. Critically, several informants pointed out that mining companies leave after the minerals have been extracted or their financing runs out, but Yukoners are left to deal with the damage they leave behind. As one informant put it, “we take on more risk than the mining company ever does” (R. Moar, Lands and Resources Technician, Little Salmon/Carmacks First Nation, personal communication, July 7, 2009).

The majority of stakeholders interviewed highlighted the intrinsic value of the Yukon’s wilderness and natural resources, the key role these components play in Yukoners’ culture and identity, and the importance of preserving them. Informants also consistently raised the importance of minimising impacts on First Nations culture; distributing benefits equitably and appropriately among communities, governments, and First Nations; and ensuring the voices of affected stakeholders are heard and addressed. Several stakeholders also highlighted the importance of fair and transparent decision-making and governance for mining development. The importance of incorporating traditional and local knowledge into decision-making, and of monitoring and adaptively managing environmental and socio-economic effects during mine operation, was also raised.

2.3 Conceptualising Sustainability in Mining

Fundamentally then, the concept of sustainability in mining development implies net benefits, minimisation of negative impacts and trade-offs among environmental, socio-cultural, and economic factors. The idea of “capital” and “capital formation” lies at the heart of sustainable development (MMSD, 2002). The mining and sustainable development discourse is frequently framed around discussion of the contribution to and depletion of various stocks of *capital* (e.g., MMSD, 2002; Peck & Sinding, 2009; Richards, 2006; Rajaram & Parameswaran, 2005). Whereas the pillars describe the necessary “ingredients” for sustainable development, capital formation and depletion conceptualises the net contribution to sustainability of an undertaking.

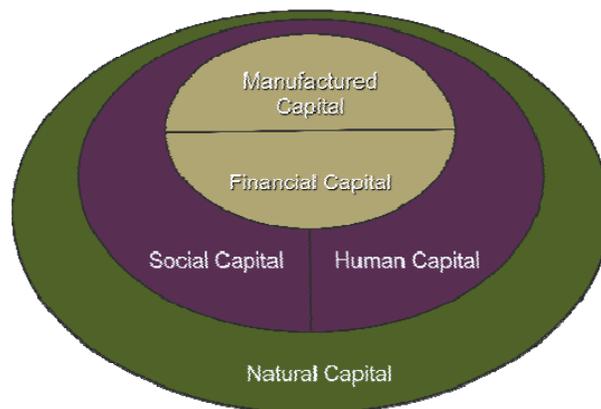


Figure 2-2 Forum for the Future’s “Five Capitals Model” of Sustainability

The Forum for the Future’s *Five Capitals Model* (Figure 2-2) depicts sustainable development in terms of *capital*, defined as any stock capable of generating a flow of revenue or yield (Porritt, 2005). The Model identifies five types of capital:

- *Natural capital* includes the resources used for inputs for economic activities, sinks and environmental services.
- *Human capital* comprises health, knowledge, skills, motivation, emotional and spiritual capacities of individuals.
- *Social capital* concerns the structures, institutions, networks, and relationships that enable people to work together to be more production and which are the basis of economic activity.
- *Manufactured capital* consists of tools, machines, buildings and other infrastructure that contribute to the production process rather than being the output itself.
- *Financial capital* is made up of shares, bonds, or currency that reflect the productive power of the other types of capital and allow other capital to be owned and traded (Forum of the Future, n.d.).

Building upon the Forum for the Future’s *Five Capitals Model* in order to suit mining development more appropriately, the bar graph shown in Figure 2-3 depicts capital formation and depletion in a conceptual “sustainable” mining development scenario. *Cultural capital* can be considered a subset of both human and social capital and is added to reflect the significance of cultural considerations in the northern Canada generally, as described above. *Business enterprise capital* is a form of financial capital, added to emphasize the importance of mining development utilizing existing services or spurring the creation of new businesses in local communities, and the role of business enterprises in economic diversification.

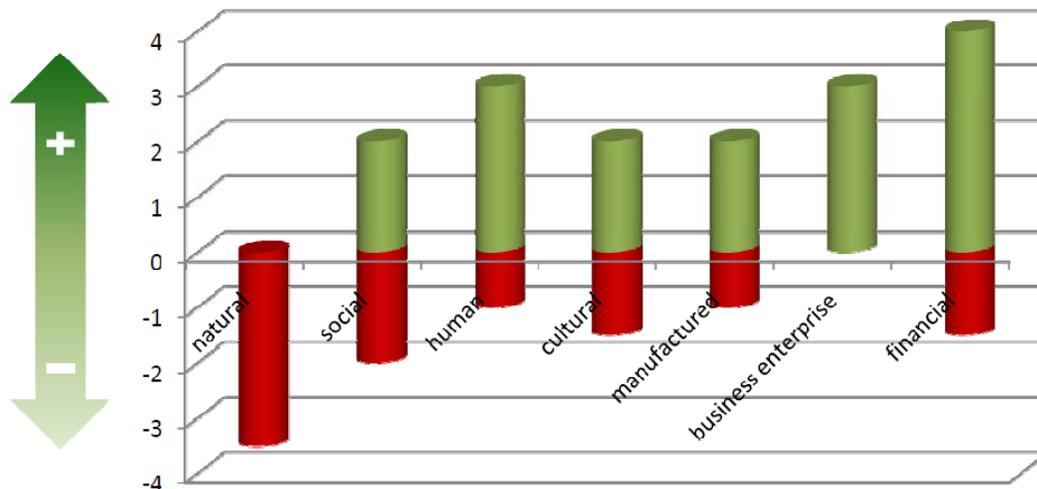


Figure 2-3 Capital Depletion and Formation in More Sustainable Mining Development¹⁶

¹⁶ Note that this graphic representation is not based on actual numeric or monetary values—it is meant only to provide a coarse relative estimation of the formation and depletion of different stocks of capital.

The model depicted in Figure 2-3 is intended to elicit a *systems-thinking* approach to sustainability. From this systems view, it is possible to conceptualise net gains or losses in the stocks of capital contributing to the overall level of sustainability, and that sustainable development can, at least in part, be measured by the overall net gain or loss over time (i.e., $n + s + h + c + m + b + f <> 0$). Mining depletes natural capital (n), but it can generate revenues for governments and communities (f), train and employ people (h), utilise existing local services and create others (b), provide infrastructure for the community (m), promote First Nations values and ways of life (c), and contribute to community organisations (s). And through mitigating adverse environmental impacts, and compensation (e.g., contributing to a regional biodiversity conservation fund¹⁷), the depletion of natural capital can be minimised. The overall objective is to devise ways to maximize capital formation and minimise capital depletion toward achieving net positive “sustainability”. Fundamentally, Figure 2-3 depicts the *costs* of mining relative to the *benefits* – if the benefits outweigh the costs, the project is worth doing. If the gains are great enough and the losses can be reasonably compensated, the project is likely to contribute to sustainable development.

Positive sustainability gains are achieved by capital formation and trade-offs where depletion cannot be avoided. This research accepts that different forms of capital can be traded. This idea of trade-offs and compromises must be applied cautiously, however, considering the fact that many argue there are some types of capital that are non-negotiable or non-tradable (MMSD, 2002). Manufactured and human capital can often be replaced, but some natural capital (e.g., critical habitat for species) and cultural capital cannot. This implies a role for governments and stakeholders in identifying the stocks of critical natural capital may not be used (e.g., Protected Areas), and the levels to which other stocks may be used (e.g., thresholds).

From a broad perspective, trading forms of capital also points to transforming the mineral wealth extracted from natural capital into other durable forms of capital. Here it is apparent there is a role for mining companies, government and stakeholders to develop measures to ensure that mineral wealth is turned into sustainable development – i.e., critical natural capital is maintained or enhanced, and that a nation’s mineral wealth contributes to net environmental continuity and the maintenance or enhancement of individual and community health, well-being and progress. *Enduring* capital is also an important consideration in mining, and is inherent to sustainability. It is critical that when the mine closes, leaving a depleted stock of natural capital and likely reduced ecosystem service/amenity, there is a otherwise legacy to show for it in the form of improved stocks of other forms of capital.

Aiming for “sustainability” by trading capital, minimising depletion and maximizing gains is an approach to resource management that can at best be considered “weak” sustainable development, in which substitution of natural capital with human and other forms of capital, as well as harvesting of resources is permitted (Baker, 2006). If such arguments are accepted, then, “development can be called sustainable as long as total capital grows, or stays at the same level” (Hermans & Knippenberg, 2006, p. 304). In stronger forms of sustainable development, critical natural capital and biodiversity is maintained regardless, no substitution is permitted, and resource use is strictly limited.

¹⁷ This type of trade-off is an example of a *substitution in place*, whereby disturbance in one area is “offset” by addition to natural capital in another area (Gibson, 2005). Thus on a regional level, the impact is “compensated”.

3 Large-Scale Mining in the Yukon

This section outlines the political and institutional conditions that shape the Yukon. It addresses aboriginal issues and rights, presents Yukon's commitment to sustainable development, and reviews the legislative context for large-scale mine development. The planning, assessment and regulatory processes that comprise the governance regime for major mines are explained.

3.1 First Nations

Over half the population of Canada's three northern territories is aboriginal (Statistics Canada, 2006). Aboriginal people have inhabited northern Canada for thousands of years and many still lead traditional lifestyles and practice traditional activities. They are inextricably tied to the environment – the land, water, fish, animals and ecosystems. “From the earliest times the people have defined themselves by the environment and the animals. This basic principle is at the core, right at the very essence of all that is important to us” (Council of Yukon First Nations, n.d.). Aboriginal peoples' traditional knowledge¹⁸ and holistic worldview are the foundation for their traditional culture, lifestyle and resource use practices (Berkes, 2008; Inglis, 1993; Menzies, 2006). Sustainability is at the heart of Aboriginal peoples' traditional approach to resource management. Menzies (2006) indicates that the local level ecological knowledge held by aboriginal populations, rooted in an intimate and long-term involvement in local ecosystems, can be a crucial tool and source of knowledge for sustainable resource use and management and conservation.

Compared with southern Canada, the northern territories also have prevalent socio-economic problems – high unemployment rates, and significant health and well-being issues, for example (Kwiatkowski & Ooi, 2003). Concerns raised by aboriginal people about development projects include not only environmental effects, but also social and economic considerations. The concerns of aboriginal people often centre around the pursuit of traditional livelihoods, land rights, employment, health issues, social diseases and maintenance of their cultural identity – as well as the sustainable development of natural resources in general (Armitage, 2005; Kwiatkowski & Ooi, 2003).

“First Nations are not simply another stakeholder” (YG EMR, 2009). The following characteristics set aboriginal people apart from the wider population as a key stakeholder in mining development (MMSD, 2002, p. 152):

- Identity – political, but also bound to recognition of land, water and animals, kin, social networks, place and spirits;
- Territory – land and the sustained network of social relations that are supported by it;
- Autonomy – decisions based on communitarian consensus and indigenous perceptions;
- Participation – acknowledgement of the right to be involved at all levels in the planning for alternative use of aboriginal lands; and

¹⁸ First Nations traditional knowledge is defined under the Yukon Environmental and Socio-economic Assessment Act as: “the accumulated body of knowledge, observations and understandings about the environment, and about the relationship of living beings with one another and the environment, that is rooted in the traditional way of life of First Nations”.

- Self-determination – the right to possess, control, manage, and develop a territory.

Historically, aboriginal people were generally not recognised as an interest group and engagement in the development process for mining projects was nil or minimal (IISD, 2004). They were not included in the project planning or decision-making processes, and in general did not benefit from local or regional mining development. Their traditional way of life and livelihoods were not respected or accommodated. Today, this situation is steadily improving and aboriginal people play an increasingly important role in the planning and decision-making process of mining projects. To a greater extent, their traditional livelihoods and knowledge are being respected and incorporated into project planning, and aboriginal people are benefiting meaningfully from the development (ibid.).

Ascertained through interviews conducted for this study, review of comments submitted on mining development proposals, and my own experience working with First Nations and communities on non-renewable resource extraction projects, the concerns of Yukon First Nations and communities about mining may include *inter alia*:

- Impacts on land, water and other natural resources
- The preservation of ecological and social systems for future generations
- Responsible resource stewardship—the availability of resources for future generations
- Impacts on First Nations peoples’ culture, including traditional activities and the pursuit of traditional ways of life
- The creation of lasting benefits, such as skills and training development, diversification of local economies
- The distribution of direct and spinoff economic benefits
- The assurance of benefits for future generations
- Effects on community and social structure and dynamics

3.2 Commitment to Sustainable Development

3.2.1 Federal

Canada is actively working to support growth and development of its mining industry, but the federal government has clearly indicated its intentions that development be accomplished with sustainability principles in mind. “Canada is committed to ensuring that the future development of its natural resource base is consistent with the principle of sustainable development” (NRCAN, 2000, p. 14). The *Minerals and Metals Policy of the Government of Canada: Partnerships for Sustainable Development*, drafted in 1996 (GC, 1996), builds upon the definition of sustainable development presented in the Brundtland Report in an attempt to define sustainability in the context of minerals and metals, and addresses issues such as reclamation, land access, protected areas, and aboriginal peoples’ rights (Hilson & Murck, 2000). Canada’s *Minerals and Metals Policy* incorporates the following aspects which lend themselves readily to sustainable development: the polluter pays principle, the precautionary principle, life-cycle management, risk assessment and risk management, and pollution prevention (GC, 1996). In collaboration with the national industry association, the Mining Association of Canada, the Whitehorse Mining Initiative Leadership Council Accord (WMI Leadership Council, 1994) was adopted, which calls for *inter alia*, guaranteed stakeholder participation; recognition and

respect for Aboriginal treaty rights; adoption of sound environmental practices; and establishment of ecologically-based protected areas.

3.2.2 Territorial

Commitment to sustainable mining development at the Territorial level has been expressed formally through several legislative and political channels¹⁹:

YG Department of Energy, Mines and Resources (EMR) EMR's mandate is to responsibly manage and support the sustainable development of Yukon's energy and natural resources; its vision is to manage and support the development of our natural resource wealth in partnership with Yukon people and industry (Yukon Government (YG), 2008).

The EMR's Integrated Resources Management (IRM) Strategy²⁰ includes the goal of practicing sustainable resource development so as to maintain the natural quality of the environment.

Quartz Mining Act (QMA) *Part 2 Land Use Regulation:* The purpose of this Part is to ensure the development and viability of a sustainable, competitive and healthy quartz mining industry that operates in a manner that upholds the essential socio-economic and environmental values (YG & Council of Yukon First Nations (CYFN), 2003a, sec. 130).

UFA *Chapter 11 Land Use Planning:* One of the objectives of this chapter is to ensure that social, cultural, economic and environmental policies are applied to the management, protection and use of land, water and resources in an integrated and coordinated manner so as to ensure Sustainable Development (GC, CYFN, & YG, 1993, sec. 11.1.1.6).

Chapter 12 Development Assessment: One of the objectives of this chapter is to provide for a development assessment process that protects and maintains environmental quality and ensures that Projects are undertaken consistent with the principle of Sustainable Development (GC, CYFN, & YG, 1993, sec. 12.1.1.4).

YESAA One of the purposes of this Act is to ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities and their residents, and societies in general, depend (GC, YG, & CYFN, 2003, sec. 5(2)(e))²¹.

Yukon Mine Site Reclamation and Closure Policy The vision of this Policy is responsible and progressive mine reclamation and closure in the Yukon, conducted in a manner that fosters sustainable development and a healthy environment (YG,

¹⁹ This list is not intended to be exhaustive; rather it is intended to be illustrative of the types of sustainability commitments.

²⁰ Taken from the unpublished *Integrated Resource Management Work Plan*, prepared by YG IRM Core Team, dated 27 July 2007. This Work Plan is not publicly available.

²¹ Note that this is the definition of sustainable development in the UFA.

2006, p. 3).

3.3 Governance Regime for Large-Scale Mining

This section overviews the elements of the governance regime and two factors that influence the governance process considerably: devolution and the UFA. Several informants explained that the Yukon context is largely shaped by the UFA and devolution. The mine development process is also outlined here.

3.3.1 Political System

A brief description of the political system is necessary to provide context for understanding resource management and decision-making processes. Canada has a parliamentary system; its federalist structure divides government responsibilities between the federal government and the Canadian provinces and territories. In the Yukon, political parties are elected to the Yukon Legislative Assembly. A general election usually takes place every three to five years. The last general election was October 10, 2006; presently the Yukon Party (conservative) is in power.

3.3.2 Devolution

Devolution is the transfer of governmental power from a central government to a regional authority. Unlike Canada's provinces, its three northern territories have been governed by the federal government. Among the three northern Canadian territories, the Yukon is presently the only one with powers now devolved to its territorial government. The Devolution Transfer Agreement was enacted to transfer authority for administration and control of public (i.e., state) lands, water and renewable and non-renewable natural resources from the federal government to the territorial government. This authority includes law-making powers and resource revenue (e.g., royalties) collection. This means that since devolution took effect in 2003, the YG has been the primary decision-maker and governing authority in the Yukon.

Devolution resulted in the creation of new legislation pursuant to the new government. Significantly, the Devolution Transfer Agreement stipulated that territorial legislation must “mirror” the existing federal legislation. Consequently, the acts and regulations governing mining development were “mirrored” to their federal predecessor. Some amendments have been made to the legislation since this requirement was enacted.

3.3.3 Umbrella Final Agreement

The Yukon Territory is at the forefront of aboriginal land claim negotiations in Canada (YG, 2009). The 1993 Yukon Umbrella Final Agreement (UFA) between the Government of Canada, the Council of Yukon First Nations (CYFN) and the YG established a comprehensive framework for aboriginal rights and title to land and resources, and provisions for self-government. Presently 11 of the 14 Yukon First Nations have finalized their land claims and have *Final Agreements* and *Self-Government Agreements* pursuant to the UFA (YG, 2009). These Agreements give First Nations people specific governance powers in their “Traditional Territories” and on their “Settlement Lands”. Under these Agreements, First Nations have surface rights (and sub-surface rights in some areas) and decision-making authority on their Settlement Lands, and generally have a say in how lands and resources are managed in their Traditional Territories.

