Issues and Recommendations for Social and Economic Impact Assessment in the Mackenzie Valley

Delivering on the Mackenzie Valley Environmental Impact Review Board's Mandate to Assess the Socio-Economic Impacts of Proposed Developments

Prepared by the MVEIRB, with assistance from Consilium and Gartner Lee Limited

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EXECUTIVE SUMMARY

The Mackenzie Valley is once again experiencing major mining and oil and gas activity. Diamond mining and oil and gas developments provide a variety of economic and social benefits including more employment, training and more government revenues from taxes and royalties. However, there are serious negative impacts that can arise, including social disruption and stresses on communities, their infrastructure and services. Non-renewable resource development, therefore, presents residents of the Mackenzie Valley with very significant challenges with respect to sustainable development, including managing adverse social and economic impacts in a way which lessens the economic peaks and valleys that come with the non-renewable resource economy. This would ensure that governments can meet the true costs of development, and ensure that people can take advantage of opportunities for community economic and social development.

In this discussion paper, the Mackenzie Valley Environmental Impact Review Board (MVEIRB) with assistance from Consilium and Gartner Lee Ltd., explores the contribution social and economic impact assessment (SEIA), as part of overall environmental assessment (EA), can make to better long-term decisions about social and economic sustainability in the Mackenzie Valley. The paper highlights the requirement to put into practice sound, high-quality SEIA processes under the *Mackenzie Valley Resources Management Act* (MVRMA) and suggests improvements and action items for the future conduct of SEIA. The Paper will be used to consult with stakeholders on planning and priorities for the development of SEIA guidelines.

PART A: ASSESSING SOCIO-ECONOMIC SUSTAINABILITY AND THE ROLE OF SEIA

In Part A the paper introduces issues, theories and concepts related to non-renewable resource development impacts, sustainable development and SEIA.

Socio-Economic Sustainability: Putting Principles into Practice

To properly assess the socio-economic sustainability of proposed projects, SEIA processes must:

- be driven by consistent and geographically relevant sustainability principles (for example, taking precautionary measures in decision-making);
- address fairness and equality between current and future generations;
- link vision and goals to indicators and standard measurement;
- examine long-term socio-economic cumulative effects, limits of acceptable change and associated thresholds;
- be open and transparent, by making clear what assumptions and judgments were used;
- provide for continuing capacity to carry out ongoing and adaptive assessment; and,
- clearly assign responsibility and support in decision-making.

Another requirement for assessing socio-economic sustainability is continued support for standardizing innovative measurements of social and economic progress, for example the use of full-cost accounting approaches and genuine progress indices (GPI).

Also critical for sustainable development is the identification of new ways to harness the long-term local benefits from larger projects.

Doing SEIA: Process, Tools and Challenges

The paper provides an overview of the goals, objectives, processes and tools generally applied in SEIA. It finds that while the goals of SEIA seem to be moving towards ensuring developments provide maximum benefits for affected people and address fair distribution of costs and benefits, the technical practice of SEIA in Canada still faces some challenges. These challenges relate to a variety of issues, including:

- industry-driven analysis;
- incorporation of Traditional Knowledge;
- fully considering women's views and appropriate gender analysis;
- lack of funds for public participation;
- lack of adequate baseline information on social and economic conditions, particularly in the North where the traditional economic activities are often under-measured;
- difficulty of predicting socio-economic significance of impacts; and,
- the confidentiality of Impact Benefit Agreements (IBA's) and how they should be dealt with in the context of EA.

PART B: PROTECTING THE SOCIAL, ECONOMIC AND CULTURAL WELL-BEING OF RESIDENTS IN THE MACKENZIE VALLEY: RECOMMENDATIONS FOR IMPROVEMENTS UNDER THE MVRMA

In Part B, the paper explores the use of sustainability approaches in SEIA by agencies with social and economic mandates in the NWT, and analyses current SEIA approaches carried out under the *Mackenzie Valley Resource Management Act* (MVRMA).

Operational Framework for SEIA under the MVRMA

For SEIA to function well under the MVRMA, guidelines should clearly assign roles and responsibilities in the decision-making process and guide developers and others on best practices. Aside from key roles that co-management bodies, in particular the MVEIRB, play in assessing social and economic impacts of proposed developments, the Government of the Northwest Territories (GNWT) also plays a key role in the SEIA process because of its legal jurisdiction for many social and economic sectors in the NWT. GNWT strategies, policies and initiatives affecting SEIA include:

- development of social and economic indicators under socio-economic agreements and other initiatives (e.g. Social Agenda);
- collection of baseline information on vital community statistics; and,
- fiscal analysis of projects through its input/output model.

At the federal level, Department of Indian Affairs and Northern Development (DIAND) is responsible for the development of cumulative effects assessment and monitoring frameworks concerning human health and community well-being. The National Energy Board (NEB), along with DIAND, is responsible for review and approval of safety and environmental protection plans submitted by developers.

A preliminary scan of initiatives affecting SEIA and socio-economic sustainability reveal four key issues.

1. It is not clear at this time whether broad government strategies or mechanisms are in place that allow for adaptive management (improving our ability to learn from experience) and which tie the vision for sustainable development to community development, land use planning, assessment and monitoring.

2. Crucial parts of the MVRMA have not been implemented. Land Use Plans, which are critical for determining social and economic values with respect to land use, are not yet in place,. The Cumulative Impact Monitoring Program (CIMP) and audit is still incomplete, which is important for determining how multiple projects impact upon limits of acceptable social change.

3. Many social and economic indicators are being identified, tracked and analyzed through the Diavik and BHP projects and through vital statistics (for example employment, education and health) collected by the GNWT and Canada. This is a positive initiative for the purposes of SEIA. In the next year, the GNWT will be working on a more comprehensive socio-economic indicator program under the Social Agenda, which could prove useful for the purposes of SEIA.

4. Finally, there has been little work done on the development of social or economic thresholds in the NWT, which are critical for the successful application of cumulative effects assessment to valued social and economic components.

Enhancing Project-Level SEIA: Specific Considerations and Required Action

To improve the operational, participation and technical aspects of SEIA, the paper recommends:

1. Establishing a SEIA Technical Working Group consisting of the MVEIRB, GNWT departments and the Mackenzie Valley Land and Water Board.

2. Developing consultation guidelines to broaden and strengthen public participation and improve community involvement in SEIA, including guidelines for proponents on cross-cultural consultation, community-based research licencing and for ensuring community preparedness issues are identified and appropriately addressed early in the process.

3. Improving the SEIA processes technically, by doing the following:
    - Standardizing some aspects of SEIA Terms of Reference.
    - Providing input on ways to improve quality and use of social and economic baseline information (e.g. traditional economy, impacts on women, use of traditional knowledge, and economic and fiscal baseline information related to royalties, payroll taxes, corporate taxes, and transfer payments).

- Providing guidance on methods for predicting social and economic impacts, including the use of appropriate techniques for social and economic analysis, valuation of intangibles and criteria for use of valued social and economic components and indicators.
- Improving significance determination by developing guidelines for describing socio-economic magnitude, duration and frequency ,clarifying requirements for social and economic thresholds, and the applying of the precautionary principle.
- Strengthening mitigation, monitoring and management requirements by providing guidance on appropriate mitigation measures, follow-up requirements in the post-approval stage and sequencing of Impact Benefit Agreement negotiations in relation to results of the SEIA's related to mining projects.

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1. INTRODUCTION

The Mackenzie Valley Environmental Impact Review Board (the Review Board) is an institution of public government created by Part 5 of the *Mackenzie Valley Resources Management Act* (MVRMA), a federal statute. The MVRMA establishes the Review Board as the main instrument for environmental assessment (EA) and environmental impact review (EIR) of proposed developments in the Mackenzie Valley, including the assessment of social, cultural and economic impacts. The assessment and review framework established under the Act, particularly section 115, requires that the Review Board consider "*the protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley*". The MVRMA gives the Review Board the authority to set guidelines for the social and economic impact assessment (SEIA) of proposed developments.

This discussion paper explores the contribution SEIA can make to social and economic sustainability in the Mackenzie Valley. It will be used for public consultation prior to the development of SEIA guidelines that will govern future EA and EIR.