3.3.4 Governance Instruments

The governance regime for large-scale mining in the Yukon consists broadly of planning, assessment and regulatory components. Each component has one or more instruments or tools to fulfil its respective mandate. As explained previously, First Nations governance systems will not be directly addressed in this study. The three components are intended to function as an integrated, complementary system.

Planning Instruments

The main planning instrument in the Yukon is regional land use planning established in Chapter 11 of the Umbrella Final Agreement (UFA). Land use planning is a process for developing strategies around where it is appropriate to develop, and the types of activities that are permitted in certain areas, to feed into governance for development. The Chapter 11 land use planning process is intended to be participatory and forward-looking, to involve First Nations peoples and traditional knowledge meaningfully, and to directly inform development decision-making.

Development Assessment Process

Chapter 12 of the UFA outlines the Development Assessment Process for development projects proposed anywhere in the Yukon. The YESAA is the legislation established pursuant to Chapter 12. The YESAA Process came into force in 2005 and is administered by an administrative tribunal, the Yukon Environmental and Socio-economic Assessment Board (YESAB). The YESAB is comprised of First Nations and non-First Nations members appointed by the Council of Yukon First Nations, and the federal and territorial governments. It is intended to be an independent assessment body operating at arm's length from government authorities. The YESAA Process is decentralized and adopts a local-level, shared approach to natural resources management. The details set out in the UFA were intended to create a broader, integrated development assessment framework (SENEC Consultants Ltd, 2009). This new regime is intended to more effectively represent the interests of Yukon people and protect its environment, society and culture, and economy.

Under the legislation, proposed development projects undergo a “screening” that includes assessment of socio-economic aspects, as well as the more conventionally considered environmental aspects, prior to undergoing the Regulatory Process. The YESAB employs a conventional impact assessment²² approach to conduct the project screenings, whereby potential adverse environmental and socio-economic impacts are identified, and measures are put forth to mitigate them. The YESAA stipulates that other considerations, such as assessment of project alternatives, cumulative effects and effects of the environment on the project (e.g., natural disasters, climate change) be taken into account as well. There are requirements under the Act for the company to consult with First Nations and communities potentially affected by the project. There are two opportunities for the public to comment on a project during an Executive Committee-level screening: first on the company's proposal and

²² The term *impact assessment* is used interchangeably with *environmental assessment* among practitioners and in the literature. The term *environmental assessment* or *environmental impact assessment* has evolved in Canada (and many other countries) to include the consideration of socio-economic impacts alongside environmental effects (MVEIRB, 2004). *Impact assessment* is used here to avoid confusion, as the YESAA Process clearly assesses both environmental and socio-economic impacts.

subsequently on the draft Screening Report produced by the YESAB. All comments received must be considered. The YESAB Online Registry is an interactive database for stakeholders and the public to track a project review. All information generated during the YESAA Process is available on the Registry, including documentation from the company, comments from stakeholders, and expert input.

The output of a YESAA screening process is a Screening Report containing the environmental and socio-economic assessment conducted by the YESAB, complete with recommended measures to address potential impacts of the project and a final recommendation of whether or not the project should be allowed to proceed. Critically, these recommendations are non-binding and put forth to decision-makers to consider the YESAB's findings and issue a final decision in the form of a Decision Document. The terms and conditions of project authorisations issued through the Regulatory Process are based upon the Decision Document issued under the YESAA Process.

There are three levels of screenings under the *YESAA* triggered by the size, complexity and or controversial nature of a project. Major mines undergo more comprehensive assessment at the Executive Committee or Panel of the Board level. There have been only two screenings conducted at the Executive Committee-level and none at the Panel of the Board level.

Regulatory Process

Construction, operation and closure of major mines in the Yukon is governed by three main regulatory instruments²³: the *Quartz Mining Act* (QMA) (YG & CYFN, 2003), administered by the YG; the *Waters Act*, administered by the Yukon Water Board, an independent administrative tribunal (YG & CYFN, 2003b); and the *Territorial Lands (Yukon) Act*, administered by the YG (YG & CYFN, 2003b). Authorisations issued under these pieces of legislation stipulate the terms and conditions of mine construction, operation, and closure; monitoring and inspection requirements; and financial security requirements.

A Quartz Mining Licence under the QMA is required for major mine development and production, and includes provisions regulating these activities, including (YG EMR, 2009):

- the area and mineral deposits to be mined;
- design of mine workings, including underground and open pit development and production, and waste dumps;
- allowable mining and milling rates;
- site infrastructure, including buildings, roads, fuel storage, etc.;
- solid waste disposal;
- monitoring programs;
- reclamation, including slope stability, erosion control, and re-vegetation;

²³ Note that other authorisations are normally required depending on project details. Environmental protection is achieved through other pieces of legislation, such as the *Yukon Environment Act* or the federal *Fisheries Act*. In order to be consistent with the analysis undertaken by Craig (2000), I have chosen to focus on only these three main regulatory instruments.

- financial security; and
- annual reporting requirements.

The *Territorial Lands Act* generally applies to land tenure, land clearing, excavation, construction of access roads and other off-site auxiliary infrastructure and activities located on state-owned land outside a company's mineral claims. A surface lease under the Act may be sought for permanent off-claim infrastructure.

Chapter 14 of the UFA outlines the process for administering water resources in the Yukon. A Water Licence under the *Waters Act* is required for large-scale mines, which controls water use and discharge into Yukon waters. The water licencing process conducted by the Yukon Water Board is intended to be comprehensive, open and transparent. Licencing for large-scale mining projects involves a public hearing.

The regulatory authorities responsible for decision-making on a large-scale mining project generally include the YG, federal agencies, and First Nation government(s) (if the project is located on certain categories of First Nation Traditional Lands). The YG Department of Energy, Mines and Resources (EMR) is the primary regulatory authority for mining development within the Territorial Government.

3.4 Supra-regulatory Instruments

Supra-regulatory agreements (SRAs), such as impact and benefits agreements (IBAs), socio-economic agreements, participation agreements and environmental agreements, are mechanisms that are external to governance instruments. They are private contracts negotiated generally between a company and the affected First Nation(s)²⁴ to address aspects of resource development projects, such as socio-economic issues, provision of economic and related benefits, and environment management measures, among other provisions. SRAs are increasingly recognized as part of the standard package of regulatory and benefits requirements associated with major mining projects in Canada (Fidler, 2008; Kennett 1999). "IBAs have proven one way to support equity in terms of sharing resources and responsibility and sustainability in the sense of integrating Aboriginal input into the social, environmental and economic decision making processes" (Fidler, 2008, p. 28). The provisions laid out in SRAs may address gaps in impact assessment processes (Galbraith, Bradshaw, & Rutherford, 2007), provide follow-up mechanisms to impact assessments (GNWT, 2007), and supplement the conditions of project authorisations.

Kennett (1999) describes two main purposes of SRAs: (1) to address the concerns of Aboriginal people pertaining to the adverse effects of large-scale mineral development on their communities, culture, and traditional pursuits and ways of life; and (2) to ensure that local people secure short- and long-term benefits from mineral development in their region. Further, Kennett (1999) outlined a number of goals that provisions in SRAs aim to achieve:

- Promote capacity building of aboriginal and local employees to participate in mining (e.g., through training provisions,
- Protect aboriginal cultural values, traditional activities and lifestyles

²⁴ SRAs may also involve other parties, such as governments and communities.

- preferential hiring)
- Promote development of aboriginal businesses and economic diversification (e.g., through specialised contracting procedures, joint venture arrangements, etc.
- Help communities prepare for mine closure
- Address environmental and socio-economic monitoring requirements

Environmental agreements may be formulated which addresses specific environmental management issues, particularly local and aboriginal involvement in monitoring and follow-up activities. Environmental agreements have been negotiated for major resource projects in a number of Canadian jurisdictions during the last decade (O’Faircheallaigh, 2007).

3.5 Mine Development Process

The mining company is responsible for preparing a project proposal that meets the requirements of the YESAA, especially in terms of addressing the mine’s potential impacts on environmental and socio-economic components. Stakeholder consultation is a requirement of the screening process and special attention to First Nations’ considerations and the incorporation of traditional knowledge into the process is encouraged. The YESAB screens, or assesses, the project proposal and develops a screening report, with a final recommendation of whether or not to approve the project, and terms and conditions under which the project should be approved (if applicable). The decision-makers take YESAB’s recommendations into consideration and issue a final decision. Upon approval, the project enters the permitting/licensing phase, whereby the company seeks to obtain the required project authorisations. Once authorisations are issued, mine development can proceed as per the terms and conditions of the permits and licences. Figure 3-1 depicts the development process.



Figure 3-1 Simplified Mine Development Process

4 Evaluating the Governance Regime

The Yukon's governance regime for large-scale mining is analysed for its potential contribution to sustainable development by applying two sustainability frameworks. First, the governance instruments are analysed with the 10 Sustainability Criteria; subsequently, the processes are examined further using a sustainability assessment framework to "test" the first major mine to undergo the reformed governance regime. The analyses are synthesised at the end of this section.

4.1 10 Sustainability Criteria

When Craig's 10 Sustainability Criteria were applied to the planning, assessment and regulatory tools of the governance regime operational in 2000, it was determined that, "there are many shortcomings with the existing tools. None of the instruments was found to be a strong contributor to the achievement of sustainable development. Similarly, taken together, they do not offer strong contributions to progress toward sustainability" (Craig, 2000, p. 154). The analysis revealed "significant need to make improvements and necessary changes both within and across the instruments of governance" (p. 128).

As the following analysis shows, while there have been considerable changes to the governance regime since 2000, primarily through devolution and the enactment of the YESAA Process, there remain several shortcomings when the 10 Criteria are applied to assess its present contribution to sustainability. While direct sustainability progress is limited, several interview informants pointed to achievements in governance in line with sustainability principles, which improve the foundation for sustainable development. Since 2000, one land use plan has been finalised and another is in draft form. Four more First Nations have completed their Final Agreements and have thus been instituted as self-governments. The seven predecessor First Nation governments have had almost 10 more years to establish their governing legislation, policies, protocols and practices. Notable changes have also been made through the Quartz Mining Act (QMA). Furthermore, the YESAA Process has been in practice for 5 years and is presently undergoing an independent *Five-Year Review*, as stipulated in the UFA.

This section analyses the current governance regime for its contribution to sustainable development through the application of Craig's (2000) 10 Sustainability Criteria.

4.1.1 Analysis and Discussion

The analysis using the 10 Sustainability Criteria is conducted in two stages. First, each governance instrument is examined individually; subsequently, the overall governance regime is considered. Table 4-1 presents an overview of the analysis results. The analysis is detailed in Table 4-2, Table 4-3, and Table 4-4.

Table 4-1 Summary of Results of Application of the 10 Sustainability Criteria to the Governance Regime^{25,26}

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall
1. Incorporates a foundational sustainability ethic in legislation.	a. Does legal and regulatory framework specify sustainability objectives supported by sustainability principles and supporting policies?	P/P	N/P	P weak
	b. Is lifecycle (cradle to grave) analysis integral to assessments and decisions?	P/P	P/P	P
2. Integrates planning, assessment and regulatory framework including monitoring and enforcement.	a. Are processes complementary and well coordinated, with strong linkages (e.g., approvals not made in isolation)?	Y/P	P/P	P
	b. Are processes streamlined and efficient (e.g., one window, clear structure and process, includes timelines, avoids jurisdictional overlap)?	Y/Y	P/P	P strong
3. Ensures effective citizen participation and decentralised decision-making.	a. Is there early and ongoing involvement of citizens enabling response before decisions are taken?	Y/Y	Y/P	Y
	b. Are communities given a decision-making role and if so, are mechanisms established to ensure ecological and socio-economic integrity is not sacrificed?	P/P	P/P	P
4. Assesses alternatives and technology.	a. Is assessment of alternatives and technology mandatory?	P/P	N/N	P
	b. Is an assessment conducted to ensure that the proposal will either preserve or enhance the ecosystem and not reduce biodiversity?	P/P	N/N	P weak
	c. In light of technological advances, are provisions for modification built in?	N/N	P/P	P
5. Adopts adaptive and interactive approaches and addresses maintenance or enhancement of ecological functions.	a. Do flexible mechanisms exist to ensure maintenance or improvement of ecological functions, including no net loss of renewable resources and do they address ecological responses?	P/P	P/P	P
	b. Are there clear linkages between outcomes and policy/regulatory responses?	Y/Y	P/P	P
	c. Are mechanisms or strategies in place to facilitate reclamation of abandoned sites?	N/N	N/Y	Y

²⁵ [Y=yes P=partially N=no; **bolded** results pertain to the author's analysis; un-bolded results are Craig's (2000) findings]

²⁶ Note that because Craig's analysis included the planning instruments, the overall ratings are not comparable.

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall
	d. Is it mandatory to consider traditional and local knowledge?	Y/Y	N/N	Y
6. Respects uncertainty and risks.	a. Are contingency plans and risk analysis integral to requirements and is the precautionary principle applied?	N/N	P/P	P weak
	b. Are compliance and effects monitoring required and are mechanisms for responding clearly established?	P/P	P/P	P
7. Assesses transboundary and cumulative effects.	a. Is it mandatory for these aspects to be assessed?	Y/P	N/N	P weak
	b. Does comprehensive baseline information exist for monitoring effects?	P/P	P/P	P weak
	c. Is there provision for long-term monitoring of effects and subsequent modification if necessary?	Y/Y	P/P	P
8. Promotes community self-reliance and benefits.	a. Are community benefit agreements requirements or long-term participation agreements advocated?	N/P	N/N	P weak
	b. Do training programmes exist for affected communities?	N/N	N/P	P
	c. Are commitments enforced and monitored?	N/N	N/N	N
	d. Is evaluation of equity effects mandatory?	N/N	N/N	N
9. Respects First Nations as well as community interests and values.	a. Are mechanisms in place to ensure that First Nation governments and communities can articulate their own interests and values to established processes?	Y/P	Y/P	P
	b. Are culture, traditions, local knowledge and priorities analysed and considered in decision-making processes?	Y/P	P/P	P
	c. Are mechanisms established which guarantee participation in planning, decision-making and monitoring arrangements?	P/P	P/P	P
10. Contributes to economic diversification and stability.	a. Is a mandatory assessment of community and regional socio-economic circumstances required?	N/P	N/N	P weak
	b. Do processes promote community stability and broadening of the economic base?	N/N	N/N	N
	c. Are community economic or resource management plans considered in assessments and decision-making processes?	N/P	N/N	P weak

Governance Instruments

Planning Instruments

Craig (2000) determined the planning process to have a relatively strong potential contribution to sustainable development. Craig (2000) assessed regional land use planning processes established by the UFA, and the Yukon Protected Areas Strategy (YPAS). Several elements of the instruments were cited that offer a “strong contribution” (Craig, 2000, p. 118), such as the early and ongoing involvement of stakeholders before decisions are taken. Important shortcomings were identified in the planning instruments, including lack of a clear requirement to assess cumulative or transboundary effects, and the lack of requirement for community benefit or participation agreements.

Craig (2000) analysed the planning instruments from a partially theoretical perspective, as no land use plans had yet been established. While the YPAS had been instituted at the time, it was shelved in early 2003, then eliminated in early 2004 under the current political administration (A. Jones, Park Planner, Yukon Parks, Department of Environment, personal communication, September 11, 2009).

To date, only one land use plan has been established in the Yukon for an area covering about 12 percent of the Territory (North Yukon Planning Commission, 2009). While the finalisation of this plan represents a considerable success for the Yukon, the plan has limited relevance to the mining industry, as the region covered by the plan has very few active mineral claims. Many interview informants expect the implementation of subsequent plans to take several years. Thus, although land use planning has an important role to play in contributing to sustainable development, the instrument may not realise this function for some time to come.

It is worth noting that another planning mechanism exists within the UFA: the provision of Special Management Areas (Ch. 10). These protected areas can be established within a First Nation Traditional Territory as national wildlife areas, national parks, habitat protection areas, national historic sites, or other type. There are presently four SMAs in the Yukon (Yukon Government (YG) Environment, 2009). The SMA management plans restrict or stipulate provisions controlling mineral development within the area boundaries. The regions covered by the existing SMAs are of relatively little relevance for mining development, however, as they are not in areas of intense mineral exploration (YG EMR, 2009).

The planning instruments in the Yukon are thus, at present, not fulfilling their potential to contribute to sustainable development of large-scale mining. Since the focus of this work is on the sustainability contribution of the governance system *in practice*, the following analysis does not focus on planning instruments.

Development Assessment Process

Craig (2000) analysed the assessment process pursuant to the federal Canadian Environmental Assessment Act (CEAA), which was the primary impact assessment instrument applied at that time. Interestingly, Craig (2000) also analysed the Development Assessment Process established under the UFA, although its corresponding legislation (the YESAA) was not yet instituted. The now-enacted YESAA Process is analysed against the 10 Sustainability Criteria in this work to understand how it contributes to sustainability in practice. The CEAA was replaced by the YESAA; thus, the CEAA is not analysed in this work.

Craig's analysis outcomes are largely consistent with the findings of this work (see Table 4-1). In practice, key strengths of the process in contributing to sustainability, as assessed through the application of the 10 Criteria, include facilitating stakeholder participation and decentralised decision-making; establishing a clear and efficient assessment process with some feedback loops and relatively unambiguous linkages between outcomes and responses. Provision for effects monitoring, and assessment of cumulative and transboundary effects are strengths of the Process, however, each requires improvements in practice to more fully contribute to sustainable development.

Key weaknesses include the lack of promotion of community and First Nation self-reliance and benefits; little attention to economic diversification and stability; and inadequate consideration of uncertainty and risks. The lack of clearly defined underlying sustainability principles and objectives, regulation, policies, or protocols, is a significant hindrance to the sustainability contribution of the assessment process.

The YESAA Process lacks supportive mechanisms (e.g., principles, objectives, policies and plans), and sustainability is not presently explicitly considered in its application. Interestingly, the explicit reference to sustainable development made in the objectives set out in the UFA was not directly transposed to the YESAA. Rather, the YESAA includes the definition of sustainable development in the UFA in its purposes (Section 5.2). The term sustainable development or sustainability is not included in the YESAA.

Mechanisms are in place within the YESAA Process to facilitate First Nations and communities communicating their interest and values; however, to some extent, external factors such as inadequate capacity on the part of First Nations and communities interfere with their success in articulating these aspects (SENES Consultants Ltd, 2009). Importantly, while the YESAA does include relatively extensive provision for stakeholder input and participation, the draft *YESAA Five-Year Review* found, "First Nations contend that the way in which YESAA is implemented fails to give their governments or citizens the substantive role envisioned in the UFA and in the Act, at all stages of the YESAA. First Nations suggest that they are marginalized and that their perspectives and input are overlooked or discounted in the development assessment process." (p. 85-86).

Sec. 79(c) of YESAA states that YESAB recommendations for projects proposed for First Nations Settlement Land, where First Nations are a decision-maker, may be varied if they are "so onerous as to undermine the economic viability of the project". Decisions that result in accepting potential environmental or socio-economic impact in the interest of economic benefits undermine sustainability and may undermine the interests of First Nations governments.

The draft *YESAA Five-Year Review* found that many First Nations do not feel their traditional knowledge is incorporated into the assessment process adequately. This view is also held by some First Nations representatives interviewed for this study. YESAB practitioners point out that there is inadequate traditional knowledge baseline information to feed into assessments.

The YESAA is progressive when compared with other impact assessment legislation in Canada in terms of its explicit attention to socio-economic²⁷ effects; however, in practice, the

²⁷ Social, cultural and economic aspects are grouped together as "socio-economic" components in the YESAA, thus the term *socio-economic* is used in this work.

treatment of social, cultural and economic impacts of mining projects is lacking. The draft YESAA Five-Year Review found that there is “considerable dissatisfaction with the quality of the socio-economic assessments being conducted by YESAB” (SENES Consultants Ltd, 2009, p. 56), pertaining to the lack of consideration of benefits, unclear significance determination of effects, and the underlying lack of adequate socio-economic baseline data. A critical underlying factor is the YESAB’s practice of generally *not* considering positive effects or benefits²⁸. In practice, measures around socio-economic impacts are put forth to decision-makers as non-binding suggestions, rather than binding recommendations. This is largely due to a lack of regulatory instruments to “carry” such recommendations through to project authorisations.

Regulatory Process

In 2000, application of the criteria to the three key regulatory instruments, the QMA, the Waters Act and the Territorial Lands Act, revealed this mechanism to be least effective among the planning, assessment and regulatory instruments in terms of its contribution to sustainable development (Craig, 2000). The regulatory instruments were found to partially contribute to several of the criteria, but overall, they did not offer a strong contribution to sustainability. Craig (2000) found that key weaknesses pertained to:

- the lack of foundational sustainability in the legislation;
- lack of supporting regulations and policies;
- failure to require the assessment of alternatives and technology;
- lack of promotion of community self-reliance or benefits and failure to ensure contributions to economic diversification and stability.

The findings of this analysis with respect to the regulatory process largely mirror those of Craig (2000). Notable improvements have been made to the regulatory process that contribute to its sustainability contribution, which are not fully detectable by this analysis. These changes have come about primarily through amendments and enhancements to legislation and changes to the way mining development is managed by the YG (primarily EMR), the primary administrator of the regulatory legislation governing mining development. They mainly affect the criteria concerning *foundational sustainability ethic* (1), *governance process integration* (2), and *adaptive approaches to address ecological components* (5).

Some informants interviewed consider the QMA to be antiquated legislation unsuited to today’s conditions in certain respects, as it was first drafted near the beginning of the last century. While some amendments have been made to update certain sections, revision of the Act is ongoing. Some of the inadequacies identified by Craig (2000) have subsequently been at least partially addressed by amendments to the QMA and the establishment of additional regulation and one notable policy under the Act (L. Craig, private consultant, personal communication, July 29, 2009). Perhaps most notably, the YG developed the Yukon Mine Site Reclamation and Closure Policy (YG EMR, 2006), addressing several sustainability issues, such as, closure and reclamation planning, progressive reclamation (i.e. reclamation measures conducted during mine construction and operation), financial security, establishment of

²⁸ The YESAB has generally taken the position that positive effects are considered only if they directly mitigate an adverse effect.

closure objectives, and post-closure monitoring. Significantly, the Policy states that financial security retained by YG must be equivalent to site liability at all stages during the mine life—i.e., 100 percent of the required security to remediate and close the site at any given point during mine life.

The Security Regulation pursuant to the QMA, instituted in 2007, authorises the YG to consider “the costs that would be incurred by the [YG] if it was required to reclaim the site of development and production, including costs associated with post-closure measures, monitoring and on-going maintenance to address mitigation of any significant adverse environmental effects from development and production” (s. 3[c]) in determining the amount security to retain. Previously, the QMA was vague about these requirements and this regulation helps contribute to long-term economic stability.

The YG has proposed changes to the royalty regime under the QMA, which are presently out for public consultation. The changes include a provision to allow contributions made by a mining company to community infrastructure or economic development to be deducted from the royalties the company is required to pay to the Territory. The Community Economic Development Allowance provides an incentive for companies to make these types of contributions. The intention of this provision is to promote economic diversification and stability. Several interview informants expressed concern about other aspects of the proposed changes to the royalty regime, which lies outside the scope of this work.

The Devolution Transfer Agreement included provisions for the federal government to take on responsibility for abandoned mine sites permitted while the GC was the primary regulator. Abandoned mines are an important sustainability issue in the Yukon, and this action represents an important step toward sustainable development.

Several EMR informants highlighted the role of the adaptive management approach practiced by regulators in achieving some sustainability outcomes (although sustainability outcomes are not explicitly defined). Changes have been made to the QMA giving the “Chief of Mining” more authority to make decisions, which in practice, means relatively minor licence amendments and related issues can be addressed in a more efficient manner (i.e., without seeking Ministerial approval). This change is positive from the perspective of facilitating adaptive management; however, it might also have negative consequences in terms of sacrificing transparency and consistency to some degree. To date, no policies or protocols have been developed explicitly around adaptive management; however, an adaptive management approach is advocated in the Yukon Mine Site Reclamation and Closure Policy (YG, 2006).

In 2005, the YG approved its IRM Strategy to be implemented across government activities. Its vision states that, “By 2008, the Yukon Government will have a fully integrated approach to its resource management activities that will make decision-making more effective and promote sustainable development”²⁹. Specific sustainable development objectives or indicators were not defined, but the IRM approach is promoted as a management tool to achieve sustainable development as an outcome. One of the IRM principles effectively reflects sustainability aims: “Resource management decisions should consider and reflect impacts and benefits of all resource sectors at the local, regional, national and international level from the

²⁹ From *Integrated Resource Management Work Plan*, prepared by YG IRM Core Team, dated 27 July 2007.

present and into the future”. The last IRM goal is to “practic[e] sustainable resource development so as to maintain the natural quality of the environment”.

Unfortunately, however, informants indicated that dissemination of the IRM approach across government has been limited, and implementation of the IRM Work Plan has been relatively weak. As part of the IRM Work Plan, Best Management Practices have been developed for the oil and gas sector only, and the proposed Cumulative Effects Management Framework has not been finalised or implemented. Furthermore, the IRM documentation is not currently available to the public. While the IRM approach has considerable potential as a tool for sustainable development, as it is currently applied, it is not facilitating sustainability progress within the regulatory process.

Although there are not established timelines for the regulatory process, it does function in a reasonably streamlined and efficient manner, and there is focus within YG to continually improve streamlining and efficiencies, as evidenced by the goals of the YG Integrated Resources Management (IRM) strategy, approved in 2005. YG informants indicated that decision-making, and management of large mining projects is coordinated among departments by various mechanisms, such as the Development Assessment Branch of the YG Executive Council Office, tasked with coordinating YG participation in the YESAA Process, and the Deputy Ministers Oversight Committee, which brings together the heads of YG departments affected by a large-scale project.

Despite some progress toward sustainability through modifications to the regulatory system, there remain important shortcomings. The failure to require the assessment of alternatives and technology, lack of promotion of community self-reliance or benefits and failure to ensure contributions to economic diversification and stability remains, and additional supporting regulations and policies are required to increase the regulatory instruments’ contribution to sustainability. Attention to socio-economic considerations by the regulatory process remains weak. There are very limited legislative mechanisms to implement measures to protect or promote socio-economic considerations, or manage socio-economic impacts of mining development.

Overall Governance Regime

The governance instruments are intended to function in concert. The planning instruments, the YESAA Process, and the suite of regulatory mechanisms are intended to function in an integrated and complementary way to govern large-scale mining development. With respect to sustainability, this integrated and complementary nature can result in one piece of the governance system filling the gaps of another. An example of this is the *early and ongoing involvement of citizens before decisions are made*, where shortcomings in the regulatory process are addressed in the assessment process, leading to an overall positive contributing factor to sustainability. Unfortunately, as discussed above, due to the inadequate implementation of land use planning, this mechanism does not contribute to the overall governance regime (discussed further in Section 5.1).

When the 10 Sustainability Criteria are applied to the assessment and regulatory processes together, there are some aspects working to contribute to sustainable development to varying degrees and several aspects that require enhancement to reach this goal. The following discussion overviews the analysis through the categorisation used in Craig (2000), whereby the criteria are classified under: *Comprehensive Public Policy Framework* (criterion 1-3); *Ecological Integrity* (criterion 4-7) and *Socio-economic Integrity* (criterion 8-10).

Comprehensive Public Policy Framework

This group of criteria includes (1) incorporates a foundational sustainability ethic in legislation; (2) integrates planning, assessment and regulatory framework; and (3) ensures effective citizen participation and decentralised decision-making. The analysis outlined in Table 4-2 shows that all the criteria are at least partially met; thus, the assessment and regulatory processes can be considered to be contributing to sustainable development to some degree in this regard.

While all the instruments' guiding legislation has a "foundational sustainability ethic", there are no supporting policies or regulations that definitively describe guiding sustainability principles or objectives. As previously discussed, some important changes have been made to the regulatory regime that support sustainable development. Indeed, the YG Mine Reclamation and Closure Policy comes closest to this aim and supports sustainable development.

Importantly, there are no overarching strategic sustainability principles, goals or objectives guiding mining development in the Yukon, and which would underpin the three main governance instruments.

The assessment and regulatory processes are also reasonably integrated and streamlined. Decision-makers issue a "decision document" based on the outcomes of the YESAA Process and which forms the basis for project authorisations. Under the YESAA, the Yukon Water Board cannot issue a Water Licence or set terms of a Water Licence that are contrary to a decision document. While decision-makers have the authority to reject or vary recommendations from the YESAA Process, the terms and conditions put forth by the YESAB have been accepted in practice for large-scale projects. It is not required that the findings generated through the YESAA Process are taken into account during the Water Licencing process, which implies significant redundancy in the project review procedure. In practice however, the YESAB's work has been formally submitted to the Water Board by the proponent.

Formerly, government authorities conducted project screenings under the federal Canadian Environmental Assessment Act (CEAA) and staff who participated in the assessment phase often contributed to the licensing process (Craig, 2000). Informants indicated that isolation of the assessment process from the regulatory process, which followed the enactment of the YESAA, has resulted in a somewhat less coordinated process overall. While the independence of the YESAB may have compromised the continuity that existed when government authorities conducted project screenings, it is on the other hand, advantageous because the YESAA Process is independent and arguably more transparent. In practice, there is collaboration among YESAB assessors and regulatory authorities on Executive Committee level screenings.

The processes are relatively strong in ensuring effective stakeholder participation before decisions are reached. This is mostly resulting from the participation mechanisms built into the YESAA. Concern was raised by First Nations through the Five-Year Review Process and during the interviews conducted for this study that the YG is using the YESAA consultation process to fulfil their own requirements to consult on projects with First Nations (SENEC Consultants Ltd, 2009).

Table 4-2 Application of the 10 Sustainability Criteria to the Governance Regime – Comprehensive Public Policy Framework³⁰

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
1. Incorporates a foundational sustainability ethic in legislation.	a. Does legal and regulatory framework specify sustainability objectives supported by sustainability principles and supporting policies?	P/P	N/P	P weak	<ul style="list-style-type: none"> Sustainable development is an underlying purpose of the YESAA, as well its “parent” mechanism, Ch. 12 of the UFA. There are no explicit sustainability principles or objectives defined under the YESAA; likewise, there are no policies or guidelines on the consideration of sustainability issues in the assessment process. The QMA includes an explicit reference to sustainable development; the Waters and Territorial Lands Act do not. Consideration of sustainable development in supportive regulations and policies is limited. Here too, sustainability is not explicitly considered in application of the regulatory instruments. The YESAA Process is transparent, as all documentation related to a project screening is available to the public through the YESAB online registry.
	b. Is lifecycle (cradle to grave) analysis integral to assessments and decisions?	P/P	P/P	P	<ul style="list-style-type: none"> Lifecycle analysis is not conducted as part of the YESAA or regulatory processes. All stages of mine development are addressed in both processes however.
2. Integrates planning, assessment and regulatory framework including monitoring and enforcement.	a. Are processes complementary and well coordinated, with strong linkages (e.g., approvals not made in isolation)?	Y/P	P/P	P strong	<ul style="list-style-type: none"> The planning, assessment and regulatory frameworks are designed to be complementary, with strong linkages. Land use plans or special management areas must be taken into consideration in deliberations. In practice, the YESAB and regulators collaborate during the project assessment to coordinate the process and link it to regulatory outcomes. The YESAB is required to consult UFA boards, councils and committees during the assessment process, as required. The linkage between the YESAA and regulatory processes is somewhat weak. This is, in part, reflected in the fact that the terms and conditions put forth under YESAA may not be carried through to the provisions of the regulatory authorisations. There is a provision for YESAB to recommend socio-economic or environmental effects monitoring, and subsequently request the results and recommend follow up measures. In practice, however, this provision is rarely utilised and in all instances when it have been

³⁰ [Y=yes P=partially N=no; **bolded** results pertain to the author's analysis; un-bolded results are Craig's (2000) findings]

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
	b. Are processes streamlined and efficient (e.g., one window, clear structure and process, includes timelines, avoids jurisdictional overlap)?	Y/Y	P/P	P strong	<p>used, it has been rejected during the regulatory process.</p> <ul style="list-style-type: none"> • Under the YESAA, the Yukon Water Board cannot issue a Water Licence or set terms of a Water Licence that are contrary to a decision document based on the YESAA Process. • Monitoring requirements are not stipulated in the QMA or Territorial Lands Act, but are stipulated in the Waters Act. In practice, environmental monitoring provisions are included in the Quartz Mining Licence, issued under the QMA, and the Water Licence. None of the applicable regulatory instruments address socio-economic monitoring. • Regulatory authorities carry out enforcement of authorisation provisions. • The YESAA Process establishes clear structure and procedural requirements. The YESAA establishes clear timelines for the project screening process, and avoids duplication to a large extent with the regulatory process. • There are no timelines established for the regulatory process.
3. Ensures effective citizen participation and decentralised decision-making.	a. Is there early and ongoing involvement of citizens enabling response before decisions are taken?	Y/Y	Y/P	Y	<ul style="list-style-type: none"> • The YESAA requires that a company consult affected communities and First Nations “adequately”, and that the generated input be incorporated into the proposal submitted to the YESAB for screening. In practice, the YESAA Process involves several opportunities for public and stakeholder input. For Executive Committee level screening, in addition to the two legislated public comment periods, the YESAB conducts meetings/workshops with stakeholders on project issues. • The Water Licence review process includes a public hearing. Authorisations under the QMA and Territorial Lands Act do not require a public hearing.
	b. Are communities given a decision-making role and if so, are mechanisms established to ensure ecological and socio-economic integrity is not sacrificed?	P/P	P/P	P	<ul style="list-style-type: none"> • First Nations governments are given a decision-making role for projects proposed on certain categories of their Traditional Lands. • Communities are not decision-makers; YG has decision-making authority for projects in municipal boundaries. Through the YESAA Process they can provide input to the project review process. • The YESAA Process sets out to protect ecological and socio-economic integrity; likewise the regulatory instruments are focused on maintaining ecological integrity. There are, however, no specific provisions in either the assessment or regulatory processes stipulating that ecological and socio-economic integrity <i>not</i> be sacrificed.

Ecological Integrity

Table 4-3 provides the analysis of the criteria addressing *Ecological Integrity*, which include (4) assesses alternatives and technology; (5) adopts adaptive and interactive approaches and addresses maintenance or enhancement of ecological functions; (6) respects uncertainty and risks; and (7) assesses transboundary and cumulative effects. Here too, all criteria are met at least partially, indicating that the processes make some contribution to sustainability in terms of addressing ecological integrity; however, they also exhibit some important weaknesses.

The assessment of alternatives and technology by the assessment and regulatory processes is deficient. Technological advancement is not explicitly considered. Alternatives assessment is conducted by the YESAB to investigate options that mitigate negative impacts only, as per legislative requirements. Under Chapter 14 of the Umbrella Final Agreement (UFA), the Yukon Water Board has a statutory requirement to ensure that substantial alteration of water quantity or quality on or adjacent to First Nations Settlement Land is not authorised unless it is satisfied that, “There is no alternative which could reasonably satisfy the requirements... and there are no reasonable measures by which the applicant could avoid causing the alteration” (GC, CYFN, & YG, 1993, sec. 14.8.0).

The YESAB and regulatory authorities are mandated with protecting the Yukon’s environment. The authorisations issued for large-scale mining projects include a multitude of requirements for mining companies to undertake to help ensure environmental quality is maintained. Monitoring and inspection is conducted as part of the Regulatory Process to ensure companies are in compliance with the terms of project authorisations.

The assessment and regulatory processes do not address the *enhancement* of ecological function. One of YESAA’s purposes is to “protect and maintain environmental quality”, but the Act does not speak to *augmenting* this component. A key shortcoming in the way the YESAB conducts assessments is its lack of ecosystem-level approach. Environmental aspects are examined on a component-by-component basis and a more holistic assessment is not conducted. Potential adverse effects are mitigated to an “acceptable” level and enhancements are generally not considered.

The processes appear to be relatively successful in utilising an “adaptive and interactive” approach to address ecological considerations. There are mechanisms within the YESAA and regulatory processes to monitor effects and facilitate adaptive management—however, these mechanisms are designed for environmental *protection* rather than *enhancement*.