The discussion paper is divided into two Parts. Part A, "*Non-Renewable Resource Development and Socio-Economic Sustainability*: *The Role of SEIA*" provides background context and concepts respecting social and economic sustainability and the practice of social and economic impact assessment. Specifically, Part A:

- Highlights the **need** to implement good SEIA practice in the Mackenzie Valley in light of the current prospects and challenges facing residents with respect to non-renewable natural resources development;

- Provides an **overview** of sustainable development, sustainability principles and their role in SEIA (including assessment, adaptive management and indicators), and the importance of deriving long-term benefits from non-renewable resource developments; and,

- **Defines the purpose, goals, and objectives** of SEIA and identifies challenges with respect to its application in a sustainable development context.

Part B, "*Protecting the Social, Cultural and Economic Well-Being of Residents of the Mackenzie Valley: Issues and Recommendations for SEIA in the Mackenzie Valley***"** provides an overview of the policy framework supporting SEIA in the Mackenzie Valley and the opportunities for improving SEIA. Specifically, Part B:

- Outlines the **current operational framework** for the conduct of SEIA in the Mackenzie Valley and describes, on a general level, the status of work by various agencies on the identification of valued social and economic components (VSCs), related indicators, and monitoring and mitigation initiatives;

- Identifies the requirement for systematic approaches to enhance both industry and stakeholder **participation** and the technical processes required to carry out SEIA; and,

- Suggests **improvements** and action items for SEIA under the MVRMA in order to support the development of SEIA guidelines.

1.1. Methods, Scope and Limitations

The paper was developed using a variety of consultative and qualitative research methods. An assessment survey identified key SEIA issues of various stakeholders in the Mackenzie Valley. Stakeholders included First Nations, government departments involved in social and economic impact assessment and community and municipal affairs, social and environmental non-government organizations, social activists and industry. Informal discussions with a number of government officials were held; key areas of interest were also reviewed during internal Review Board discussions (*a list of stakeholder organizations who responded to the survey and government officials consulted is attached in Appendix A*).

This paper was developed with the assistance of an SEIA team put together by Consilium and Gartner Lee Ltd. This team bring many years of experience to the issues of sustainable development, northern community economic development, resource management and SEIA in the Mackenzie Valley, Northern Canada and internationally.

The practice of SEIA, specifically in the context of social and economic sustainability, is a complex subject. This paper covers a wide range of topics, concepts and issues surrounding the practice of SEIA. It is by no means an exhaustive review of sustainable development requirements SEIA theory, practice or initiatives in the Northwest Territories. It is intended to raise awareness and to prompt further discussion on preferred approaches and directions for SEIA, in order to help shape and develop guidelines for its practice under the MVRMA. The paper is focused on EA and EIR requirements and does not focus on preliminary screening. The issues and questions raised in the discussion paper may, however, be useful in this context as well.

PART A:

NON-RENEWABLE RESOURCES DEVELOPMENT, SOCIO-ECONOMIC SUSTAINABILITY AND THE ROLE OF SEIA.

The most compelling reason for ensuring that sound and consistent approaches are developed for social and economic impact assessment (SEIA) in the Mackenzie Valley is the impending wave of large-scale projects, and the impact these projects will have on Northern communities. All communities will be affected. Larger communities, especially Yellowknife, will feel the stresses of increased activity and insufficient housing capacity, while smaller ones will face the prospect of losing their traditional economy and their energetic young. Throughout the Mackenzie Valley, infrastructure, both physical and social, will be tested, in some cases severely.

With the anticipated acceleration of mining and oil and gas development, SEIA practice must address the short and long term. In the short-term, non-renewable resource development creates benefits such as wage employment, but can also contribute substantially to social instability. Over the very long-term, practice must address resource conservation based on the prospect of eventual resource depletion. This would leave the Mackenzie Valley without a basis for the generation of income and growth, and with an impoverished population. Strategies must address sustainability, and specifically ways to assess and manage the short and long-term social, economic and cultural impacts of projects. They must support an effective and rigorous approach to resource management in the Mackenzie Valley.

This part of the discussion paper provides context for recommendations for the SEIA practice found in Part B. It discusses, on a universal level:

- the prospects and challenges facing the Mackenzie Valley in light of impending non-renewable resource development activity (section 2);
- sustainable development practices, including essential aspects for assessing sustainability and measuring progress towards sustainable development goals (Section 3); and,
- the basic goals, processes and tools traditionally applied in social and economic impact assessment, as well as some of the broader challenges SEIA faces with respect to sustainable development practices (section 4).

2. PROSPECTS AND CHALLENGES OF NON-RENEWABLE RESOURCE DEVELOPMENT IN THE MACKENZIE VALLEY

2.1. Economic Prospects of Mining and Oil and Gas Development

While mines in the vicinity of Yellowknife and the major lead-zinc mine at Pine Point have closed, some established mines continue to operate, and new ones have either opened or are soon to open. By the year 2005, three diamond mines may be in operation (Smillie, 2001).

These mines represent a huge infusion of capital into the regional economy. The expected value of diamond production in the NWT will exceed $950 million per year by 2008 and is expected to employ more than 1,500 people over the next 10 to 25 years, with significant participation from northerners, including Aboriginal people[1] (NRTEE 2001, p.8). The value and employment may be considerably higher, based on 2002 performance.

Diamonds also represent an opportunity for the NWT to become a jurisdiction that benefits directly from adding value to its raw materials. Value-added opportunities include sorting, marketing and selling rough diamonds; gem cutting and polishing; jewellery making; tourism; and industrial applications, which provide substantial additional training, employment and business opportunities for northerners (RWED 2001, p.13).

Significant benefit will accrue to the Government of Canada and the GNWT through royalty, corporate and personal income tax resulting from the diamond mine operations. Estimates from the Diavik Project suggest that the company will pay out $1.6 billion (46%) of its total resource profits of $3.6 billion to the federal and territorial governments in the form of direct corporate taxes and royalties (Ellis, 2000, p.10). Roughly one third of this will be paid to the GNWT, and the remaining two-thirds to the Government of Canada.

Under the current land and resource management regime in the NWT, the Crown is the landowner and collects the majority of royalty and taxes. The GNWT's benefits from diamond development are fewer, yet it also incurs significant costs[2]. Estimates of federal revenues from the BHP Ekati diamond mine alone are $4.4 billion Canadian over 25 years. The GNWT's net fiscal benefit is estimated at 8 percent of the federal benefit – a relatively small benefit considering the incremental cost to the GNWT of infrastructure, environmental, social and business support programs (GNWT 2001a, p.1). While the GNWT reports that it does not have a costing system to track the incremental costs of diamond projects, it will have potential costs are due to pressure on infrastructure, schools, health care, staff for regulatory agencies, and other services to support an increase in population directly resulting from these projects (GNWT 2002, p.36).

Oil and gas activity has also been a major contributor to the development of the non-

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[1] NRTEE, p.8 reports that 67% of Ekati Mine's labour force was Northern, of which 38% were Aboriginal

[2] Canada, GWNT and Aboriginal Governments are currently entering devolution negotiations that will see a substantial re-structuring of the royalty and management regime in the NWT.

renewable resource economy in the NWT[3], and the prospect of major pipeline development is once again on the horizon. A study of the economic impact and revenue flows associated with the proposed Mackenzie Valley Pipeline was undertaken for the GNWT (Mansell 2002). According to the study, overall direct revenues from the project to 2033 could range from $36.3 billion to $53.2 billion, depending on whether the gas price is assumed to be $US3/bcf or $US4/bcf, and assuming gas flows begin in 2009 (p.19). Roughly half of the overall revenues would pay for resource costs (the costs of labour, capital and other inputs to develop, produce, process and transport the gas) in the $3US gas price case. The remainder would be split evenly between private sector returns and government revenues, each comprising roughly one quarter of total revenues. The federal government would receive over 90% of the total government revenues in either gas price scenario (between $8.8 billion and $19.7 billion).

While the GNWT revenues will be significantly less from the pipeline development, the project will provide a new revenue stream. After grant reduction, GNWT revenue would amount to $487 million under the $3US case, and $847 million under the $4US case. Over the 25-year operating period, this represents between $19 and $34 million per year. The GNWT, for its part, would collect property taxes in either scenario amounting to $434 million over a 25 year period. The study concludes "Given that the annual NWT government revenues in recent years have been less than $1 billion, this is not an insignificant amount." (*ibid*., p.19).