Sec. 5(2)(g) states that one of the purposes of the YESAA is to make use of First Nations traditional knowledge and experience in the assessment process. It is not, however, a requisite of the YESAA to include traditional knowledge in the assessment process³¹. Despite this, developers proposing major projects generally do incorporate traditional knowledge into their project proposal submissions and the YESAA Process encourages it. The YESAB has drafted guidelines for developers on effectively considering traditional knowledge. The draft YESAA

³¹ Mandatory collection and incorporation of traditional knowledge into a developer’s YESAA submission would force First Nations people to divulge their traditional knowledge. It is not mandatory under YESAA that traditional knowledge be submitted as part of a project proposal in order to protect First Nation’s rights and let them determine whether or not they wish to divulge their traditional knowledge. The YESAA does include several provisions around how traditional knowledge is to be considered and protected in the assessment process.

Table 4-3 Application of the 10 Sustainability Criteria to the Governance Regime – Ecological Integrity³²

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
4. Assesses alternatives and technology.	a. Is assessment of alternatives and technology mandatory?	P/P	N/N	P	<ul style="list-style-type: none"> Assessment of alternatives to a project, or aspects of a project, <i>which avoid or minimize any significant adverse environmental or socio-economic effects</i>, is required under the YESAA. There is a requirement under the Water Licencing process to consider alternatives to substantive alteration of water quantity or quality on or adjacent to First Nations Settlement Land. Assessment of technology is not mandatory, the Executive Committee can “bump” the project up to a Panel of the Board Review if it determines that the project involves technology that is controversial in the Yukon or the effects of which are unknown (s. 58(2)(b)).
	b. Is an assessment conducted to ensure that the proposal will either preserve or enhance the ecosystem and not reduce biodiversity?	P/P	N/N	P weak	<ul style="list-style-type: none"> There is no assessment conducted to ensure a project will “preserve or enhance the ecosystem and not reduce biodiversity” and this is not a necessary condition of project approval. Potential environmental impacts, including cumulative effects, are assessed through the YESAA Process; mitigation measures to address impacts are put forth and ideally reflected in project authorisations through the regulatory process. Sometimes management plans are developed by the company in consultation with regulators to address specific components (e.g., water, waste and wildlife management plans), usually depending on the severity, risk or sensitivity of potential impacts identified.
	c. In light of technological advances, are provisions for modification built in?	N/N	P/P	P	<ul style="list-style-type: none"> The YESAA Process does not address provisions for adaptation to technological advances. Through the regulatory process, a company can apply for an amendment to the appropriate authorisation to address technological advances that require a notable change to the project.
5. Adopts adaptive and interactive approaches and addresses	a. Do flexible mechanisms exist to ensure maintenance or improvement of ecological functions, including no net loss of	P/P	P/P	P	<ul style="list-style-type: none"> <i>Improvement</i> of ecological functions is generally not considered. Potential impacts to ecological systems are addressed on a component-by-component basis; an ecosystem approach to the assessment is not taken. The YESAA includes a provision to recommend project effects monitoring. Regulatory authorisations include provisions for compliance and effects monitoring for certain

³² [Y=yes P=partially N=no; **bolded** results pertain to the author's analysis; un-bolded results are Craig's (2000) findings]

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
maintenance or enhancement of ecological functions.	renewable resources and do they address ecological responses?				<p>environmental components.</p> <ul style="list-style-type: none"> The YG administers the regulatory instruments with an informal adaptive management approach, whereby they attempt to manage project effects as they arise through amendments to project authorisations—though with the intention of preventing environmental harm, rather than improving ecological function. Project authorisations may include provisions for management plans for some components (e.g., typically water and wildlife management plans), as well as adaptive management plans for certain components. Project authorisations may also include requirements for further studies or management plans pending monitoring outcomes. There is a “no net loss” principle under the <i>Policy for the Management of Fish Habitat</i> administered by federal authorities. There are no such policies for other renewable resources in the Yukon.
	b. Are there clear linkages between outcomes and policy/regulatory responses?	Y/Y	P/P	P	<ul style="list-style-type: none"> Outcomes of the YESAA screening are linked to specified responses in the legislation. Authorities can accept, reject or vary YESAB recommendations. Depending on the findings of the YESAB and any requests from decision-makers, a large-scale project can be referred back to the Board for additional review. In practice, through compliance and effects monitoring, inspections and ongoing interaction with the company, the YG can amend project authorisations to adjust to changing conditions and protect the environment. YG informants indicated that changes have been made to devolve authority to high-level department officials largely, to facilitate more streamlined and efficient response to changing project conditions.
	c. Are mechanisms or strategies in place to facilitate reclamation of abandoned sites?	N/N	N/Y	Y	<ul style="list-style-type: none"> The YESAA Process does not contain explicit mechanisms to address reclamation of abandoned sites. The YG is ultimately responsible for the reclamation of abandoned mine that have been permitted post-devolution. The federal Government of Canada has taken responsibility for reclamation of abandoned mines permitted prior to devolution.
	d. Is it mandatory to consider traditional and local knowledge?	Y/P	N/N	P weak	<ul style="list-style-type: none"> Although it is not mandatory under YESAA to incorporate traditional knowledge into the assessment process, it is one of the purposes of the Act and developers of large-scale projects generally do incorporate traditional knowledge into their project submissions.
6. Respects uncertainty and risks.	a. Are contingency plans and risk analysis integral to requirements and is	N/N	P/P	P weak	<ul style="list-style-type: none"> Contingency plans are not required under the YESAA, but they are taken into consideration in the assessment process if provided by the company. Risk of significant adverse effects are considered, but a formal risk analysis is not conducted as part of the

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
	the precautionary principle applied?				assessment process.
	b. Are compliance and effects monitoring required and are mechanisms for responding clearly established?	P/P	P/P	P	<ul style="list-style-type: none"> Contingency plans are often a requirement of regulatory authorisations. Some form of risk analysis may also be a part of the regulatory authorisation process. The requirement for contingency plans or risk analysis is not stipulated in the regulatory legislation. The precautionary principle is not explicitly applied in either the assessment or regulatory processes. Under the YESAA, effects monitoring can be recommended and the YESAB can subsequently request monitoring data and issue recommendations based on the outcomes reported. Compliance and effects monitoring and inspection is conducted as part of the regulatory process and project authorisations.
7. Assesses transboundary and cumulative effects.	a. Is it mandatory for these aspects to be assessed?	Y/P	N/N	P weak	<ul style="list-style-type: none"> It is mandatory for both transboundary and cumulative effects to be assessed under YESAA. In the draft Five-Year Review, the YESAB is criticised for the weakness of its cumulative effects assessments. Cumulative socio-economic effects are minimally assessed. The regulatory process does not require further assessment of cumulative effects.
	b. Does comprehensive baseline information exist for monitoring effects?	P/P	P/P	P weak	<ul style="list-style-type: none"> There is generally a lack of baseline environmental information in the Yukon. Companies collect data on a project basis, however. Project authorisations may require data collection, monitoring and studies to be conducted.
	c. Is there provision for long-term monitoring of effects and subsequent modification if necessary?	Y/Y	P/P	P	<ul style="list-style-type: none"> The YESAB can recommend effects monitoring to monitor environmental and socio-economic effects that result from the project, as well as the success of proposed mitigation measures. The YESAB can subsequently request the monitoring data and issue recommendations based on the outcomes reported. Regulatory authorisations may include provisions for compliance and effects monitoring. Subsequent follow up action is determined and carried out as required through amendments to project authorisations.

Five-Year Review notes that First Nations have expressed concern that their traditional knowledge is not taken into account adequately during the YESAA Process (SENES Consultants Ltd, 2009).

The precautionary principle is not explicitly applied through either governance process. While the YESAA Process takes into account risk to environmental and socio-economic components in a general sense, contingency plans and risk analysis are not formative aspects of the assessment. Contingency plans and risk analysis play a more prominent role in the regulatory process; though provision for these elements is not legislated or standardised.

Assessment and management of cumulative effects emerges as a key sustainability issue in the Yukon, raised by several informants interviewed for this study. While the YESAA lays out clear requirements to assess cumulative environmental and socio-economic impacts from a project perspective, in practice, the YESAA's cumulative effects assessments are considered by many stakeholders to be inadequate (SENES Consultants Ltd, 2009). Cumulative effects assessment and management are issues influenced by both the YESAA *and* regulatory processes, however. One informant commented that in the absence of the cumulative effects management framework, proposed as part of the YG IRM strategy, for example, cumulative effects are difficult to address effectively under the YESAA (K. Simpson, Senior Advisor, Sustainability & Integrated Resources Management, YG EMR, personal communication, June 29, 2009).

Socio-economic Integrity

As Table 4-4 outlines, the assessment and regulatory processes are weakest with respect to addressing *Socio-Economic Integrity*. These criteria include, (8) promotes community self-reliance and benefits; (9) respects First Nation and community interests and values; and (10) contributes to economic diversification and stability. Fundamentally, the regulatory instruments do not address socio-economic components directly, with the exception of heritage resources. While the YESAA does address socio-economic components as part of the assessment process, in practice, generally potential *adverse* impacts are considered and positive effects, benefits or enhancement of these elements is not taken into account.

Baseline socio-economic information, necessary for understanding existing conditions and trends and essential for assessing and managing of social, cultural and economic effects of development, is limited in the Yukon. Furthermore, socio-economic provisions lack a regulatory underpinning and are thus difficult to implement. Measures to address potential socio-economic effects (including monitoring provisions) are not reflected in project authorisations issued under the regulatory instruments. As further discussed in Section 3.4, it is general convention in northern Canada³³ that socio-economic measures are addressed in “supra-regulatory agreements” negotiated privately between the company and the affected First Nation³⁴. While these agreements may effectively mitigate certain socio-economic impacts, or enhance benefits, they are privately negotiated and thus are not regulated or standardised, as discussed further in Section 5.3.

³³ Supra-regulatory agreements are common in resource development in all Canadian jurisdictions; however, the discussion here is focused on the circumstances in northern Canada in keeping with the scope of this research.

³⁴ The Territorial Government and affected communities may also be party to these agreement.

Table 4-4 Application of the 10 Sustainability Criteria to the Governance Regime – Socio-economic Integrity³⁵

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
8. Promotes community self-reliance and benefits.	a. Are community benefit agreements requirements or long-term participation agreements advocated?	N/P	N/N	P weak	<ul style="list-style-type: none"> There is no provision in the YESAA Process or regulatory instruments to require community benefits or participation agreements. The YESAB has in practice made non-binding suggestions about provisions to be included in such “supra-regulatory” agreements (see Section 3.4).
	b. Do training programmes exist for affected communities?	N/N	N/P	P	<ul style="list-style-type: none"> Training programmes for affected communities are not provided through the YESAA or regulatory processes; however, there are training programmes for Yukoners offered by several organisations, including the Government of Canada, YG, Yukon College, and the Yukon Mine Training Association. In practice, the YESAB has made non-binding suggestions pertaining to communities engaging in training to increase their likelihood of capitalising on employment opportunities brought about by a mine.
	c. Are commitments enforced and monitored?	N/N	N/N	N	<ul style="list-style-type: none"> Socio-economic commitments are not enforced or monitored through the YESAA or regulatory processes, with the exception of heritage resources, for which legislation has been developed. Commitments are in general included in supra-regulatory agreements (see Section 3.4).
	d. Is evaluation of equity effects mandatory?	N/N	N/N	N	<ul style="list-style-type: none"> Evaluation of equity effects is not required of either the YESAA or regulatory processes. In practice, distribution and equity effects are not considered.
9. Respects First Nations as well as community interests and values.	a. Are mechanisms in place to ensure that First Nation governments and communities can articulate their own interests and values to established processes?	Y/P	Y/P	P	<ul style="list-style-type: none"> The YESAA includes specific provisions to facilitate input from stakeholders, especially affected First Nations and communities. There are relatively few opportunities for First Nations and communities to participate in the regulatory process. There is a public hearing as part of the Water Licensing process. First Nations are decision-makers for projects proposed on parts of their Settlement Lands; otherwise they are a key stakeholder—albeit without decision-making authority—for projects located within their Traditional Territories.

³⁵ [Y=yes P=partially N=no; **bolded** results pertain to the author's analysis; un-bolded results are Craig's (2000) findings]

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
	b. Are culture, traditions, local knowledge and priorities analysed and considered in decision-making processes?	Y/P	P/P	P	<ul style="list-style-type: none"> • Culture, traditional and local knowledge are taken into consideration under the YESAA through its socio-economic effects assessment process. Primarily, potential adverse effects on these elements are addressed. • There is a severe lack of baseline data describing social, cultural and economic conditions at community and regional levels in the Yukon (SENES Consultants Ltd, 2009; V. Van Hees, Policy Analyst, YG Health and Social Services, personal communication, June 25, 2009). • A formal “cultural impact assessment” is not a part of the assessment process; although potential effects on heritage resources and traditional land use and activities are considered. • Traditional and local knowledge is incorporated into the YESAA Process.
	c. Are mechanisms established which guarantee participation in planning, decision-making and monitoring arrangements?	P/P	P/P	P	<ul style="list-style-type: none"> • The YESAA includes specific provisions to facilitate input from affected actors, which indirectly informs decision-making. Affected First Nations are guaranteed a participatory role in planning and decision-making for projects on parts of their Settlement Lands and participate in planning for projects within their Traditional Territories. • There is no provision in either the YESAA process or the regulatory process to guarantee participation in monitoring arrangements. • There are provisions for stakeholders to be involved in regional land use planning processes.
10. Contributes to economic diversification and stability.	a. Is a mandatory assessment of community and regional socio-economic circumstances required?	N/P	N/N	P weak	<ul style="list-style-type: none"> • The YESAA Process requires that potential impacts on socio-economic components be assessed (primarily adverse impacts) and mitigation measures recommended, if required. Generally, mitigation measures are included largely as non-binding suggestions, rather than binding recommendations. • There is no requirement within the regulatory process to address community and regional socio-economic circumstances beyond the YESAA Process. • Enhancements, benefits or positive effects are generally addressed minimally in the YESAA Process. These aspects are generally addressed during the negotiation of supra-regulatory agreements (see Section 3.4).
	b. Do processes promote community stability and broadening of the economic base?	N/N	N/N	N	<ul style="list-style-type: none"> • Neither the YESAA Process nor the regulatory process explicitly promote broadening or stability of the economic base. In practice, the assessment process generally addresses potential adverse consequences for economic considerations.

Criterion	Associated Questions	Assessment Process	Regulatory Process	Overall	Analysis
	c. Are community economic or resource management plans considered in assessments and decision-making processes?	N/P	N/N	P weak	<ul style="list-style-type: none"> • In practice, the YESAA Process considers community plans in project screenings, although it is not required to under the legislation (N. Scotney, Assessment Officer, YESAB, personal communication, July 25, 2009). • There is no provision in the regulatory system to consider such community plans.

The YESAA includes provisions to address traditional and cultural issues. The Act's purposes include protection of heritage resources; enhancement of First Nation's traditional economy and "special relationship with the environment" (s. 5(2)(f)); and protection and promotion of the well-being of First Nations people. Impacts on First Nations traditional and cultural pursuits and heritage resources are considered in the assessment process. In practice, specific attention to *promotion* of traditional and cultural pursuits is not addressed. Here too, the lack of regulatory framework to incorporate these types of provisions is an important limitation.

Mechanisms are in place to ensure First Nations governments and communities can articulate their own interests and values. These stakeholders can provide input to the YESAA Process; though as previously discussed, First Nations have expressed concern about the extent to which they meaningfully participate in the process. Moreover, as described, under land claim provisions, First Nations have decision-making authority over some parts of their Settlement Lands.

Importantly, economic impacts are minimally assessed through the YESAA Process. There is no cost-benefit analysis conducted and the economic feasibility of the project is not explicitly considered. The regulatory instruments also do not overtly address economic considerations. YG informants interviewed for this study indicated that there is no formal cost-benefit analysis conducted by the government in deciding whether to approve a large-scale mining project.

4.1.2 Summary

When the present governance regime for large-scale mining is compared with the regime analysed by Craig (2000), relatively little progress has been made with respect to its contribution to sustainable development. Application of the 10 Sustainability Criteria to the assessment and regulatory processes operational today reveals some success, but also considerable limitations within each mechanism and across the processes in terms of their sustainability contribution. None of the criteria are met fully. In general, the assessment process makes a stronger sustainability contribution than the regulatory process.

Of the three criteria categories assessed, the *Comprehensive Public Policy Framework* offers the strongest contributor to sustainable development. Integrated governance processes, and effective stakeholder participation are the substantive elements of this category. A considerable limitation is the lack of guiding principles and objectives in the underpinning legislation or supportive mechanisms.

The criteria for *Ecological Integrity* are partially met. The adoption of adaptive and interactive approaches is most adequately addressed; though critically, improvement of ecological function and no net loss of renewable resources are not incorporated into the governance processes.

The assessment and regulatory processes are weakest in their sustainability contribution in terms of *Socio-Economic Integrity*. Despite socio-economic concerns being addressed through the YESAA Process, benefits and positive effects are not considered and mitigation measures are generally not carried through the regulatory process.

4.2 Seven Questions to Sustainability

In this section, the *Seven Questions to Sustainability* framework is applied to the first major mining project reviewed under the YESAA process, the Carmacks Copper Mine (CCM), to assess the project’s sustainability contribution from the perspective of governance³⁶. The CCM is an open pit copper heap leach mine and processing plant proposed to be developed in the Yukon near a small community, Carmacks, and within the Traditional Territories of the Little Salmon/ Carmacks First Nation and the Selkirk First Nation³⁷. The anticipated mine life is 15 years in total—eight years of construction and operation and seven years of closure and reclamation activities. The project completed screening under the YESAA Process in July 2008 and is presently undergoing licensing as part of the regulatory process³⁸.

This analysis is intended to supplement the evaluation using the 10 Sustainability Criteria in revealing aspects of the assessment and regulatory governance instruments that are successful or unsuccessful in addressing sustainability issues. Although the CCM is still in the licensing stage of the regulatory process, certain regulatory aspects have been completed (e.g., the Quartz Mining Licence has been issued) and regulatory work was ongoing throughout the YESAA Process.

The analysis reveals that the governance process for the CCM was not effective in contributing to sustainable development in several ways. The results largely reinforce the analysis using the 10 Sustainability Criteria.

As mentioned previously, the following analysis is based review of the CCM project assessment and regulatory process documentation, and my experience with the YESAA assessment of the CCM. This analysis does not include stakeholder input.

4.2.1 Analysis and Discussion

Each of the *Seven Questions to Sustainability* is presented, accompanied by sub-questions and key issues as identified in IISD et al. (2002). A synthesis of the findings follows.

1. Engagement	
Are processes of engagement committed to, designed and implemented that:	1.1 Engagement processes
	1.2 Dispute resolution mechanism
	1.3 Reporting and verification
	1.4 Adequate resources
	1.5 Informed and voluntary consent
<ul style="list-style-type: none"> Ensure all affected communities of interest (including vulnerable or disadvantaged sub-populations by reason of, for example, minority status, gender, ethnicity or poverty) have the opportunity to participate in the decisions that influence their own future; and Are understood, agreed upon by implicated communities of interest, and consistent with the legal, institutional and cultural characteristics of the community and country where the project or operation is located? 	

³⁶ It is analysed “from the perspective of governance”, because the CCM has not yet been implemented, but it has undergone most of the governance regime processes.

³⁷ Complete documentation of the Carmacks Copper Mine Project YESAA screening is available through the YESAB Online Registry at www.yesab.ca.

³⁸ The CCM’s Quartz Mining Licence has been issued, but its Water Licence has not yet been issued.

Stakeholder engagement has been ongoing throughout the CCM process. Stakeholder engagement is a key aspect of strategic or regional planning processes. As there are no such mechanisms in place for the area, this level of engagement was not a part of the CCM process. However, there was considerable stakeholder involvement during the YESAA Process. The mineral company was required to consult the affected First Nations and communities prior to and during the CCM YESAA screening. There were two rounds of public comment periods (as per the requirements of legislation) and the YESAB actively solicited stakeholder participation on certain project issues throughout the screening process (e.g., several meetings were organised with stakeholders to discuss project issues). A working group was established to tackle certain project issues, which involved the Little Salmon/Carmacks First Nation, the YESAB, the YG and technical experts.

The mineral company engaged the community and the affected Little Salmon/Carmacks First Nation directly outside the YESAA screening process as well. The company has committed to ongoing engagement with the communities and First Nations throughout the life of the mine, though a formal engagement plan was not devised. Provisions for engagement for closure planning were included in the YESAA screening report.

Some Yukon First Nations have developed guidelines clarifying how they want to be engaged³⁹. Neither the Little/Salmon Carmacks First Nation nor the Selkirk First Nation affected by the CCM had engagement guidelines in place during the project screening process.

There was no formal dispute resolution mechanism in place. Formal reporting and verification mechanisms were not in place.

2. People

<p>Will the project/operation lead directly or indirectly to maintenance of people's well-being (preferably an improvement):</p> <ul style="list-style-type: none"> • During the life of the mine? • In post-closure? 	<ul style="list-style-type: none"> 2.1 Community organizational capacity 2.2 Social/cultural integrity 2.3 Worker and population health 2.4 Availability of basic infrastructure 2.5 Direct, indirect and induced effects 2.6 Full social/cultural costs, benefits and risks 2.7 Responsibilities and sureties 2.8 Distribution of costs, benefits and risks 2.9 Social/cultural stress and restoration
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Consideration of the *people* element of the Seven Questions during the CCM governance process was lacking. Maintenance or improvement of community well-being as a result of the CCM was not explicitly addressed. Several potential direct and indirect socio-economic impacts on First Nations and communities identified during the YESAA Process and reflected in the final YESAA Screening Report. Enhancements, benefits or positive effects were minimally addressed—the focus of the assessment was on mitigating potential adverse social impacts. There are some non-binding “suggestions” included in the Screening Report that refer to enhancement of benefits, and there is reference to the inclusion of benefits in supra-regulatory instruments (see Section 3.4) negotiated *after* the conclusion of YESAA Process (and possible after the regulatory process).

³⁹ FN Community Engagement Guidelines (Craig, YG)

Mitigation measures proposed to address the potential adverse socio-economic impacts were largely included as non-binding “suggestions”, because either the potential impact could not be definitively argued (because social issues are less predictable or concrete than environmental issues, for example), or due to a lack of a regulatory instrument to implement the measure. These suggestions were not reflected in the regulatory “decision document” on which project authorisations are based.

Socio-cultural integrity was minimally assessed; a formal “cultural impacts assessment” was not conducted. There were some non-binding suggestions put forth regarding monitoring certain socio-economic indicators; no binding recommendations were made with respect to effects monitoring. No adaptive management plan is in place to address socio-cultural issues. As previously discussed, the draft YESAA Five-Year Review found that the socio-economic impact assessments carried out by the YESAB are considered by many stakeholders to be lacking. There are only limited and rather piecemeal mechanisms available to address socio-economic issues that arise. This was highlighted as a critical gap by several informants interviewed for this study, as well as in the draft Five-Year Review (SENES Consultants Ltd, 2009).

The Carmacks Integrated Community Sustainability Plan 2006 and the Carmacks Official Community Plan 2005 outline the community’s goals and expectations for community development. Neither of these plans were considered in the YESAA assessment for the CCM.

There was reference made in the Screening Report to community involvement in comprehensive closure planning, and a recommendation was made to involve stakeholders in the development and revision of the Mine Closure and Reclamation Plan.

Total (or full) assessment of socio-cultural costs, benefits and risks was not conducted. Likewise, distribution of costs, benefits and risks was not assessed.

Worker and population health and availability of infrastructure were assessed and recommendations put forth where potential effects were identified through the YESAA Process.

3. Environment

Will the project or operation lead directly or indirectly to the maintenance or strengthening of the integrity of biophysical systems so that they can continue in post-closure to provide the needed support for the well-being of people and other life forms?	3.1 Ecosystem function, resilience, and self-organizing capacity
	3.2 Ecological entitlement
	3.3 Full ecosystem costs, benefits and risks
	3.4 Responsibilities and sureties
	3.5 Environmental stress and action to ensure ecosystem integrity

Although environmental issues associated with the CCM received extensive treatment in the YESAA process and subsequent regulatory processes, there are some shortcomings of the processes when assessed against the criteria of the *Environment* question. A broad array of potential environmental impacts were assessed during the YESAA screening, and dozens of mitigations were put forth to address them. Several issues were followed up and expert opinion was sought where required. The precautionary principle was not explicitly applied in examining potential environmental impacts. No environmental effects monitoring measures were recommended by the YESAB. Monitoring provisions and environmental management

plans are included in the Quartz Mining Licence, as well as the requirement for adaptive management plans for certain components.

Principles of integrated impact assessment were used to a limited extent, but overall the assessment lacked a holistic approach. Each environmental component was assessed individually and there was no integrated or ecosystem-level assessment done to analyse the potential effects from an ecosystem function perspective. The cumulative environmental effects assessment was weak in that it was conducted on a component basis, which is common practice in impact assessment, but does not result in a broad and integrated view of the potential effects over a larger geographic area and longer timeline.

The mining company incorporated First Nations traditional knowledge into its project proposal submission to the YESAA Process. A formal traditional knowledge study was not conducted. The YESAB further solicited traditional knowledge holders for input. Traditional knowledge dictated more particular focus on certain issues during the assessment process (e.g., potential project effects on the local moose population).

Potential long-term environmental impacts of the CCM were arguably the most critical issues in the YESAA screening process. Stakeholders and environmental experts raised considerable concern about the long-term stability of the mine site and potential contamination after mine closure. Despite measures proposed by the company to address these issues, doubt remained throughout the screening, as evidenced by the persistence of some stakeholders in pursuing the issues throughout the screening. After consultation with experts, the company, and the YG, the YESAB Executive Committee determined that the potential for long-term environmental impacts was low enough, upon application of certain measures, to recommend that the project proceed. The decision-makers accepted this recommendation and the project was authorised to proceed with licensing. Stakeholders remain concerned about these mine closure issues (Baltgailis, 2009; R. Moar, Lands and Resources Technician, Little Salmon/Carmacks First Nation, personal communication, July 7, 2009).

Full ecosystem costs, benefits and risks were not explicitly assessed.

4. Economy

Is the financial health of the project/company assured and will the project or operation contribute to the long-term viability of the local, regional and global economy in ways that will help ensure sufficiency for all and provide specific opportunities for the less advantaged?

- 4.1 Project or operation economics
 - 4.2 Operational efficiencies
 - 4.3 Economic contributions
 - 4.4 Community/regional economies
 - 4.5 Government and broader society economies
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With respect to the CCM process and the *Economy* question, the governance process exhibited some considerable limitations. Potential adverse impacts on socio-economic components were considered to some extent, but the majority of measures proposed to address them were put forth as non-binding suggestions. Potential socio-economic benefits or means of enhancing such benefits was not a goal of the assessment and was addressed to a very limited extent.

No cost-benefit analysis was conducted and project economics were not explicitly considered. During the YESAA screening of the CCM, the project was considered marginally economically feasible. The 2007 Feasibility Study stated the feasibility price of copper for the project was US\$/tonne 5,114.72 (US\$/lb 2.32) (Western Copper Corporation, 2009). In the

fourth quarter of 2008 and through the first quarter of 2009, copper prices fell below this level (Ackerman, 2009; NRCan, 2008). Presently, copper prices have risen slightly above the feasibility price.

The CCM was considered in terms of its contribution to the Yukon's GDP. Economic benefits in terms of royalties, corporate taxes, and income taxes, were estimated. Spinoff economic benefits were commented on generally, but not estimated or further assessed. These details come from the economic review conducted by the YG EcDev department and were not further analysed by the YESAB. It was stated that mine operation would result in broadening the economic base of Carmacks, but details of this assertion were not provided and the effect on Carmacks' economy was not assessed further. Concern was expressed by some informants interviewed for this research about the royalty regime and the amount of royalties generated because of it. Anticipated royalties were not explicitly assessed during the YESAA screening. This issue is discussed briefly in Section 5.3.

Opportunities to maximise economic benefits were not explicitly considered. The YESAB included some non-binding suggestions pertaining to ensuring economic benefits for the First Nation and communities, and some specific suggestions on provisions to be included in a supra-regulatory agreement (see Section 3.4). These suggestions were not reflected in the regulatory "decision document" on which project authorisations are based. The company provided estimates for local procurement of goods and services, labour requirements, but no assessment was conducted to understand how this would impact the local and regional economies.

The YESAA Screening Report included non-binding suggestions around training to increase opportunities for local people (especially marginalised populations) to participate in employment opportunities associated with the mine.

As previously highlighted, closure issues featured prominently throughout the assessment and regulatory review of the CCM, and closure *costs* were a large part of this. The Mine Reclamation and Closure Policy stipulates that financial security shall be retained by the YG amounting to 100 percent of reclamation and closure liability at any given point during the mine life. Closure cost estimates are updated at least every two years. The YESAB hired an external consultant to help generate closure cost estimates to do with the most contentious closure issues of the CCM, and made corresponding recommendations to decision-makers.

Economic development goals outlined in the Carmacks Integrated Community Sustainability Plan and the Carmacks Official Community Plan were not considered in the YESAA assessment.

The distribution of economic benefits was not assessed. No cost benefit analysis was taken into consideration. Estimates of YG investments or expenditures related to the CCM were not provided. Operational efficiencies were not addressed.

5. Traditional and Non-Market Activities

Will the project or operation contribute to the long-term viability of traditional and non-market activities in the implicated community and region?

5.1 Activity/use levels
5.2 Traditional/cultural attributes

While potential impacts on traditional activities were considered in the YESAA Process for the CCM, opportunities for positive development of traditional activities in the long term

were not explicitly considered. The YESAB did attempt to ascertain the level of traditional activities undertaken in the project area and addressed potential impacts on trapping, hunting and traditional gathering activities. A “cultural impact assessment” was not conducted and potential effects on culture were not explicitly considered further.

Potential impacts on traditional land use were assessed during the YESAA Process, and mitigation measures were put forth. The mine site is located within a traditional trapping concession held by a local First Nations family. The impact on the family’s ability to pursue traditional activities was assessed and it was determined that application of certain mitigation measures and compensation by the company were required.

An assessment of impacts on non-market activities was not conducted.

6. Institutional Arrangements and Governance

Are the institutional arrangements and systems of governance in place that can provide certainty and confidence that:

- The capacity of government, companies, communities and residents to address project or operation consequences is in place or will be built; and
- This capacity will continue to evolve and exist through the full life-cycle including post-closure?

- 6.1 Efficiency and effectiveness in the mix of legislated rules, voluntary programs, market incentives and unspoken cultural norms
- 6.2 Capacity to address operational consequences
- 6.3 Bridging to post-closure conditions
- 6.4 Overall confidence that commitments made will be fulfilled

The relative strength of institutional arrangements and governance influencing the CCM represented a strong sustainability contribution. While there lacks a *variety* of governance mechanisms, there are clearly established legal requirements governing mining development. Land and resource ownership and management responsibility in the Yukon is clearly defined. The *capacity* of the regulatory authorities to implement the legislation governing mining development over the long term is generally assured. Established protocols for monitoring and follow up and adaptive management are lacking, but supportive legislative frameworks from which these types of mechanisms could be developed do exist.

The assessment and regulatory processes were relatively well coordinated. All of the terms and conditions of the YESAA Process were accepted by the decision-makers and reflected in the “decision document”, upon which the CCM project authorisations will be based. While not required to do so, the mining company formally submitted the findings of the YESAB to the Water Board to support the Water Licencing process and avoid redundancy in the reviews.

The capacity of First Nations governments and communities to address sustainability issues related to mining in the long term is not as certain. As mentioned, several First Nations in the Yukon have expressed concern that they lack sufficient financial, technical and human resources to adequately participate in the YESAA Process (SENES Consultants Ltd, 2009).

In terms of cultural norms, there is a strong desire from Yukoners *not* to see the types of mining impacts that previous mines have left and to reap ‘fair’ benefits from mining. Some informants interviewed for this study indicated a reliance on legislated rules to accomplish these goals; others think that companies have an important role to play and that strong company-community relationships should be built toward this end. In the case of the CCM, both community-YG and community-company interaction has been instrumental in the overall function of the mine development process so far.

In speaking with authorities about their experience managing environmental regulatory aspects of the currently operating mine in the Yukon, they appear to have confidence in their capacity to address mine operation and closure issues as they arise through the (informal) adaptive management approach they apply under the existing legislation. Project conditions and issues are revised through amendments to existing authorisations, and changes to terms and conditions at licence or permit renewal. First Nation representatives interviewed for this study indicated they faced challenges with respect to participating in the regulatory process.

Some interview informants indicated that there are gaps in the follow up and monitoring mechanisms of the regulatory system. No effects monitoring provisions were proposed by YESAB for the CCM.

There are no regulatory instruments that explicitly address socio-cultural and economic issues. As previously discussed, there is a considerable lack of baseline data describing social, cultural and economic conditions at community and regional levels. These hindrances featured prominently in the CCM screening.

As previously explained, closure issues featured prominently in the YESAA screening, primarily as the result of concerns raised by stakeholders. As discussed, the YG Mine Site Reclamation and Closure Policy is instrumental in addressing critical sustainability issues around mine closure. The YG must approve the Project Reclamation and Closure Plan before mine development can begin and the Plan must be updated regularly. Full closure liability is retained by the YG throughout mine life.

To date, a supra-regulatory agreement (SRA) between the affected First Nation and the company has not been signed. Many commitments—especially related to socio-economic issues—are expected to be addressed in such an agreement (see Section 3.4). In its absence, confidence that some socio-economic and environmental commitments made during the assessment process is limited.

In general, legislated rules dominate the governance of mining projects. Market incentives and voluntary programmes are very limited.

7. Overall Integrated Assessment and Continuous Learning	
Has an overall evaluation been made and is a system in place for periodic re-evaluation based on:	7.1 Project level alternatives
<ul style="list-style-type: none"> • Consideration of all reasonable alternative configurations at the project level (including the no-go option in the initial evaluation); 	7.2 Strategic level alternatives
<ul style="list-style-type: none"> • Consideration of all reasonable alternatives at the overarching strategic level for supplying the commodity and the services it provides for meeting society's needs; 	7.3 Overall synthesis
<ul style="list-style-type: none"> • A synthesis of all the factors raised in this list of questions, leading to an overall judgment that the contribution to people and ecosystems will be net positive over the long term? 	7.4 Continuous learning and improvement

The level of overall integrated assessment and continuous learning for the CCM from the governance perspective is relatively weak. In the absence of any strategic or regional plan for the area, the CCM was not checked for conformance with land and resource priorities and expectations. As previously mentioned, the YESAA assessment did not consider the Carmacks Integrated Community Sustainability Plan or the Carmacks Official Community Plan. While some project level alternatives were considered, strategic level alternatives were

not considered. Fundamentally, the CCM was reviewed without underpinning sustainability principles, goals or objectives. In general, a holistic and integrated approach was not explicitly applied. An overall synthesis was not conducted to ascertain the project's impact on or contribution to sustainability. There is overall no mechanism for continuous learning and improvement.

No effects monitoring was recommended by the YESAA screening to monitor the environmental and/or socio-economic effects resulting from the mine, or the success of mitigation measures proposed, to facilitate adaptive management. In practice, the regulatory authorities monitor mining projects, but in general for compliance rather than improvement.

Alternatives to certain aspects of the CCM were assessed to some extent through the YESAA Process; however, this was limited to the consideration of alternatives that would mitigate adverse impacts. Assessment of alternatives to the project itself was not conducted. The no-go option was not considered. The need for the project was likewise not assessed.

As previously noted, systems are in place through the regulatory process to revise and update terms and conditions of mine authorisations as necessary, such as plan revisions, compliance and effects monitoring and inspections. The Quartz Mining Licence for the CCM requires the development of several environmental protection plans, as well a heritage resources protection plan, which include stipulations for adaptive management.

There is no mechanism in place within the YESAA or regulatory processes to periodically re-assess the mine to understand its ongoing contribution to sustainability.