Employment gains during exploration and construction of infrastructure will be significant. After construction, however, direct employment opportunities will decline. Many of the skilled workers required for a pipeline development will be hired outside the NWT labour force, though there is expected to be notable participation by regional residents (NRTEE 2001,p.8).

2.2.Impacts on Communities

Large-scale development projects will bring both positive and adverse impacts to NWT communities. A recent study by the GNWT on community health and well-being in communities directly affected by the Ekati Diamond mine provides the following description of resource development impacts:

> *Most (large) projects…are expected to have beneficial effects on health and well-being because they create jobs and provide other economic benefits that contribute to a better standard of living….[They) also have the capacity to cause adverse effects on health and well-being at the individual and community level…..Social and*

[3] The first well was drilled by Imperial Oil in Norman Wells in 1920. Production at Norman Wells began during World War II when oil was moved to a refinery at Whitehorse and then to Alaska. A significant discovery of oil in the 1980's led to the development of a pipeline from Norman Wells to Alberta. Exploration for natural gas increased in the 1960's, with the Pointed Mountain gas field near Fort Liard coming into production in the early 1970's and onshore and offshore drilling activities occurring in the Beaufort Delta area in the late 1960s through to mid-1980's.

> *community health may…be affected negatively where individuals face a loss of cultural identity and quality of life, social disruption and violence, and a breakdown of community and family support networks. Furthermore, socio-cultural well-being can be affected by increasing stress, anxiety and feelings of alienation (GNWT 2000, p.2).*

Development can provide positive social and economic benefits, including a better standard of living through increased employment, training and education. In the NWT, non-renewable resource development has also had a significant positive impact on the growth of physical infrastructure in the region. Examples include the tug and barge transportation system operating along the Mackenzie River and the system of winter roads extending northward from Yellowknife. The Great Slave Lake Railroad (now the Mackenzie Northern Railway) began in 1961 to provide the outhaul route for concentrates from the Pine Point Mine, and to provide cheaper, more efficient transportation into the Mackenzie Valley (Northland Utilities homepage, May 2002). The Talston hydroelectric dam was completed in 1965 to generate hydroelectric power for the Pine Point Mine, and today provides power to the communities south of Great Slave Lake.

Existing community infrastructure in the NWT, however, faces immense pressures from development. The discussion of problems concerning the physical capacity of communities in the face of development has tended to focus on two key issues. One is the inability of the physical capital of communities to handle extra traffic volumes and activity associated with exploration and development. Roads may deteriorate faster than they can be fixed, given limited budgets. The other is a lack of recreational and other facilities, such as gymnasiums, that can be used by rotational employees spending time off in their home communities. In larger centres like Yellowknife and Inuvik, shortage of housing rental units has become a serious problem following the increase in diamond, oil and gas activity (Housing Again, bulletin 45 – November 2001).

Developments can also cause adverse effects on health and well-being at the individual and community level. Small communities in the NWT that face major resource developments are socio-economically vulnerable. This vulnerability is not simply economic. It includes complex social decisions about which way of life to follow and the implications of going one way and not another; concerns about whether the way of life that members of the community have pursued for generations will still be there after the wage jobs are gone; the ability of families to withstand the stresses of having a key member away at work for weeks at a time; the impacts when family members return home from their shifts; and concerns about the capacity of communities to continue to operate their essential services when key members take jobs that are away from town.

A study by the National Round Table on the Environment and Economy (NRTEE), *Aboriginal Communities and Non-Renewable Resource Development*, states that one major impact of non-renewable development on Aboriginal people has been the gradual movement away from the traditional economy towards wage employment (NRTEE, p.xvii). While Aboriginal people in small communities have taken advantage of wage employment, they also continue to practice traditional activities of hunting, trapping and fishing, and remain engaged in a mixed economy. This may account for the limited success of programs to encourage Aboriginal employment in major industries. As is noted by NRTEE: "past

attempts to provide employment for northerners in the mining/oil/gas industry have had limited success, particularly for Aboriginal people." (*ibid.*, p29).

Adverse impacts on small northern communities have also included destabilization of family, social and economic arrangements, and effects of social dislocation, including alcohol and spousal abuse. As an example, a study of the impact of recent oil activity on the community of Fort Liard revealed a marked increase in both alcohol consumption and alcohol related crime in the community (ibid, p.16). Similarly, adverse social and health related impacts have been identified in the Inuvik region and the surrounding communities after one year of increased development activities related to recent gas exploration. At the 2001 Inuvik Petroleum Show, the Inuvik Interagency Committee reported adverse impacts that included overcrowding, increase in substance abuse, gambling, crime, violence and family breakdown, and an increase in child welfare cases. The Committee reported a three-fold increase in the demand for social services that coincided with the exploration season, including increased pressure on drug and alcohol counselling services (Session 4, An overview of the social and health impacts in Inuvik from recent oil and gas development. Inuvik Petroleum Show, 2001).

Studies of communities affected by industrial development in other northern areas similar to the Mackenzie Valley may be illustrative of the situation in the North as a whole. Interviews undertaken for a study of the health impacts, including community health impacts, of uranium mining in northern Saskatchewan, resulted in the following conclusions:

> "*In summary, most people felt that the impact of shift work [two weeks in/two out] on mine workers and their families has both negative and positive dimensions. An increase in income for families contributed to improved nutrition, clothing and general standard of living. The broadened experience of mines may be important for community leadership and development. For already healthy families, shift work does not cause too much disruption. However, for dysfunctional families, men with existing alcohol problems, and young men, shift work can exacerbate an already unhealthy situation"* (ESAS, 1992, p.99).

In northern Saskatchewan, many mine employees chose to move themselves and their families out of their home communities and into the protective anonymity of cities such as Prince Albert or Saskatoon.

2.3. Challenges of Non-Renewable Resource Development

Mining, oil and gas developments provide a variety of economic and social benefits. Serious negative impacts may, however, arise, including social dislocation and stresses on community infrastructure and services. Non-renewable resource development presents residents of the Mackenzie Valley with very significant challenges. Some critical questions include:

- How can the social, cultural and economic impacts of major developments on communities be managed to counteract the vulnerability of communities to

unwanted change in their economic base, and to the destabilization of their family and social life?

- What approaches to resource management will minimize the peaks and valleys of prospective non-renewable resource development activity?

- How can governments meet the costs of development -both the overall cost to the territorial government of development, and the increased cost of infrastructure and municipal services that fall on municipalities?

- How does the NWT promote development that is sustainable? How can the NWT ensure that value-added opportunities are taken advantage of, and that gains from non-renewable resource development are converted into infrastructure and economic activities to support the population when resources run out?

The remainder of this paper examines the role that social and economic impact assessment can play in responding to these challenges, and reviews options for ensuring that the practice of SEIA in the Mackenzie Valley contributes towards socio-economic sustainability and addresses the challenges posed by non-renewable resource development.

3. SOCIO-ECONOMIC SUSTAINABILITY: PUTTING SUSTAINABLE DEVELOPMENT PRINCIPLES INTO PRACTICE

Social activists, economists, environmentalists and governments around the world are faced with the growing dilemma of socio-economic vulnerability in the face of development. Putting sustainable development principles into assessment frameworks has been and continues to be a challenge. Frameworks and tools for assessing the impact and significance of development on societies are still evolving, and are not consistently or universally applied.

Also of importance with respect to socio-economic sustainability is the challenge of resource conservation. While the ultimate goal of sustainable development is resource use and conservation that meets the needs of future generations, resource depletion will inevitably occur; trade-offs are therefore important. Harnessing the long-term benefits of development has thus become an important aspect of how local communities, industry and governments are attempting to make development increasingly sustainable.

This section provides an overview of sustainable development concepts and principles, including an overview of essential aspects for assessing sustainability, and examines the movement towards alternative measurement approaches for social and economic progress. Harnessing long-term benefits from development is also discussed.

3.1. Sustainable Development

We live in an era of rapid change and enormous pressures on people and the natural environment. How we can ensure the continuity of the things we value as individuals and societies and the natural systems that support life on our shrinking, globalized planet?

This question has been raised by many sources during the past decades. It was broached in the 1960s and 1970s by the Club of Rome and in 1987 by the World Commission on Environment and Development (Brundtland Commission), which added the concept of "sustainable development" to the international vocabulary (WCED, 1987).