4.2.2 Summary

When the governance process for the CCM is subjected to analysis using the *Seven Questions to Sustainability* framework, the CCM does not meet the “test” for sustainability overall. Fundamentally, a full synthesis to understand the sustainability implications of mine—whether the result would be positive or negative in the long-term—was not conducted. The elements of *Engagement* and *Institutional Arrangements and Governance* featured prominently in the CCM governance process as aspects of the assessment and regulatory instruments that contribute to sustainable development. Both involve well-established procedures founded in legislation and regulation. *Environmental* and *Traditional and Non-market Activities* emerged as elements making some sustainability contribution, but exhibiting limitations with important implications for sustainable development. *Overall Integrated Assessment and Continuous Learning* was lacking in the CCM process; there was very limited project or strategic level assessment of the CCM, and no regional planning mechanisms are in place for the mine site area. Moreover, there are essentially no mechanisms to facilitate learning and continuous improvement. *Economy* and *People* were the weakest elements of the CCM process and their shortcomings represented considerable limitations of this project in terms of its contribution to sustainable development. The process was impeded by not explicitly considering positive inputs to *economy* and *people* as part of the assessment or regulatory processes. Fundamentally, the lack of regulatory mechanism to enforce socio-economic measures and manage socio-economic impacts undermines sustainability of mining projects.

4.3 Synthesis

Synthesis of the analyses using the *10 Sustainability Criteria* and the *Seven Questions to Sustainability framework* reveals considerable consistency among the findings. The *Engagement*

and *Institutional Arrangements and Governance* elements highlighted as positive sustainability contributors by the Seven Questions are comparable to the *Comprehensive Public Policy Framework* identified by the 10 Sustainability Criteria as elements of the assessment and regulatory processes that are working well in this context. The *10 Sustainability Criteria* highlight the lack of sustainability principles and objectives underpinning the relevant legislation; the *Seven Questions* emphasise the lack of variety in the types of regulatory instruments applied to mining development.

Both sustainability frameworks likewise expose the shortcomings of the governance processes in addressing social, cultural and economic considerations. The Seven Questions highlight the lack of full cost accounting and cost benefit analysis. The Seven Questions also focus on the process' treatment of traditional and non-market activities.

The frameworks reveal that certain aspects of the processes are working toward environmental sustainability, such as the focus on environmental protection, and provision for monitoring and adaptive management mechanisms. The frameworks also highlight the lack of integrated approach to the treatment of environmental components, as well as the unwillingness to consider enhancement of ecological integrity and functioning, as factors that undermine sustainable development.

4.3.1 Crosscutting and Recurring Issues

Several crosscutting and recurring issues emerge that undermine the sustainability contribution of the governance regime. These issues influence or are influenced by the different governance instruments and in general cannot be addressed through one instrument in particular—rather they require the collaborative attention of the different mechanisms. These issues include:

- lack of explicit consideration of sustainability in deliberations; limited sustainability principles, goals and objectives in legislation and support mechanisms;
- lack of consideration of enhancement of ecological or socio-economic integrity;
- inadequate level of integration in assessment approach;
- inadequate consideration of social, cultural, and economic considerations;
- insufficient socio-economic and, to a lesser extent, environmental baseline information;
- lack of regulatory framework to implement and manage socio-economic measures;
- inadequate cumulative effects assessment and management framework;
- lack of regional land use or strategic planning; and
- inadequate framework for feedback and continuous improvement

5 A Way Forward

While the governance instruments reviewed in this work were not devised as tools for sustainability development specifically, they are the key mechanisms governing mining development and thus should fulfil the commitments to sustainable development outlined in Section 3.2.

While this analysis reveals significant shortcomings of the current governance regime for large-scale mining when it is assessed for its contribution to sustainable development, advances have been made, and importantly, the regime has a strong foundation for sustainability and considerable potential to move in this direction. The planning, assessment and regulatory processes are intended to function in an integrated and synergistic way to manage resource development in the Yukon to achieve the goals and commitments founded in a sustainability ethic highlighted throughout this thesis. Improvements in all three pieces of the governance regime are required to advance its overall contribution to sustainable development. This section outlines some possible ways forward.

Context for Moving Ahead

IISD et al. (2002, p. 21) summarise the following key implications of incorporating sustainability constructs in mining development, which must be considered in the planning, assessment and regulatory processes that govern large-scale mining in the Yukon:

- Equity – the equitable distribution of costs, benefits and risks among stakeholders affected by mining development must be addressed.
- Trade-offs – decision criteria must be developed to guide trade-off decisions. Decisions must be made about non-negotiable forms of capital (i.e., capital that cannot be traded).
- Need and alternatives – the purpose of and need for a mining project must be assessed; alternatives to the project should also be analysed to determine which makes the most substantive contribution to sustainability.
- Precautionary approach – a precautionary approach should be applied in situations when a decision must be made about a risk of serious or irreversible harm to the public or the environment in the face of scientific uncertainty.
- Adaptive management – in order to protect communities and ecosystems, effects of mining on must be monitored and management measures employed to adaptively address impacts as they arise.
- Holistic and integrated approach – the impacts and implications of mining development on environmental, economic, social, cultural and polity components must be assessed, understood and integrated from a holistic, system perspective. This also implies that the impacts and implications of multiple mining projects must be considered on a regional level.

5.1 Planning Instruments

The lack of planning mechanisms is a critical issue in the overall sustainability discussion. These mechanisms have a considerable potential to contribute to sustainable development of mining in the Yukon (Craig, 2000). Indeed, one of the objectives of land use planning under

the UFA is “to ensure that social, cultural, economic and environmental policies are applied to the management, protection and use of land, water and resources in an integrated and coordinated manner so as to ensure Sustainable Development” (sec. 11.1.1.6). Without adequate planning in place, assessment and regulatory instruments are applied in the absence of guidelines on land and resource use expectations of stakeholders (Gibson, 2001). Several informants cited planning mechanisms as a key missing component of sustainable development. YESAB practitioners highlighted planning instruments as one of the most important mechanisms to support assessment of projects in the context of sustainability. Operationalising sustainability in the assessment and regulatory frameworks becomes particularly important in the absence of adequate regional or strategic planning.

Carrying Sustainability Forward

Opportunities for streamlining land use planning processes, as well as prioritisation of regions most affected by mining development to undergo land use planning, should be considered. More extensive use of the Special Management Areas provision of the UFA should also be considered.

5.2 Development Assessment Process

Why isn't sustainability explicitly considered in the Development Assessment Process presently?

When YESAB informants were questioned about the reasons that sustainability is at present not explicitly incorporated into the YESAA Process, several points were raised. Prominent among them is the fact that the YESAA Process has only been operational for five years and informants indicated that much of the organisation's resources have been focused on getting the organisation functioning, operationalising the YESAA Process, and achieving consistency in its practice. Addressing sustainability in assessments is not necessary to the basic functioning of the Process; thus, it has not been prioritised. The YESAB, furthermore, has not identified the *need* to address sustainability directly in its assessments. For one, there is a perception that sustainable development is “supposed” to be incorporated into the planning and regulatory processes through policies, strategies and other supportive mechanisms. Additionally, until the YESAA Five-Year Review, the YESAB had not conducted an evaluation or assessment of the outcomes of its practice—especially in the context of understanding the sustainability implications of their work.

YESAB practitioners highlighted constraints in the legislation as a reason for not considering sustainability. The YESAB asserts that a positive effect or benefit must directly compensate a negative effect in order for it to be considered. The YESAB has in general set a precedent of *not* considering socio-economic benefits or positive effects—particularly through its less extensive assessments of smaller-scale projects⁴⁰. In the Carmacks Copper Mine process, however, these aspects were considered to some degree, as discussed in Section 4.2.1.

⁴⁰ For example, a recent YESAA assessment report of a smaller-scale mining development in central Yukon stated: “There were some comments that questioned the proponent's overall beneficial contribution to the economy of Keno. While this may be of interest it is not central to our outcome. We are tasked with determining if a project will result in significant adverse effects and to mitigate those effects to the extent possible so that they are no longer significant. There is a much more limited role for positive effects than the cost-benefit analysis that is often assumed with our assessment practice. We are not empowered by the Act to weigh the pros and cons of a project. Our process is focused on understanding the

A Leverage Point

While adjustments to each of the governance regime processes is required, the YESAA Process emerges as an important “leverage point” for the consideration and incorporation of sustainability in Yukon large-scale mining development for several reasons. It has a critical role to play in decision-making, although the YESAB is not a decision-making body. The Process provides an open and transparent forum to discuss the implications of a development project, facilitates stakeholder engagement, addresses stakeholder concerns, considers a broad array of development impacts—and finally, the recommendations that come out of the Process directly inform decision-making for a project.

The YESAA is furthermore an independent process, intended to function without political influence. This is important, as the regulatory process is founded in political constructs and several informants indicated that the land use planning process is also politically influenced. Moreover, regulatory and political processes are generally less responsive slow and to change; whereas the YESAA Process, operating on a project-by-project basis, can adapt to changing conditions and requirements.

There is also trend in global impact assessment practice of moving towards sustainability-directed assessment approaches for large-scale development projects.

Operationalising Sustainability in the Development Assessment Process

Impact assessment⁴¹ is a widely used decision-making tool. A prominent aim of impact assessment is to support decision-making for sustainable development. Indeed, it “is the pre-eminent regulatory tool used worldwide in the name of sustainable development” (Weaver, Pope, Morrison-Saunders, & Lochner, 2008, p. 91). Conventional impact assessment is essentially a “problem-fix” approach to addressing environmental and socio-economic effects of resource development projects. It is a planning process to predict, assess and mitigate any potential adverse effects associated with a project (Kwiatkowski & Ooi, 2003). The YESAA Process goes beyond conventional impact assessment in some ways—notably, it considers environmental *and* socio-economic effects, it is open and participatory, integrative, and accepting of different knowledge types—however, it is generally practiced following a conventional approach.

Increasingly it is being recognised that conventional impact assessment approaches with comparatively narrow focuses and which aim to minimize the negative impacts of development, “can at best limit ‘unsustainability’ and [do] not necessarily facilitate a shift towards sustainability” (Pope et al, 2004; Weaver et al, 2008). In many places in the world, impact assessment approaches are being developed to address the ever-increasing sustainability concerns of stakeholders about resource development projects —particularly in Canada, Australia and South Africa (Gibson, 2006; Hacking & Guthrie, 2008). There is an abundant and burgeoning discourse and practice building around sustainability-directed assessment, which include several mining development applications (e.g., Gibson, 2005, 2001, 2006a, 2006b; Morrison & Therivel, 2006; Pope, 2006; Weaver et al., 2008). While the concept

adverse effects. Since the economic effects of this project were not determined to be significant and adverse there was no need to consider them any further” (YESAB, 2009, p. 27)

⁴¹ The term *impact assessment* is used interchangeably with *environmental assessment* among practitioners and in the literature and in practice.

is relatively well established (though not concretely defined), sustainability-directed assessments are largely still conducted on an *ad hoc* basis (Gibson, 2006, 2006; Pope & Grace, 2006). A full discussion of sustainability assessment is beyond the scope of this work, but in general, sustainability-directed assessments apply a “higher test”⁴² to projects—going beyond the conventional approach of testing a project for “acceptability” to evaluating its potential contribution to sustainable development. The application of the *Seven Questions* in this work is an example of a form of sustainability assessment. Boxes 5-1 and 5-2 provide examples of assessment processes in Canada that explicitly addressed the sustainability contribution of large-scale mining projects.

Box 5-1 The Voisey's Bay Nickel Mine Project, Labrador

A major nickel mining project proposed by Inco Limited (now Vale Inco) near Voisey's Bay, in northern Labrador underwent a “landmark assessment” between 1997 and 2002. The mine and mill are located on land belonging jointly to the Innu and Inuit people. The project was reviewed by a panel comprised of the federal and provincial government, as well as the Innu Nation and Labrador Inuit Association.

The environmental assessment was “a landmark in Canadian and global assessment practice because it introduced ‘contribution to sustainability’ as the basic test of acceptability [for the project]” (p. 334). The review process considered potential positive and negative impacts on environmental, social, economic, cultural, spiritual, recreational and aesthetic components, and emphasised attention to cumulative effects, traditional knowledge, and the precautionary principle. The panel outlined the following sustainable development objectives (p. 340):

- The preservation of ecosystem integrity, including the capability of natural systems to maintain their structure and functions and to support biological diversity;
- Respect for the right of future generations to the sustainable use of renewable resources; and
- The attainment of durable and equitable social and economic benefits.

The panel considered (p. 340):

- The extent to which the undertaking may make a positive overall contribution towards the attainment of ecological and community sustainability, both at local and regional levels;
- How the planning and design of the undertaking have addressed the three objectives of sustainable development;
- How monitoring, management and reporting systems will attempt to ensure continuous progress towards sustainability; and
- Appropriate indicators to determine whether this progress is being maintained.

“Adoption of sustainability-based decision criteria... changed how the main issues in the case were addressed, how the project was designed and what was approved. The higher test of ‘contribution to sustainability’ shifted the focus from mitigation of negative environmental effects during the life of the mine to net gains over the long term. The net gains requirement meant attention to trade-offs and compensations” (p. 342). The panel recommended that the Voisey's Bay mining project be allowed to proceed under certain conditions, which included (p. 339):

- The life span of the project is sufficient to permit establishment of lasting benefits;
- Land claim negotiations are completed first; and
- Specific agreements are reached with the affected Aboriginal groups on project impacts and benefits, and on co-management of environmental reviews during project implementation.

As a direct result of these recommendations, an agreement was struck with Inco to locate the ore smelter in Newfoundland and the production rate was lowered to increase the project life span from possibly as few as seven years to more than 30 years. Extensive impact and benefits agreements were signed between Inco and the Innu and Inuit, and an environmental co-management agreement was signed to monitor project effects. The federal government did not agree to settle land claims prior to project approval.

Sources: Gibson, 2006

⁴² Robert B. Gibson uses this phrase to describe sustainability assessment. See his works cited throughout this report.

The analyses in Section 4 revealed that in order for the YESAA Process to improve its sustainability contribution some key changes are required, notably:

- establishment of foundational sustainability principles and objectives reflected in supportive policies, directives or strategies;
- adoption of a more holistic and integrated assessment approach, including consideration of ecological and socio-economic systems function, and a project's net impact on sustainability; and
- consideration of positive environment and socio-economic effects/ benefits.

One way the YESAA Process' contribution to sustainable development can be improved is by incorporating sustainability considerations into the YESAB impact assessment approach— that is, adopting a sustainability-directed approach. Further investigation and planning is necessary to construct an approach appropriate for the YESAA Process.

Box 5-2 Kemess North Copper-Gold Mine Project, British Columbia (B.C.)

Northgate Minerals proposed to develop the Kemess North copper and gold deposit, nearby its existing mine operating in northern B.C. The project triggered assessment under the Canadian Environmental Assessment Act and the B.C. Environmental Assessment Act; thus, as is common practice when both provincial and federal assessment legislation is triggered, a Panel was struck to assess the potential environmental, economic, social, health and heritage effects of the project. The Panel review process involved comment periods and several public hearings to gather the perspectives of affected parties. The Panel was an independent advisory body charged with reviewing the project and making a recommendation for the government authorities to consider.

The Panel adopted a sustainability assessment framework based on the *Seven Questions to Sustainability* and the B.C. Mining Plan (see Box 5-4), consisting of five sustainability perspectives:

1. Environmental Stewardship – Is the environment adequately protected through all phases of development, construction, and operation, as well as through the legacy post-closure phase?
2. Economic Benefits and Costs – Does the project provide net economic benefits to the people of B.C. and Canada?
3. Social and Cultural Benefits and Costs – Does the project contribute to community and social well-being of all potentially affected people? Is it compatible with their cultural interests and aspirations?
4. Fair Distribution of Benefits and Costs – Are the benefits and costs of development fairly distributed among potentially affected people and interests?
5. Present versus Future Generations – Does the project succeed in providing economic and social benefits now without compromising the ability of future generations to benefit from the environment and natural resources in the mine site area?

Through its review, the Panel concluded that the project “in its present form would not be in the public interest” and recommended the project not be allowed to proceed. The Panel found that, “the economic and social benefits provided by the project, on balance, are outweighed by the risks of significant adverse environmental, social and cultural effects, some of which may not emerge until many years after mining operations cease”.

In recognising that the provincial government could reject the Panel's counsel and approve the project, the Panel additionally put forth 32 recommendations intended to help “enhance project benefits and facilitate effort to manage and minimise adverse effects, should the Project proceed”.

The government authorities, however, accepted the Panel's advice and rejected the project.

Sources: Kemess North Mine Joint Review Panel, 2007

Legislative Foundations

Table 5-1 presents the stated purposes of the YESAA, and the objectives of its “parent” statute, the Umbrella Final Agreement (UFA). While the YESAB has thus far chosen not to explicitly address sustainability, the purposes of the YESAA lay the groundwork for incorporating such considerations in assessments. Sec. 5(2)(e) requires assessments under the YESAA “to ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities and their residents, and societies in general, depend (emphasis added).” In fact, this is the definition of sustainable development included in the UFA. Sec. 42(1)(c) highlights the “significance of any environmental or socio-economic effects” among the matters to be considered in assessments. Other matters to be considered that address sustainability constructs include (a) the project’s purpose; (b) full project lifecycle; (d) the significance of adverse cumulative effects; (e) project alternatives; (g) protection of the rights, cultures and values of First Nations and other Yukoners; (h) the interests of Yukoners and Canadians; (2)(a) the need for effects monitoring; and (b) the capacity of renewable resources.

Table 5-1 Purposes of UFA Development Assessment Process and YESAA

Objectives of Chapter 12 of the UFA (s. 12.1.1)	Purposes of the YESAA (s. 5(2))
<ul style="list-style-type: none"> • Recognizes and enhances, to the extent practicable, the traditional economy of Yukon First Nations People and their special relationship with the wilderness Environment; • Provides for guaranteed participation by Yukon First Nations People and utilizes the knowledge and experience of Yukon First Nations People in the development assessment process; • Protects and promotes the well-being of Yukon First Nations People and of their communities and of other Yukon residents and the interests of other Canadians; • Protects and maintains environmental quality and ensures that projects are undertaken consistent with the principle of Sustainable Development; • Protects and maintains Heritage Resources; • Provides for a comprehensive and timely review of the environmental and socio-economic effects of any project before the approval of the project; • Avoids duplication in the review process for projects and, to the greatest extent practicable, provides certainty to all affected parties and project proponents with respect to procedures, information requirements, time requirements and costs; and • Requires project proponents to consider the environmental and socio-economic effects of projects and project alternatives and to incorporate appropriate mitigative measures in the design of projects. 	<ul style="list-style-type: none"> a) To provide a comprehensive, neutrally conducted assessment process applicable in Yukon; b) To require that, before projects are undertaken, their environmental and socioeconomic effects be considered; c) To protect and maintain environmental quality and heritage resources; d) To protect and promote the well-being of Yukon Indian persons and their societies and Yukon residents generally, as well as the interests of other Canadians; e) To ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities and their residents, and societies in general, depend; f) Recognize and, to the extent practicable, enhance the traditional economy of Yukon Indian persons and their special relationship with the wilderness environment; g) Guarantee opportunities for the participation of Yukon Indian persons and make use of their knowledge and experience in the assessment process; h) Provide opportunities for public participation in the assessment process; i) Ensure that the assessment process is conducted in a timely, efficient and effective manner that avoids duplication; and j) Provide certainty to the extent practicable with respect to assessment procedures, including information requirements, time limits and costs to participants.

Fundamentally though, according to YESAA sec. 58(1), the Executive Committee's overall recommendation must ultimately be made in consideration of whether the identified significant adverse environmental or socio-economic effects can be successfully mitigated. Even if sustainability is taken into consideration in the assessment, its final outcome is determined solely by the capability to *mitigate adverse impacts*. This undermines sustainability constructs that demand the consideration of negative *and* positive effects and advocates a net positive sustainability outcome. The draft YESAA Five-Year Review (2009) highlights, "There is no legislative and policy framework that requires concerted attention be given in YESAA assessments to the need to ensure long-term durable or "sustainable" socio-economic benefits from project". While the YESAA has clear sustainability foundations, some of its provisions seem incongruent with supporting its stated intentions in practice. This implies that the YESAB may need to revise its interpretation of some provisions, and that modifications to the Act may be required in order for the YESAB to defensibly incorporate sustainability into its practice.

5.3 Regulatory Process

Why isn't sustainability explicitly considered in the regulatory process presently?

When government informants were questioned about the reasons that sustainability is at present not explicitly incorporated into the regulatory instruments or decision-making process, two interrelated main points emerged. For one, informants emphasised that recent governance efforts have been centred on devolution, as well as First Nation land claim negotiation processes. And indeed, these aims are reflected in the commitments of the current government (The Yukon Party, 2006). Since devolution in 2003, the Territorial Government's main focus has been on adjusting to its new role as the primary regulator and administrator for the Yukon, informants indicated. The YG is very young in this role and is still "ironing out the kinks" in terms of effective function and delivery of services to Yukoners. As discussed, there is a focus on streamlining processes and achieving efficiencies within government. The implication is that an issue like sustainability may not be focused on because it is not critical to primary government functioning.

This relates closely to the second main point that emerged: that is, it appears that the issue of sustainability has not been given explicit attention, in part because the YG has not identified the *need* to do so. Three issues feed into this point: first, there has been no formal assessment or evaluation conducted to understand the implications of the regulatory legislation and policies on mineral resource development—through the lens sustainability or otherwise. Another important consideration is the fact that the resurgence of interest in large-scale mining development is relatively recent. The third issue that feeds into this second point is the emphasis put on the favourable comparison of the current system to the system operational in the 1990s and early 2000s.

Several informants highlighted the significant changes that have been made to the regime since then, and the considerable progress (especially in terms of environmental protection) that has resulted from the modifications. These improvements include the provisions within the Quartz Mining Land Use Regulations to regulate exploration activities that previously did not require an environmental assessment or regulatory authorisations to undertake, and which represented a significant environmental concern. As previously discussed, informants also emphasised the Mine Site Reclamation and Closure Policy (YG, 2006), the Security Regulation and the recently proposed changes to the royalty regime as important steps toward protecting the environment and ensuring benefits for Yukoners.

Operationalising Sustainability in the Regulatory Process

Based on the findings of the analyses, and information gathered during the interview process, this section identifies the most salient sustainability issues pertinent to the regulatory process and important for improving its contribution to sustainable development. These issues are also highlighted because of their role in supporting the function of the other processes of the governance regime. Some suggestions for addressing these issues are put forth.

Establishment of Sustainable Development Goals and Objectives, Plans, Strategies and Policies

Underpinning the issues discussed above, as well as the several shortcomings identified by the analysis, is the limited strategic vision or principles and the lack of specific government goals or objectives, plans or policies to guide resource development. It is clear from the YG Economic Development Strategy (YG Economic Development, 2005) and the current government's platform (The Yukon Party, 2006), that development of the Yukon's mining sector is a key priority. When questioned about the YG's strategic vision or principles guiding mineral resource development, informants indicated that the platform of the current government guides decision-making to some extent. The platform does include commitments to environmental management and protection, but it is not specific about resource development intentions and does not explicitly address sustainability (The Yukon Party, 2006). The mandate of the YG EMR, the primary administrator of the regulatory instruments, is "to responsibly manage and support the sustainable development of Yukon's energy and natural resources" (YG, 2008). The EMR's IRM Strategy also includes a clear goal to foster sustainable development; however, as previously discussed, this strategy has not yet been successfully implemented and is presently not available to the public. The YG should prioritise the implementation of the IRM Strategy.

Box 5-3 Government of Northwest Territories (GNWT) Non-Renewable Resource Development Strategy and Sustainable Development Policy

In its *Non-Renewable Resource Development Strategy (2000)*, the GNWT promotes development based on the principles of: partnership, sustainable development, economic diversification, and fiscal sustainability. The Strategy hinges on creating the right environment for development, managing development, and maximizing benefits (p. 10). The Strategy outlines a vision, identifies challenges and puts forth concrete actions to achieve the strategy's goals.

In 2005, the GNWT developed its Sustainable Development Policy to guide decision-making for natural resources development. The Policy includes principles, objectives, implementation guidelines, and specifies authority and accountability for its execution. It addresses sustainable resource use, stakeholder participation, balancing conservation and development in decision-making, and stipulates sustainability guidelines around ecological, economic, social, and cultural pillars.

"The Government of the NWT recognizes that environmental conservation is essential to long term economic prosperity while at the same time economic development can contribute significantly to the achievement of conservation goals. This interdependence between conservation and development will be officially recognized by the Government of the NWT through the application of the concept of sustainable development to all its decisions and actions related to natural and heritage resources in the NWT" (p. 1).

Source: GNWT, 2000; GNWT, 2005

The development of the Mine Site Reclamation and Closure Policy is one example of a policy that contributes to sustainability of major mines, and the YG, as the primary land and resource administrator and decision-maker for resource development in the Yukon, should continue to develop such mechanisms in support of sustainable development. Importantly, these tools

also support the sustainability contribution of the planning and assessment processes, in terms of providing direction toward sustainable development objectives. The neighbouring jurisdictions of NWT and British Columbia have developed policies and strategies founded on sustainability principles that guide resource development, and which have been the foundation for sustainability-related recommendations from the assessment process (Boxes 5-3 and 5-4).

Box 5-4 British Columbia's Mining Plan

The province of British Columbia, which lies directly south of the Yukon, has developed and implemented its B.C. Mining Plan (2005). In recognising the important role of mining in B.C.'s economy, the Plan is founded on the principle of developing the province's mining sector in a sustainable manner—ensuring “the industry is not only profitable but socially and environmentally responsible and, ultimately, sustainable for the long-term future”. The Plan is balanced around four cornerstones: 1) Focus on communities and First Nations; 2) Protecting workers, protecting the environment; 3) Global competitiveness; and 4) Access to Land.

B.C. has been working at implementing the multitude of strategies and concrete actions included in the Plan. The Plan has furthermore been used to guide decision-making for mining development. For example, the expectations laid out in the Plan were incorporated into the review process for the Kemsess North Copper-Gold Mine project (see Box 5-2).

Source: B. C. Ministry of Energy, Mines and Petroleum Resources, 2005

Consideration of Socio-cultural and Economic Implications

Inadequate treatment of socio-cultural and economic implications of mining development by the governance system emerges as a critical limitation. With respect to the regulatory process, two main issues require attention from government authorities: management of socio-economic effects of mining development through the regulatory process; and economic evaluation of large-scale mining projects.

Within the issue of socio-economic effects management, the underlying matters of the lack of baseline socio-economic data and inadequate regulatory frameworks emerge. Adequate socio-economic baseline data and trends are required for accurate assessment and effective management of impacts. While socio-economic data is collected on a project-by-project basis by companies in the development of application submissions, baseline data collection and management is generally considered to be the responsibility of government authorities. Collection and analysis of this type of data presents considerable challenges—especially in regions like the Yukon with small populations (V. Van Hees, Policy Analyst, YG Health and Social Services, personal communication, June 25, 2009). In the NWT, the Territorial Government, in collaboration with mining companies operating in the region, has initiated a progressive programme to monitor the socio-economic implications of large-scale mining development on eight affected communities (Box 5-5). This is one approach that may be considered by the YG as more large-scale projects begin operating in the Yukon to address this gap.

Interview informants consistently raised the issue of inadequate regulatory frameworks for socio-economic effects management. A regulatory framework that better addresses these elements is necessary in order to carry out socio-economic measures identified through the YESAA Process, and generally, to ensure First Nations and community values and interests are respected, and benefits of resource development are realised. As identified in the draft YESAA Five-Year Review, and reinforced during the interviews, regulatory authorities face “significant challenges in implementing measures to effectively mitigate the socio-economic

impacts identified in YESAA assessments” (SENES Consultants Ltd, 2009, p. 60). The YG has rejected or varied many socio-economic measures included in YESAA recommendations because of a lack of regulatory “housing” to implement the measures. Two options for improving socio-economic effects management are to modify the regulatory framework to better address these issues, or look to supra-regulatory mechanisms.

Box 5-5 Communities and Diamonds – Collaboration on Understanding Socio-economic Impacts

Pursuant to socio-economic agreements (i.e., SRAs) between the GNWT and three mining companies conducting large-scale mining operations in the NWT, a programme has been established that uses objective and subjective indicators to monitor the socio-economic implications of large-scale mining development in the NWT. A multitude of indicators are monitored to understand effects on factors such as, individual, family and community well-being; cultural well-being; crime and family violence; economic aspects; education and infrastructure. Government and sustainability trends are also assessed. The GNWT issues the *Communities and Diamonds* Report annually. The reporting has taken place since 2000 and now sufficient data is in place and trends have been established to gain a better understanding of the types of socio-economic impacts arising from large-scale mining development.

Source: GNWT, 2007

As discussed in Section 3.4, supra-regulatory agreements (SRAs) are a common mechanism used in the North to address socio-economic impacts and other issues that prove difficult to tackle within existing regulatory frameworks. Two implications of acknowledging the role of supra-regulatory mechanisms in addressing such issues include: (1) SRAs should be a requirement of project approval by regulatory authorities; and (2) critically, regulatory authorities have to standardise the contents of these agreements to ensure they adequately address socio-economic impacts, benefits and related concerns. SRAs are often signed after the conclusion of the impact assessment, thus the assessment process is left without a means for assessing and verifying the appropriateness of the socio-economic mitigation measures included in the SRA (MVEIRB, 2004). Furthermore, SRAs are normally confidential agreements (Fidler, 2008). This implies stipulating SRA provisions and/or implementing some arrangement to share the contents of SRAs with government authorities. In the easternmost northern territory of Canada, Nunavut, the Inuit have stipulated in their Land Claim Agreement that an “Inuit Impact and Benefits Agreement” is a requirement of resource development activity. The Land Claim Agreement also stipulates “matters appropriate for Inuit Impact and Benefits Agreement”, including provisions for training, preferential hiring, joint business ventures, cultural considerations, arbitration and amendment procedures (Tunngavik Federation of Nunavut & Government of Canada, 1993, sec. 8.4.4). It is interesting to note that IBAs *are* a requirement for project approval under the *Yukon Oil and Gas Act* (sec. 68(2)), but *not* the QMA. As outlined in Box 5-5, the GNWT has taken an innovative approach to ensuring that SRAs meet government objectives.

Pertaining to economic evaluation, the preceding analyses highlights a significant gap in terms of understanding the overall economic implications of large-scale mining projects in the Yukon—from a project’s economic feasibility, to its costs and benefits, to its effects on economic diversification. At present, as ascertained through interviews, it appears that limited formal comprehensive economic evaluation is conducted for proposed large-scale mining projects within the YG, and such information is not publicly available. The *Seven Questions* framework emphasises the use of tools such as, cost-benefit analysis, economic risk analysis, and full ecological and socio-economic cost accounting, in evaluating the economics of a mining project. Both the *10 Sustainability Criteria* and the *Seven Questions* highlight equity effects

analysis to understand how costs and benefits are distributed among affected actors. This type of analysis is currently not being conducted. YESAB and government informants seemed to agree that it is more appropriate for government authorities to collect such information and conduct these types of analyses, since it is ultimately the responsibility of decision-makers to weigh costs, benefits and risks and make trade-off decisions (though the YESAA Process may *inform* trade-off decisions). Given this, the YG should consider adopting analytical tools and protocols to better understand the economic ramifications of major mine projects and the results of such analyses should be made publicly available.

Implementation of the IRM Cumulative Effects Management Framework (CEMF)

As previously highlighted, cumulative effects assessment and management emerge as an important sustainability issue for mineral development in the Yukon. This issue becomes particularly important in consideration of the surge of mineral development activity anticipated over the next 5-10 years, as well as the lack of strategic and regional planning currently in place. At present, the Yukon does not have a cumulative effects management framework in place; although a CEMF is one of the “Key Integrated Resource Management (IRM) Projects” identified in the most recent YG IRM Work Plan. The Work Plan states, “The YESAA Process requires the assessment and mitigation of cumulative effects arising from development activities. At this time, cumulative effects assessment and management is taking place at a project, resource planning and regional planning level, but there is not generally accepted framework for conducting this work. This initiative will require a coordinated and integrated approach across sectors and agencies in order for cumulative effects management to be successful”. The development and implementation of the CEMF should be prioritised in order to address this key sustainability issue.

Factors Undermining Sustainability

In addition to the range of challenges listed in the previous sections, informants representing different stakeholder categories consistently raised two issues potentially undermining sustainable mining development in the Yukon: the *free-entry staking system* and *resource revenues*. They are raised in this section, because both are directly influenced by the YG and the legislation it administers. While both matters lie outside the scope of this document as outlined in Section 1.2, they are considered here to highlight their implications for sustainability. These issues require further investigation.

In the Yukon, mineral tenure is granted under the ‘free-entry staking system’, whereby any individual or company can obtain exclusive rights to publicly owned minerals on state land by staking a mineral claim⁴³ (YG EMR, 2008b). Several informants highlighted this system as fundamentally undermining sustainable development of the mining sector, arguing that it essentially gives mining the highest land use priority.

Informants also raised the issue of mineral resource revenues—in particular, the royalty regime under the QMA⁴⁴ and the revenue cap under the Devolution Transfer Agreement—and the implications for sustainable mining development. A royalty is a payment to resource

⁴³ State, or Commissioner’s land, comprises the majority of land in the Yukon. Exception to the free-entry systems include First Nation Settlement Lands, parks and other special management areas, agricultural land, and some other classes of land.

⁴⁴ The QMA Mine Royalty Provisions (March 2008) have been updated and are currently out for public consultation.

owners for the extraction of minerals and represents one of several forms of mineral resource revenues. The amount of royalties paid for hardrock mining is currently calculated as a percentage of the mine's profit. Informants highlighted several problems with this method of royalty generation. Additionally, some informants commented on the ineffectiveness of the royalty regime in facilitating intergenerational equity.

Stakeholders also raised the issue of the CAD3 million cap set by the Federal Government on the Yukon's resource revenues. This cap means that for any resource revenue made by the YG beyond this amount, the federal government holds back the equivalent amount from its annual transfer payments to the Territory⁴⁵; thereby potentially providing a disincentive for the YG to develop regulation that maximises revenue from mineral extraction.

⁴⁵ Territorial Formula Financing is an annual transfer payment from the federal Government of Canada to the three northern Canadian Territories to support government service delivery, development and in the Yukon, devolution implementation requirements.

6 Conclusion

Achieving sustainable mining development is a considerable challenge. Sustainability in the context of large-scale mining development has been presented as being about achieving balance among environmental, societal, cultural, polity and economic pillars and exploring the interlinkages among them. It involves finding ways to minimise costs and maximise benefits through trade-offs among some forms of capital. Sustainable mining development requires the acceptance of tradeoffs and costs and demands that significant efforts are made to minimise risks, maintain or enhance ecological and socio-economic integrity and attain durable gains from mineral extraction activities.

Amid increasing mineral development and a legacy of environmental and socio-economic mining impacts, decision-makers in the Yukon have committed to sustainable development of the mineral sector. Despite this, the governance regime for large-scale mining development does not explicitly consider sustainability in its decision-making or management practices. This work set out to evaluate the planning, assessment and regulatory processes that comprise the governance regime for their individual and collective contribution to sustainable development *in practice*, and to identify their strengths and shortcomings.

A multifaceted approach was used to conduct the research, involving a variety of data collected from several sources. Data assembled through a literature and material review was supplemented and triangulated by information gathered through a series of in-depth semi-structured interviews with informants representing multiple stakeholder categories. Two analytical frameworks developed specifically for mining in a North American context were applied in order to provide an indication of the sustainability contribution of the governance regime. The first, *10 Sustainability Criteria*, is a framework used in a Master of Environmental Studies research project from 2000 investigating the same topic (Craig, 2000). Nearly a decade later, and following considerable governance reform, the Criteria were applied in this study to understand the sustainability implications of the regime today, and compare it with the previous findings. The regime was further analysed by assessing the first large-scale mine to undergo the reformed governance processes against the *Seven Questions to Sustainability* framework, developed through the global Mining, Minerals and Sustainable Development (MMSD) initiative.

In some ways, sustainability seems to have “fallen between the cracks” of the governance regime. Information gathered from the interviews revealed that the YESAB expects sustainability to be incorporated into the planning and regulatory processes; likewise YG informants indicated that many sustainability issues (e.g., socio-economic effects) should be addressed by the YESAA Process. This work demonstrates that overall, the governance regime consisting of planning, assessment and regulatory aspects, is not contributing to sustainable development effectively and that relatively little progress has been made since 2000. The analyses show that modifications to each process are required to improve the respective instrument’s contribution, and to add to the regime’s overall sustainability input. Each governance instrument has a role to play in contributing to sustainable development of large-scale mining. If efforts to improve the processes are coordinated, synergies toward this aim can be achieved.