The Brundtland Commission defined sustainable development as "… *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*"(*ibid.*, p.43). The Commission helped to establish new ways of thinking about critical questions of development, sustainability, and communities. Following Brundtland, considerations of sustainability are expressed in two sets of objectives. One concerns reducing and reversing ecological degradation, especially where this threatens human well-being. The other focuses on the enhancement of human development, especially where people lack the prerequisites for life at a decent standard. The Brundtland Commission recognized that meeting these objectives is dependent on the development of a common set of principles that apply to both people and the environment (Gibson 2001, p.10).

What are these sustainability principles, and how can they be put into action? Various efforts have been made to address the issues identified by the Brundtland Commission through real-world applications. Principles developed to date are still very general, and have more to do with the elaboration of a philosophy than with practical guidelines or rules that are easily followed. They include elements such as:

- building human-ecological relations to maintain the integrity of biophysical systems;
- ensuring that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity;
- reducing dangerous gaps between the rich and the poor;
- protecting health;
- reducing overall material and energy demands and other stresses on socio-ecological systems;
- building capacity to apply sound environmental principles;
- respecting uncertainty by avoiding poorly understood risks of serious or irreversible damage; and
- developing integrated approaches to planning and decision-making that take into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options (*ibid*., p.8-16; Auditor General Act).

The principle of respecting uncertainty by avoiding poorly understood risks of serious or irreversible damage has had a practical impact in promoting sustainability through incorporation of the so-called "precautionary principle" into environmental impact assessment related guidelines. The *Bergen Ministerial Declaration on Sustainable Development* (1990) states,

> *In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent, and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental damage.*

While numerous definitions of the precautionary principle exist, they have in common the general requirement of taking action in situations of potentially serious or irreversible threats to health or the environment, where there is a need to reduce potential hazards before there is strong proof of harm, taking into account the likely costs and benefits of action and inaction. An example of the incorporation of the precautionary principle into environmental assessment is provided by the work of the Voisey's Bay panel. The panel recommended that, in order for the proposed mine to contribute to sustainability, the proponent was required to:

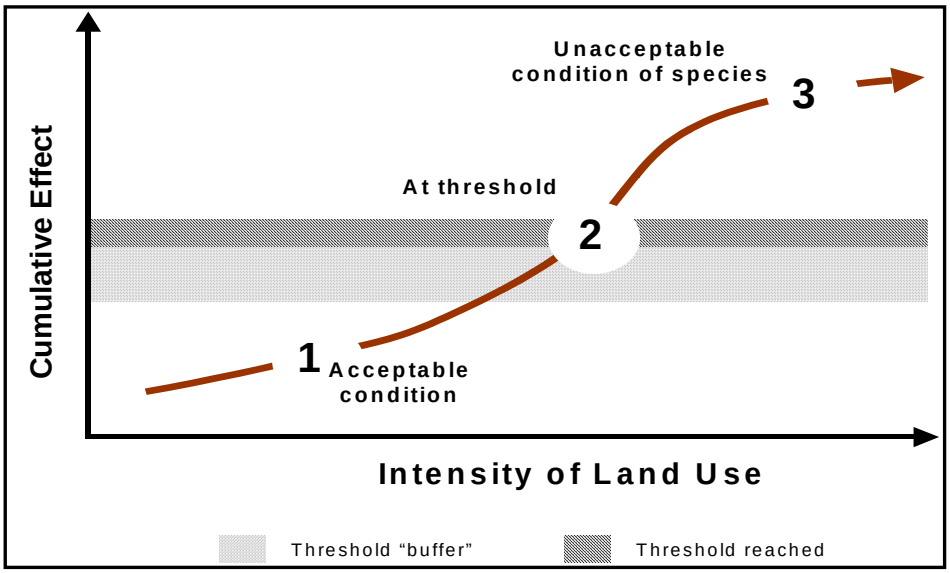
- not impair ecosystem integrity or biodiversity;
- not significantly damage local and regional ecosystem functions;
- not reduce the capacity of renewable resources to support present and future generations;

- deliver durable and equitable social and economic benefits, with special attention to the needs of Aboriginal people;
- proceed in a manner compatible with stewardship of non-renewable resources; and
- respect Aboriginal rights and not prejudice land claims agreements.

The Voisey's Bay panel established a number of important thresholds, letting the proponent know that it must not cross them unless it could demonstrate that it knew clearly what lay on the other side and was not contrary to the general public interest (Green 2001).

The concept of thresholds is also relevant in considering both social and environmental factors. Just as a natural ecosystem system can be damaged or destroyed, social systems can also be damaged or destroyed if key components are undermined or removed. It is very important to know, thorough research, where the thresholds lie and what the consequences of crossing them might be (see Figure 3.1). In cases where the impacts are as yet uncertain or unknown, the precautionary principle must apply.

Figure 3.1 – Concept of Thresholds



Source: Axys, Gartner Lee Ltd.

Figure 3.1 illustrates the relationship between the concepts of thresholds and of cumulative impacts. It may be possible for a community to survive, redefine itself and recover if a threshold is crossed. However, if, as in the case of the Innu of Labrador, thresholds are crossed again and again, recovery may no longer be possible. As Peter Armitage noted of the Innu communities:

> "*The Innu are presently in a poor position to deal adequately with the negative impacts of mega-project development; many of them are totally consumed with deep emotional problems and the pursuit of individual survival strategies, and because of this, they do not have the strength to deal with the additional psycho-social stresses that will accompany military expansion in Goose Bay....*" (Armitage 1989, p.26)

Armitage noted that alcohol and chemical abuse was widely pervasive and was a major factor in local mortality. In Utshimassit "...over 50% of the adult population ... are alcoholic: a fact which has a terrible impact on the social fabric of the community" (ibid, p.31).

In Part B, the Review Board considers the importance of sustainable development principles and approaches to resource management in the in the Mackenzie Valley, including the establishment of social and economic thresholds.

3.2. Assessing Sustainability

In recent years, environmental assessment has been identified as an important instrument for furthering sustainability in public and private decision-making (World Commission on Environment and Development 1987, United Nations Earth Summit 1992). Increasingly, practitioners support the assumption that sustainability perspectives must be built into SEIA.

As a result of this recognition, sustainable development has been defined by law, making it a consideration in assessing development, but also, perhaps, limiting the scope of how it might be treated. Since 1995, sustainable development has been included in the *Auditor General Act* "as a continually evolving concept based on the integration of social, economic and environmental concerns…". The *Auditor General Act* has also been used to create the office of the Commissioner of the Environment and Sustainable Development, whose role is to make the federal government accountable for greening its policies, operations, and programs.

If the perspective of sustainability is to be integrated into SEIA theory and practice, the challenge is to determine what essential aspects must be considered when assessing whether development is sustainable. The aspects outlined in figure 3.2 provide a good guide for the assessment of sustainability (IISD Homepage: www.iisd.ca, accessed June 2002).

Figure 3.2: Essential Aspects for Assessing Sustainability

- **Aspect 1: Establishing guiding vision and goals –** ensure clear vision of sustainable development and goals / principles that define that vision.

- **Aspect 2: Doing the Assessment**

    - **Holistic perspective -** review of the whole system as well as its parts, consideration of the well-being of all components (social, ecological and economic sub-systems) and consideration of both positive and negative consequences of human activity, in a way that reflects the costs and benefits for human and ecological systems, in monetary and non-monetary terms.

    - **Essential elements -** consider equity and disparity in current population and between present and future generations, deal with concerns over resource use, over-consumption and poverty, human rights and access to services. Consider economic development and other, non-market activities that contribute to human / social well-being.

    - **Adequate Scope -** adopt time and geographical horizons that can capture cumulative effects, and build on historic and current conditions to anticipate future conditions. Ask, "Where we want to go? Where we can go?".

    - **Practical Focus** - choose sets of categories and frameworks that link visions and goals to indicators and assessment criteria, and identify a limited number of key issues and indicators for analysis and standard measurements. Compare indicator values to targets and thresholds.

    - **Openness -** make methods and data accessible and make clear all judgments, assumptions and uncertainties.

- **Aspect 3: Key Process Issues**

    - **Effective communications -** use appropriate design and simplicity by use of plain language.

    - **Broad participation** – obtain representation of key grass-roots, professional, technical and social groups, including youth, women and Aboriginal people to ensure diverse voices are heard. Ensure key decision-makers are involved to secure links to adopted policy and action

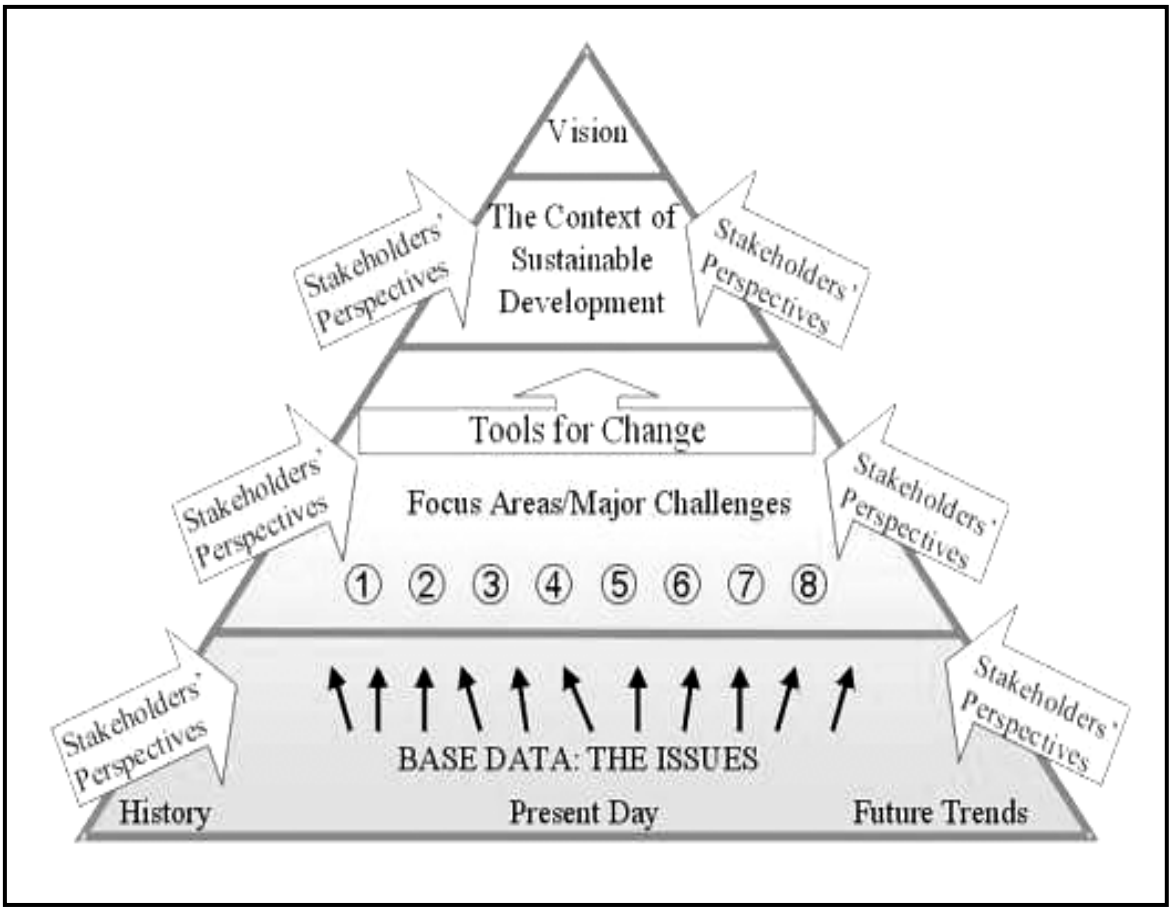
- **Aspect 4: Continuing Capacity**

    - **Ongoing Assessment –** carry out repeated measurements, be adaptive and iterative and responsive to change and uncertainty because systems are complex and change often. Adjust goals, frameworks and indicators as new insights are gained and promote development of collective learning and feedback to decision making

    - **Institutional Capacity –** Clearly assign responsibility and provide ongoing support in decision-making, provide institutional capacity for data collection, maintenance and documentation and support development of local assessment capacity.

To assess sustainability people need to identify a vision for the future. This requires that people and communities identify the aspects of culture, economy, society, and the environment that they value. Depending on one's worldview, these may be quite diverse, and can vary enormously across communities and generations.

Figure 3.3: The Importance of Vision in Assessing Sustainability



Source: IIED, Mining, Minerals and Sustainable Development homepage.

An example of a broad vision for sustainability in the NWT was developed by the National Round Table on Environment and Economy and is presented in Figure 3.4. These goals and visions encompass the environmental, economic and social dimensions of sustainability that are valued by Aboriginal people in the NWT. They emphasize the importance of equity in relationships between individuals, groups and generations. Their focus on governance and control over natural resources reflects the particular history and aspirations of the Aboriginal groups in the NWT.

Figure 3.4: NRTEE Sustainable Development Goals for the NWT

Economic Vitality

- Attractive business climate for all investors (e.g., clarity and certainty of regulations, access to current geoscience data)
- Local retention of benefits (i.e., in the North)
- Balance of traditional and non-traditional (i.e., wage) economies
- Economic diversification (i.e., not dependent on one sector)
- Capacity building for Aboriginal people (e.g., through education, literacy programs, high-school upgrading, training and opportunities for employment)

Environmental Integrity

- Preservation of ecosystem (i.e., intact, not at risk)
- Recognition and inclusion of traditional knowledge
- Minimization of pollution
- Identification and mitigation of cumulative effects (i.e., environmental, social, cultural)

Social and Cultural Well-Being

- Retention of Aboriginal traditions, culture, language and way of life
- Meaningful Aboriginal community participation (i.e., in all stages of a project's exploration, development and implementation)
- Capacity in Aboriginal communities to address health and social problems

Equity

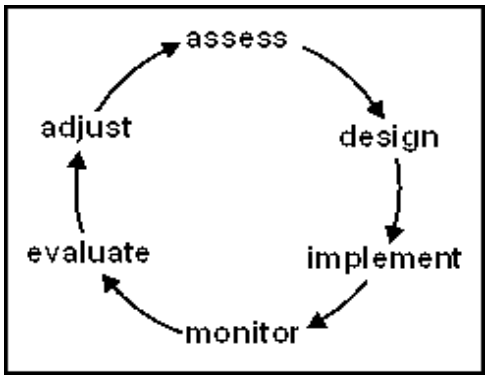
- Equitable distribution of costs and benefits (e.g., within and among communities, between communities and developers, and across different economic interests and generations)

Control over Natural Resources

- Clearly defined system of governance that respects the rights of all people in the North and supports Aboriginal people's land claim settlements and control over natural resources

Social systems are complex and change often. It is therefore important to be adaptive in order that approaches can be adjusted and repeated measurements can be carried out. Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs (BC Forest Service homepage, June 2002). Adaptive management is based on recurrent forecasting and continually keeping affected publics informed so they can modify their own strategies (see Figure 3.5).

Figure 3.5: Concept of Adaptive Management



Source: ESAA Technologies.

Some of the key characteristics of adaptive management are:

- Acknowledgment of uncertainty;
- Selection of the approach thought best to resolve an issue (e.g., assessment and mitigation);
- Implementation of a means designed to provide information currently lacking;
- Monitoring of key response indicators;
- Analysis of outcomes in consideration of the original objectives; and
- Incorporation of the results into future decisions.

To summarize, essential aspects are required to assess sustainability, including vision and management frameworks that are adaptive. Approaches must also be practical, linking vision and goals to indicators, a limited number of key issues and standard measurements (see IISD aspect #2). While assessments must consider standard forms of economic development, they must be capable of measuring non-market activities that contribute to social well-being - for example, the value of raising healthy children or the value of retaining traditional land use activities.

3.3. Indicators and Measurements

There has been a long-standing view that official measures of national progress, such as Gross Domestic Product (GDP), which measures economic growth based on assumptions of economic contributions, are based solely on economics and can hide societal wrongs. A variety of attempts have been made to develop alternative, broad-based indicators for measuring economic progress and social well-being, which are more relevant to the principles and practical requirements for measuring sustainability. What are indicators?

Indicators are data or data sets that provide a snapshot of what is happening to identified valued social or economic components (VSCs) within social, economic, cultural, and environmental systems. The indicator is not necessarily the VSC, but it is something measurable that tells you about the state and trends of the VSC. A short list of indicators linked to examples of individual and community goals is provided in Table 3.1.