The governance regime exhibits some strengths in terms of its sustainability contribution, but overall, it was determined to be unsuccessful in achieving this aim. The analyses focused on the assessment and regulatory mechanisms, because of the limited implementation of the

planning instruments in the Yukon, despite their considerable potential for contributing to sustainable development.

Analysis using the 10 Sustainability Criteria reveal the assessment process to be a stronger contributor to sustainability than the regulatory process overall. The assessment process exhibits strengths in terms of its facilitation of stakeholder engagement, its level of integration within the regime, and its foundational sustainability ethic. It also assesses a broad range of environmental effects, including cumulative effects, and attempts to incorporate First Nations traditional knowledge. The YESAA Process suffers from a lack of integrated approach to its impact assessment methods. While the YESAA Process does take socio-economic considerations into account to some extent, this element emerges as its greatest shortcoming. The Process attempts to consider socio-cultural values and facilitates communication of First Nations and communities interests and values; however, it does not adequately address community well-being, self-reliance and benefits—largely because it does not explicitly consider positive socio-economic impacts or benefits. Economic analysis is also lacking.

The 10 Sustainability Criteria reveal both strengths and shortcomings in the regulatory process as well. The regulatory instruments also have a foundational sustainability ethic, but they additionally have some supportive strategies and policies (e.g., the Mine Site Closure and Reclamation Policy and the YG Integrated Resources Management [IRM] Strategy). The regulatory instruments are reasonably well coordinated within the overall regime, and importantly, they include monitoring and enforcement provisions. Here too though, consideration of socio-economic issues of large-scale mining development was found to be weak. Positive effects or benefits of mine development are not considered within the regulatory process.

Since the governance processes are designed to work together, analysis across the instruments reveals additional information about the overall regime. Across the regime, some of the shortcomings of one instrument are addressed by the other. The comprehensive public policy framework aspect, outlined by the first three Sustainability Criteria, proved to be the strongest sustainability contributor. The instruments are, however, lacking sustainability principles and objectives, as well as adequate supportive policies, plans and/or strategies. Ecological integrity is addressed by the regime, but there are considerable limitations, particularly with respect to consideration of the function of ecological systems and cumulative effects. This work indicates that consideration of socio-economic integrity and promotion of socio-economic benefits toward sustainable mining development emerge as the weakest aspect of the governance regime.

Analysis of the first major mine to undergo the reformed governance process with the MMSD's *Seven Questions* largely reinforces the findings of the 10 Sustainability Criteria analysis. The regime was found to be deficient in meeting the “test” for sustainability overall. The *Seven Questions* highlighted the regime's strength as an integrated and coordinated process and in stakeholder engagement. It also emphasised the regime's weaknesses in addressing economic issues, including project economics, full cost accounting and cost-benefit analysis, as well as distribution of costs and benefits and equity effects. Here too, the lack of ecosystem-level assessment detracts from the regime's consideration of environmental aspects. The analysis revealed that the regime inadequately addresses social considerations of major mine development. The *Seven Questions* stressed the regime's lack of overall integrated assessment, in terms of consideration of alternatives and overall synthesis to ascertain a project's net effect on sustainability in the short- and long-term.

Interviews revealed that sustainability has not explicitly been incorporated into governance and decision-making for large-scale mining development for several reasons. Chief among them is that the administrators of the regulatory and assessment processes have had other priorities to address. Interview informants indicated that devolution, First Nations Land Claims and enactment of the YESAA have been the strategic priority and focus of resources.

Section 5 outlined some approaches to move sustainability ahead within the governance regime. The importance of prioritising the implementation of planning processes is emphasised—but in the absence of planning at present, the significance of instituting sustainability in the assessment and regulatory processes becomes especially critical.

Within the YESAA Process, *establishment of foundational sustainability principles and objectives*; *adoption of more holistic and integrated assessment approach*; and *consideration of positive environmental and socio-economic impacts and benefits*, emerge as key factors to be addressed in order to improve its sustainability contribution. The adoption of a sustainability-directed assessment approach is put forth as a potential means of explicitly incorporating sustainability into the Process and addressing these issues. *Establishing sustainability objectives and principles* emerges as a key factor in enhancing the regulatory process' contribution to sustainable development, in addition to *addressing socio-cultural and economic implications of mining projects*, and *implementing the IRM Strategy, especially the YG Cumulative Effects Management Framework (CEMF)*. Example approaches from neighbouring Canadian jurisdictions may provide insight into ways the regulatory process might explicitly incorporate sustainability.

This work has put forth some suggestions for addressing the shortcomings identified in the governance instruments, and improving their sustainability contribution. These suggestions are not exhaustive and have not been thoroughly investigated for their feasibility. Rather, they are intended to illustrate possible ways forward and to provide some guidance on research directions to pursue, based on the research conducted for this work. There are a myriad of ways to improve the sustainability contribution of the planning, assessment and regulatory processes of the mining governance regime. Table 6-1 summarises the suggestions made in this work.

Table 6-1 Summary of Suggestions for Improving the Sustainability Contribution of the Governance Instruments

Instrument	Key Considerations	Suggestions
Planning	<ul style="list-style-type: none"> Inadequate implementation of planning mechanisms to support sustainable mining development 	<ul style="list-style-type: none"> Streamline land use and regional planning processes Prioritise regions most affected by mining development for planning Develop Special Management Areas
Assessment	<ul style="list-style-type: none"> Lack of foundational sustainability principles and objectives and supportive policies, directives or strategies Inadequate application of holistic and integrated assessment approach Inadequate consideration of positive environment and socio-economic effects/ benefits 	<ul style="list-style-type: none"> Establish principles and objectives; develop policies and strategies in support of sustainable development Adopt sustainability-direct assessment approach Consider modifications to the legislation
Regulatory	<ul style="list-style-type: none"> Lack of foundational sustainability 	<ul style="list-style-type: none"> Establish principles and objectives; continue to

Instrument	Key Considerations	Suggestions
	principles and objectives and supportive policies, directives or strategies <ul style="list-style-type: none"> <li data-bbox="399 323 781 375">• Inadequate consideration of socio-cultural and economic implications <li data-bbox="399 386 781 443">• Lack of Cumulative Effects Management Framework (CEMF) 	develop policies and strategies in support of sustainable development <ul style="list-style-type: none"> <li data-bbox="833 302 1344 401">• Develop regulatory framework for socio-economic effects management; consider developing provisions for supra-regulatory agreements. <li data-bbox="833 411 1344 468">• Establish protocols for comprehensive economic analysis for major mining projects <li data-bbox="833 478 1344 552">• Implement Integrated Resources Management (IRM) Strategy; especially the Cumulative Effects Management Framework (CEMF)

This work focuses on the governance regime, but other stakeholders play important roles in sustainable mining development as well; for example, the *mining industry*, through its practices, reporting and precedents; *First Nation Governments*, through establishment of legislation and supportive strategic plans and policies, and guidelines; and *communities*, through further development and dissemination of community and regional sustainability plans, based on their goals, expectations, needs and capacities in preparation for mining development that affects them. These considerations should be given attention in future research.

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Appendix A Interview Questions

The following outlines the general types of questions posed to interview informants. These questions were intended to guide the interview process and were not necessarily strictly followed.

Yukon Environmental and Socio-economic Assessment Board

- How would you define sustainable development of large-scale mines in the Yukon?
- What do you think the YESAB's role is in promoting sustainable development of mining projects?
 - Who are the other actors? What are their roles?
- Why isn't sustainability incorporated into YESAA deliberations at present?
- What do you feel the challenges or limitations of the YESAA process are in promoting sustainable development?
 - How feasible would it be to institute sustainability into the YESAA assessment process?
- What challenges or barriers do you foresee with instituting this type of shift in assessment approach?
- YESAA does not operate in a silo; rather it functions within an socio-political and institutional framework – what external conditions are necessary to facilitate a sustainability-directed assessment approach?
 - i.e., what “support infrastructure” is required? (e.g., sustainability goals and principles, policies, plans, land use planning, YG support, etc?)
 - The NWT has a Sustainable Development Policy guiding resources development – Would such a policy help the YESAB in its work?
- Is there any interest from proponents in addressing sustainable development?

First Nations

- How would you define sustainable mining development in the Yukon?
- How has the development and operation of the XX mine affected the First Nation and the community? In what ways has it affected you positively? In what ways has it affected you negatively?
- Do you feel that First Nations' perspectives and interests are adequately considered in the assessment and decision-making process for mining projects?
- How successful do you think the mining project assessment and decision-making process is at promoting sustainable mining development?

- How could the decision-making process be modified or improved to better foster more sustainable development of mining projects?
- Who are the important actors involved in ensuring the sustainable development of mining projects?
- The NWT has a Sustainable Development Policy guiding resources development (attached) – do you think the Yukon could benefit from a similar policy?

Yukon Government

- How does YG define sustainability in the context of non-renewable resources development? How does YG define sustainable development of large-scale mines in the Yukon?
- How does YG incorporate or consider sustainability in planning and decision-making for resources development?
- What policies, plans or strategies guide non-renewable resource development planning? Do these policies, plans or strategies explicitly address sustainability?
 - The NWT has a Sustainable Development Policy guiding resources development – does the Yukon have a similar policy? Would the Yukon benefit from such a policy? Would such a policy help YG in its work?
- (If it is not) Why isn't sustainability explicitly incorporated into YG practice at present?
- Does YG have specific goals, objectives or indicators for sustainable non-renewable resources development? For mining specifically?
- What role does the YESAA assessment play in sustainable resources development versus the regulatory and permitting process?

Non-Government Organisations

- How would you define sustainable mining development in the Yukon?
- What are the most significant mining sustainability issues faced by the Yukon?
- How well do you think the governance process is doing at ensuring sustainable mining development?
- What do you think YESAB's role is compared to the YG's role in ensuring sustainable mining development?
- What are the biggest threats to sustainability of mining projects?

Appendix B Rationale for the 10 Sustainability Criteria

The following table outlines the rationale and sub-questions corresponding to each of the 10 Sustainability Criteria from Craig (2000) and applied in this research. The table has been adapted and updated from Craig (2000).

1. Incorporates foundational sustainability ethic	
Rationale	<ul style="list-style-type: none"> • Sustainability/ sustainable development is an overarching objective and its application by government is expected in clearly articulated policies, legislation and regulation. • Sustainability has been included as both a global/national Agenda 21 priority, as well as a Yukon priority in its economic strategies.
Sub-Questions	<ol style="list-style-type: none"> a. Does legal and regulatory framework specify sustainability objectives supported by sustainability principles and supporting policies? b. Is lifecycle (cradle to grave) analysis integral to assessments and decisions?
2. Integrates planning, assessment and regulatory framework including monitoring and enforcement	
Rationale	<ul style="list-style-type: none"> • Multi- and cross-sectoral implications including ecological, economic, socio-cultural and socio-political factors should be considered with variances from approved plans and assessments fully explained. Such integration is necessary both for clarity and efficiency. • Such integration is included as a global priority in Agenda 21, the Brundtland Commission (United Nations World Commission on Environment and Development (WCED), 1987), and facilitates the holistic perspective advocated by the International Institute for Sustainable Development (IISD) Bellagio Principles. Nationally, integration is established under the Whitehorse Mining Initiative ("ICMM Library • Community Development Toolkit," n.d.), and Environment Canada's Sustainable Development Strategy 2007-09 (Environment Canada, 2007); and regionally under the Yukon Environment Act, the Yukon Environmental and Socio-economic Assessment Act (YESAA) and the Umbrella Final Agreement (UFA). Integration is also one of the main goals of the YG Integrated Resource Management strategy.
Sub-Questions	<ol style="list-style-type: none"> a. Are processes complementary and well coordinated, with strong linkages (e.g., approvals not made in isolation)? b. Are processes streamlined and efficient (e.g., one window, clear structure and process, includes timelines, avoids jurisdictional overlap)?
3. Ensures effective citizen participation and decentralised decision-making	
Rationale	<ul style="list-style-type: none"> • Decisions should be taken at lowest practicable level and in closest proximity to those most affected; consideration of spatial and temporal effects is also factored into decentralised processes. • Such participation and decision-making is specified globally as a priority in the Brundtland Commission, the Rio Declaration and the IISD Bellagio Principles, as well as in the Yukon Economic Strategy (Yukon Government (YG), 1998), the Yukon Environment Act, the YESAA, and the UFA. Effective stakeholder participation is also one of the main goals of the YG Integrated Resource Management strategy.
Sub-Questions	<ol style="list-style-type: none"> a. Is there early and ongoing involvement of citizens enabling response before decisions are taken? b. Are communities given a decision-making role and if so, are mechanisms established to ensure ecological and socio-economic integrity is not sacrificed?
4. Assesses alternatives and technology	
Rationale	<ul style="list-style-type: none"> • Alternatives to conventional approaches and compatibility with sustainability objectives should be considered before an option is selected; as well, appropriateness of technology should be analysed. • Assessment of alternatives is identified in the YESAA and the UFA; the appropriateness of technology is identified as a priority in the Brundtland Commission.

Sub-Questions	<ol style="list-style-type: none">a. Is assessment of alternatives and technology mandatory?b. Is an assessment conducted to ensure that the proposal will either preserve or enhance the ecosystem and not reduce biodiversity?c. In light of technological advances, are provisions for modification built in?
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5. Adopts adaptive and interactive approaches and addresses maintenance or enhancement of ecological functions

Rationale	<ul style="list-style-type: none">• Consideration is given to interactions of the systems, impacts and long-term consequences. As well, historical, adverse ecological and socio-economic effects are ameliorated.• Global/national Agenda 21 established this as a priority, as well as the Brundtland Commission, the Rio Declaration, the Millennium Development Goals; nationally, this is a goal of Environment Canada's Sustainable Development Strategy 2007-2009, and regionally, this is set out in the Yukon Environment Act and the UFA. An iterative, adaptive and responsive approach is also advocated by the Bellagio Principles.
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Sub-Questions	<ol style="list-style-type: none">a. Do flexible mechanisms exist to ensure maintenance or improvement of ecological functions, including no net loss of renewable resources and do they address ecological responses?b. Are there clear linkages between outcomes and policy/regulatory responses?c. Are mechanisms or strategies in place to facilitate reclamation of abandoned sites?d. Is it mandatory to consider traditional and local knowledge?
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6. Respects uncertainty and risks

Rationale	<ul style="list-style-type: none">• The precautionary principle requires that scientific uncertainty not be seen as an acceptable reason to postpone cost-effective preventative or remedial measures and imposes the need to exercise caution and concern for natural values, favouring project options that avoid potential risks, are replaceable and reversible.• The precautionary principle is advocated at a global level in the Brundtland Commission, the Rio Declaration, and Agenda 21. This principle is also advocated nationally in the Minerals and Metals Policy of the Government of Canada (GC, 1996), the Whitehorse Mining Initiative, and the Yukon Conservation Strategy (YG, 1990).
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Sub-Questions	<ol style="list-style-type: none">a. Are contingency plans and risk analysis integral to requirements and is the precautionary principle applied?b. Are compliance and effects monitoring required and are mechanisms for responding clearly established?
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7. Assesses transboundary and cumulative effects

Rationale	<ul style="list-style-type: none">• Effects outside of the Yukon, as well as the temporal and spatial cumulative effects of multiple sources of land and resources use, warrant consideration.• This assessment is established in the Brundtland Commission and Rio Declaration; as well as in the YESAA, the UFA, the Yukon Environment Act and the Yukon Conservation Strategy (YG, 1990).
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Sub-Questions	<ol style="list-style-type: none">a. Is it mandatory for these aspects to be assessed?b. Does comprehensive baseline information exist for monitoring effects?c. Is there provision for long-term monitoring of effects and subsequent modification if necessary?
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8. Promotes community self-reliance and benefits

Rationale	<ul style="list-style-type: none">• Those directly impacted by development should benefit from projects through employment, training, and business opportunities.• Such requirements are established in the Brundtland Commission. Nationally, the Whitehorse Mining Initiative and the federal Minerals and Metals Policy recognise the importance of community self-sufficiency and benefits, especially concerning First Nations people. Regionally, this is advocated in the UFA, the Yukon Conservation Strategy and is identified in the Yukon Economic Growth Perspective 2005-2025 report (YG Economic Development, 2005).
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Sub-Questions	<ol style="list-style-type: none">a. Are community benefit agreements requirements or long-term participation agreements advocated?
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	<ul style="list-style-type: none"> b. Do training programmes exist for affected communities? c. Are commitments enforced and monitored? d. Is evaluation of equity effects mandatory?
9. Respects First Nations as well as other community interests and values	
Rationale	<ul style="list-style-type: none"> • First Nations rights, customs, and traditions, as well as community values and concerns are fully assessed and meaningful participation should be assured. • Such requirements are established as a global priority in the Brundtland Commission, the Rio Declaration and Agenda 21; nationally under the Whitehorse Mining Initiative, the federal Minerals and Metals Policy, and regionally in the UFA, the YESAA, the Yukon Environment Act, and the Yukon Conservation Strategy.
Sub-Questions	<ul style="list-style-type: none"> a. Are mechanisms in place to ensure that First Nation governments and communities can articulate their own interests and values to established processes? b. Are culture, traditions, local knowledge and priorities analysed and considered in decision-making processes? c. Are mechanisms established which guarantee participation in planning, decision-making and monitoring arrangements?
10. Contributes to economic diversification and stability	
Rationale	<ul style="list-style-type: none"> • Proposed undertakings should broaden the economic base and contribute to community/ regional stability and adaptability. • This is a priority of the Brundtland Commission, the Rio Declaration, and Agenda 21; nationally this is established under the Whitehorse Mining Initiative, and under the Yukon Economic Growth Perspective 2005-2025 report (YG Economic Development, 2005). A diversified private sector economy is also one of the four main development areas identified by the Yukon Government.
Sub-Questions	<ul style="list-style-type: none"> a. Is a mandatory assessment of community and regional socio-economic circumstances required? b. Do processes promote community stability and broadening of the economic base? c. Are community economic or resource management plans considered in assessments and decision-making processes?