Table 3.1 – Sample List of Social Indicators

SOCIAL GOAL	SAMPLE LIST OF RELEVANT INDICATORS
Individual health, well-being and participation in society	• immunization rates of infants • % of children meeting early childhood milestones • Literacy rates in adults • Unemployment rate
Nurturing, stable and supportive families	• Rate of child apprehension • Level of domestic violence • Average person per household
Safe and Vibrant Communities	• Reported crime rates • STD rate • Per capita revenue available to support social well-being • Level of community self-government • % of people who speak traditional language or who participate in traditional activities

Adapted from Discussion Paper survey and Draft Social Agenda Indicators, GNWT.

The United Nations (UN) has been active in the development of an overall set of social indicators that measure progress in each of a number of "categories" or sectors such as economic development, social development, health, and the environment. As outlined in Table 3.2, it uses a variety of measurement indicators classified as:

- "driving force indicators" -those which move the system forward for better or worse,
- "state indicators" – those which indicate where the system is currently at rest, and
- "response indicators" – those which indicate the extent to which the system has gotten better or worse (ESAS Inc., 1997).

Table 3.2: United Nations Indicators

CATEGORY	SD OBJECTIVE	DRIVING FORCE INDICATORS	STATE INDICATORS	RESPONSE INDICATORS
Economic	Self-sustaining economy	Real GDP per capita growth rate (%)	GDP per capita	Domestic Investment share in GDP(%)
Social	Full employment and eradication of poverty	Unemployment rate (%)	Population living in absolute poverty (no. and %)	Welfare caseload (rising or falling)
Health	Absence of disease, quality of life	Calorie supply per capita (calories / day)	Infant mortality rate	Health expenditures (rising or falling)
Environment	Continuity of Valued Ecosystem Components (VEC)	Industrial / municipal discharges into freshwater bodies (t / m3)	Concentration of lead, cadmium, mercury and pesticides in freshwater bodies (mg / l)	Clean-up Expenditures (rising or falling)

It should be noted that neither individual social indicators nor the work the UN has done provides integrated models or systems for measuring progress or social well-being. They do not, for example, indicate whether some components are more important than others; nor do they suggest what the linkages among the various component parts might be. What social indicators can do is to provide a variety of individual measures which indicate whether conditions in a society are getting better or worse. It is therefore important to ensure that they are used within an adaptive management framework, where goals are understood, proper measurement can be achieved and policy alternatives can be addressed based on outcomes of assessment.

3.3.1. Alternative Indicator and Measurement Frameworks

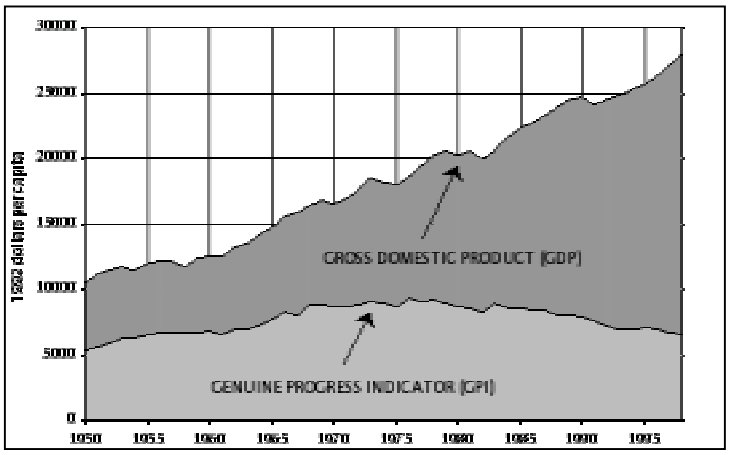
Genuine Progress Indicators (GPI) [4]

An example of the attempt to find an alternative measure has been work by a variety of groups on Genuine Progress Indicators (GPI). GPI indices are more genuinely inclusive of what goes on in society. GPI looks at the economy from the point of view of the individual, and how various types of market and non-market activities affect him or her. It starts with the same accounting framework as the GDP, but then makes some crucial distinctions: it adds the economic contributions of household and volunteer work, but subtracts factors

[4] *For a full description of how GPI is derived, see Appendix B.*

such as crime, pollution, and family breakdown. The resulting measure of progress is different when compared to progress as demonstrated by growth in GDP (*see Figure 3.6).*

Figure 3.6: Gross Production vs. Genuine Progress – United States, 1950 to 1999



Source: Redefining Progress Homepage, www.redefiningprogress.org

One source outlines the estimation of GPI as follows:

GPI = (P – C)+ O, where

- P = Economic progress;
- C = The cost to society of economic activity, social and environmental decay; and
- O = Other factors, which may have a positive or negative value (BC Ministry of Finance, 1997)

In Canada, the Pembina Institute, a non-governmental organization in Alberta, has developed a GPI accounting framework as an alternative to the current System of National Accounts. According to the Institute, the GPI accounting system offers a "tool for nations to measure, in an integrated manner, the condition, sustainability and monetary costs and benefits of human, social, natural and produced capital"(Anielski, M. et al. 2001).

While GPI definitely warrants attention from policy makers, a number of issues arise with respect to its implementation. One is that, despite criticisms of official accounts, GPI, like GDP, relies on standard economic measurements such as consumer expenditures on goods and services and public expenditures on services and infrastructure. It is therefore not entirely free of standard national accounting biases. Another consideration is that GPI includes many components that are very important to people but difficult to measure and value. As a result, many of the components utilize estimated values that are derived subjectively, using professional judgement, and therefore require careful analysis and consideration by effected communities, policy-makers and industry.

If the disadvantage of GDP is its narrow focus and what it cannot tell you, its advantage is that, based on government and private transactions and prices determined in markets, it is

measurable and relatively objective. GPI is also expected to become more systematic and objective as it is developed over time.

Full-Cost Accounting

Measuring progress in sustainable development requires accounting for both the short- and the long-term external environmental impacts of development. Full-cost accounting is a tool that seeks to account for all costs of development, through the integration of an entity's internal costs (including all internal environmental costs) with the external costs relating to the impacts of the entity's activities, operations, products and / or services on the environment (Canadian Institute of Chartered Accountants homepage, accessed June 2002).

Two key adjustments are required to establish a full-cost accounting system. The first is to extend the principle of depreciation to cover consumption of natural capital stocks depleted through production (e.g. fish, trees, air quality). That is, how does our consumption now reduce the ability of nature to produce more resources? The second is to subtract expenditures necessary to defend society from the unwanted side effects of production and consumption, such as over-exploitation of environmental resources, costs associated with urbanization such as pollution and crowding, and the costs of unhealthy consumption and behavioural patterns (Daly, 1996). That is, how much is being spent cleaning up our incidental environmental impacts and side effects?

Instances of putting full cost accounting into practice are rare. Statistics Canada has worked for a number of years on the development of a new component of the national accounts that will integrate environmental factors into the traditional Canadian System of National Accounts. These new accounts would provide data on the physical quantities and monetary values of Canada's natural resource stocks; on the depletion and use of these resources; on waste emissions to the environment; and on environmental protection expenditures. This work, however, is still ongoing.

Full-cost accounting and GPI represent a new frontier in the measurement of economic progress and social well-being. Many economists and other social scientists argue that the measurement of progress should proceed in this direction, but practical results to date are limited.

In Part B, section 6 the Review Board considers the use of GPI and full-cost accounting in relation to social and economic impact assessment under the MVRMA.

3.4. Harnessing Long Term Benefits

Another consideration in assessing sustainable development as defined by the IISD principles (see section 3.2), is addressing concern over resource use, over-consumption and poverty by determining whether actions over the longer term will exacerbate disparity and inequity.

The prospect for any jurisdiction dependent on non-renewable resources is that, eventually they will become depleted. This is also the case in jurisdictions dependent on renewable resources that are over-exploited, such as cod in Newfoundland. Once the resources are gone, they cannot be replaced; if enough of them are extracted too quickly, an economic decline is unavoidable. When this happens, the economic base will shrink, even collapse, unless it has undergone substantial expansion by the growth of secondary and tertiary industries.

Perhaps the most significant issue faced by the people of the Northwest Territories during the next few decades will be their growing dependence on non-renewable resource activity. Resource depletion scenarios in the NWT are not certain, and discoveries of additional resource deposits may continue well into the future, although eventual depletion is certain. However, the concern is not only about the distant future. In the shorter term, industrial activity typically brings impacts in surges. Investment and employment rise dramatically when a major facility such as a large-diameter pipeline is built, but then fall once the oil and gas starts flowing. Developing a mine is a large-scale exercise; operating a mine is a matter of smaller scale.

Ultimately two issues are of concern: ensuring that something is left behind to support the NWT population when the resource finally runs out, and ensuring that the peaks and valleys of prospective non-renewable resource activity do not further destabilize communities and undermine their way of life. The goal is that the discovery, development, and delivery of the territory's resources take place in a manner that is fair, responsible, and in the public interest, and that resources are managed to ensure that they are not depleted too quickly, and thus provide a basis for sustained activity for the longest possible period.[5]

What can be done about these issues? Specifically what can be done to ensure that a significant proportion of the benefits from exploiting the region's resource base remain in the North?

3.4.1. Current Initiatives in the NWT

There are policy frameworks in place in the NWT to address the issues outlined above. Many of these are based on alternatives to non-renewable resource development; for example, the GNWT's Energy Secretariat is looking at ways of reducing energy costs for communities through efficiencies, alternative fuels, and recycling (Munroe 2002, p.48). To deal with non-renewable industrial development, the GNWT is committed to the implementation of a number of resource management strategies under its Sustainable Development Policy, including a Non-Renewable Resource Development Strategy.

The GNWT's *Non-Renewable Resource Development Strategy* (2000) promotes development based on principles of partnerships, the concept of sustainable development, support for economic diversification and fiscal sustainability (GNWT 2000, p.11). In support of these principles, the GNWT identifies several challenges that it argues must be overcome, including:

[5] *Mission statement of the Alberta Energy Utilities Board.*

- Devolution of taxation and royalty regimes to the territorial and Aboriginal governments of the NWT;
- Clarification of northern benefits expectations;
- Development of a skilled and available workforce; and,
- Provision of reliable land access and transportation infrastructure.

A recent media report suggests that the GNWT is considering additional options for securing project profits in order to deal with the increased demand from the diamond industry on government services and infrastructure. These options include the introduction of a mineral tax, an increased payroll tax and continuing lobbying in Ottawa for investment in Northern infrastructure (News North, Friday, May 10, 2002).

There are other examples of innovative initiatives to harness long-term benefits from non-renewable resource development taking place in the NWT. They include joint ventures between industry and communities, small business development programs, and regional community economic development initiatives (e.g., NWT Community Mobilization). Other approaches include: impact benefit agreements between First Nations and developers which provide arrangements for employment, training and royalties; benefits plans under the *Canadian Oil and Gas Operations Act* (COGOA); and socio-economic agreements negotiated between companies, various levels of government and communities in order to ensure proposed developments enhance the social and economic climate of the local community. Existing socio-economic agreements in the NWT include the BHP (1996) and Diavik (1999) agreements.

3.4.2. Creative Options for Larger Projects

Two creative options for harnessing long-term benefits of non-renewable resource development that could also be considered in the NWT for large projects include a territorial heritage fund and project-specific enhancements funds.

Heritage Trust Fund

One possibility for ensuring long-term benefits from resource development is the establishment of a trust fund for the NWT similar to the Alberta Heritage Trust Fund. The Alberta Heritage Savings Trust Fund is a long-term investment fund, currently worth $12.46 billion, that was created in 1976 when oil and gas revenues were high and the provincial economy was booming. Throughout its quarter century history, the Heritage Fund has used the income from investment of its oil and gas royalties to finance many projects that contribute to Albertans' quality of life. These projects have improved infrastructure, promoted tourism, developed parks and recreational areas, enhanced Alberta's libraries, and maintained forests[6].

In 1995, residents of Alberta were asked for their views on the Heritage Fund's future. Most people who responded said the Fund should be focused on earning greater long-term

returns, and that these returns should be used as a steady stream of income to help pay for Alberta's current needs – in other words, the interest was to be used and the capital preserved.

In 1997, the Heritage Fund was re-structured into two distinct portfolios: the Transition Portfolio to meet immediate fiscal needs, and the Endowment Portfolio to maximize long-term investments. All assets are to be transferred to the Endowment Portfolio by 2003[1]. The Fund thus represents a means of projecting the benefits of a diminishing oil and natural gas assets into a future in which the resource is bound to decline.

Project Specific Adjustment and Harvest Support Funds

The concept of a heritage fund could also be applied within the context of a single non-renewable resource development project. Like a heritage fund, this approach would provide financial resources in support of adjustment initiatives before, during and at the closure of the project, including the support of traditional harvesting activities.

One such example is found in British Columbia. As part of the Environmental Assessment of a mine development on the traditional territory of the Taku River Tlingit First Nation (TRTFN), an independent study on the impacts recommended the establishment of a Sustainable Futures Fund to support the TRTFN and local community during the life of the project. It was recommended that it be funded at $500,000 by the provincial government, and that the company pay an annual "top-up" to the fund equal to $.05 per ton of ore milled (Staples 1997). The study also recommended establishment of a trust fund from project royalties and revenues, to support the cash and management requirements of TRT traditional land use.

In Part B, section 6 the Review Board considers how the issue of harnessing long term benefits will be addressed through mitigation guidelines for social and economic impact assessment under the MVRMA.

Sustainable development is now a major international issue. It has been widely accepted that sustainability principles need to be integrated into resource and environmental management approaches in the NWT. To assess the sustainability of projects, systematic approaches are required which:

- are based on sustainability goals, including reducing dangerous gaps between the rich and the poor and protecting health;
- are holistic;
- consider equity and disparity between current and future generations;
- take into account cumulative effects;
- are adaptive;
- are clear in their assignment of responsibility;
- provide ongoing support in decision-making;
- provide institutional capacity for data collection, maintenance and documentation, and which support development of local assessment capacity.

Examples of sustainable development frameworks in environmental management are slowly evolving, as are the tools required to measure sustainability. These tools include full-cost accounting systems and progress indicators such as GPI; however, these are still in development, and are not yet widely accepted. Thresholds for social and economic limits of acceptable change are also generally still poorly understood. Continued and ongoing effort to ensure these tools do become applied in environmental assessment is therefore essential.

Another key element of sustainable resource management is the harnessing of long-term benefits, particularly where large non-resident corporations are extracting wealth and leaving behind negative consequences that may outweigh short-term benefits. As noted in section 3.4.1, in the NWT there are many examples of communities, industry and government working together to mitigate harmful impacts and harness benefits. Creative options that could be considered for the future, especially if a natural gas pipeline and additional diamond mines are developed, include the creation of a large territorial heritage fund and project-specific royalty-based funds.

A specific tool for assessing sustainability is the practice of social and economic impact assessment (SEIA) as part of overall environmental assessment. The last section of Part A provides an overview of SEIA concepts, tools, and challenges related to its current practice.

4. SOCIO-ECONOMIC IMPACT ASSESSMENT: PROCESS, TOOLS AND CHALLENGES

The Review Board has a specific role in the sustainable development process – the assessment of biophysical, social and economic impacts of proposed developments. Social and economic impact assessment, or SEIA, addresses the social and economic impacts of developments.

This section discusses:

- Goals of SEIA;
- Steps involved in assessing social and economic impacts of projects;
- Tools for social and economic analysis; and,
- Challenges facing SEIA with respect to assessing sustainability.

4.1. Goals of SEIA

Broadly speaking, SEIA is an approach to determining how development projects affect people and their communities. The ultimate aim of SEIA is to make better decisions about what is an acceptable level of change to society in relation to a proposed development, whether a physical project, a program, or a policy.

The goals of SEIA may vary from simply reducing the negative effects of these actions on people to maximizing their positive benefits. At a minimum, the focus is on reducing serious social and economic consequences. In the past, the goal of some SEIAs for large and controversial developments was ensuring conditions were not made worse because of a development (e.g., no net loss of fish habitat, no deterioration in a community as a result of resettlement). In more recent times, as discussed in section 3, the goal is increasingly focused on the principles of sustainable development, ensuring that developments provide maximum positive benefits for affected people and address equitable distribution of costs and benefits. SEIA now usually attempts to understand how project effects can be harnessed to sustain what people value about their communities, and to build a better future[7].

In Canada, environmental impact assessment (EIA) has evolved to accommodate the study of social and economic impacts alongside biophysical impacts. The *Ontario EA Act* (1973) requires the study of social and economic impacts of projects. The *Canadian Environmental Assessment Act* (1992) requires that social concerns resulting from a direct biophysical impact of a project be evaluated. The *British Columbia Environmental Assessment Act (1994)* also contains explicit references to social and First Nations concerns.

[7] *See principles and guidelines for SEIA, International Association for Impact Assessment and Assessing Sustainable Development (IISD), section 3.2.*

In the last decade, broad guidelines for the practice of SEIA have been developed at the practitioner level. For example, principles for SEIA have been developed by the International Association for Impact Assessment (IAIA) (*see Figure 4.1*), and include increased broad and diverse public participation, social and economic equity, disclosure of biases and assumptions, integration with public policy, use of appropriate and relevant technical expertise, planning and implementation of monitoring and mitigation, and identification of data sources and data gaps.

Figure 4.1: Guidelines and Principles for Social Impact Assessment: International Association for Impact Assessment.

- **Involve the diverse public**
  Identify and involve all potentially affected groups and individuals.
- **Analyze impact equity**
  Clearly identify who will win and who will lose and emphasize vulnerability of under-represented groups.
- **Focus the assessment**
  Deal with the issues and public concerns that really count, not those that are just easy to count.
- **Identify methods and assumptions and define significance**
  Describe how the SIA is conducted, what assumptions are used and how significance is determined.
- **Provide feedback on social impacts to project planners**
  Identify problems that could be solved with changes to the proposed action or alternatives.
- **Use SIA practitioners**
  Trained social scientists employing social science methods will provide the best results.
- **Establish monitoring and mitigation programs**
  Manage uncertainty by monitoring and mitigating adverse impacts.
- **Identify data sources**
  Use published scientific literature, secondary data and primary data from the affected areas.
- **Plan for gaps in data**
  Evaluate the missing information and develop a strategy for proceeding.

The concepts used in SEIA are derived from a number of social disciplines, including economics, sociology, geography, anthropology and political science. SEIA may also involve lawyers, planners, and people from other fields, including perceptive generalists and persons familiar with the people and culture in question. SEIA is often led by one person, but undertaken by a team. It is, most essentially, a process of discovery, in which relatively simple questions lead to more complex ones, and, finally, to answers that can provide a basis for workable conclusions.

The key issue and challenge in SEIA is understanding the nature of social or economic impacts. An impact is a change in conditions caused by a development, such as a road or a mine. Generally, socio-economic impacts are changes in the human condition. They are changes in the economic and social conditions of local communities, vulnerable groups (such as women, children or poor), businesses and employees, districts, provinces or even the nation. Generally, health and cultural impacts (e.g., language loss) are also the subject of SEIA, but are not always covered in depth, as they may need special study. Social and

economic impacts may each require specific study and analysis using various techniques (*for an overview of social and economic techniques, see section 4.3).*

4.2. Steps Involved in Assessing Socio-economic Impacts of Projects

An SEIA process must address five elements:

1. ***Scoping and issues identification:*** The proposed project must be well-defined. Social and economic issues must be identified as well as the geographic and temporal study boundaries.

2. ***Determining the social and economic baseline:*** There must be a good understanding of the impacted community or communities and the general socio-economic conditions in the project area.

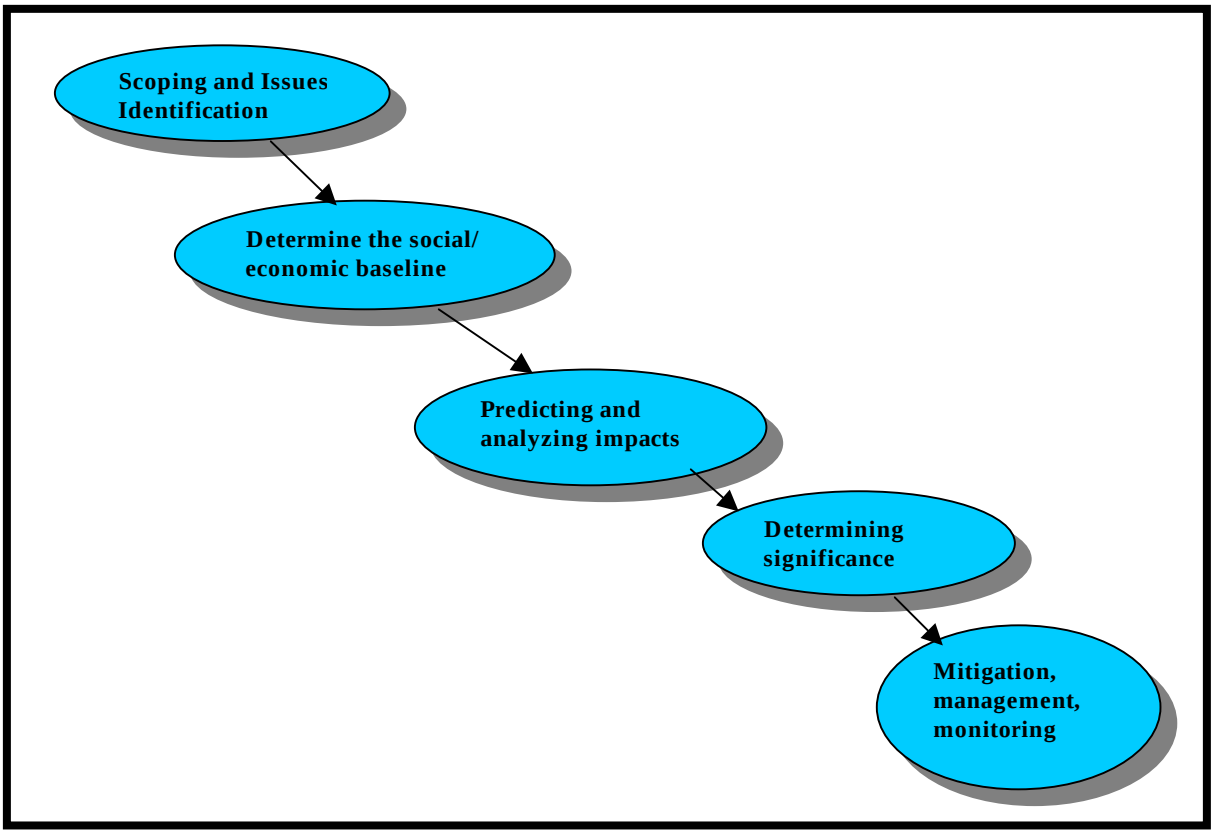
3. ***Predicting and analyzing impacts:*** The assessment must be able to project what the social and economic impacts may be, including the effect of potential interactions between factors and over the lifetime of the development.

4. ***Determining significance:*** There must be an assessment of the importance of the social and economic impacts of the project.

5. ***Mitigation, management and monitoring:*** Once impacts and their significance are understood, decisions must be made about whether the project should proceed. If so, measures must be identified to avoid or lessen negative impacts and maximize positive impacts (mitigation). Management of the mitigation needs to occur and ongoing monitoring of the projects effects must be carried out to ensure thresholds are not crossed.

As a SEIA progresses, additional concerns and issues are identified and investigated through consultation with the public and stakeholders. Figure 4.2 provides an overview of this process. These processes are described in greater detail below.

Figure 4.2: Basic Steps in SEIA



4.2.1. Scoping and Issues Identification

Scoping is the process of identifying and prioritising the issues relevant to a project that will need consideration. In effect, it is an initial evaluation of what social, economic or cultural issues may be significant or become significant in the course of an SEIA. Scoping provides the necessary information for the terms of reference (ToR) issued by the analyst to the developer so that the environmental assessment report may be developed. Not every issue should or can be considered. To scope effectively is to sort through the issues and focus on those most relevant to the evaluation of the development proposal underway.

Generally, in studies that emphasize **social** impacts, a number of basic components are examined, including impacts from a project on community dynamics, community wellness and social cohesion, employment and recreation. These impacts are normally examined at the individual and family level, as well as at the community, regional, provincial/territorial and even national levels where appropriate.

Depending on the geographic region, variables need to be tailored to fit local social and cultural contexts. For example, Table 4.1 outlines issues based on the SEIA of low-level military flight training over Labrador. It should be noted that the table illustrates only one aspect of the overall SEIA undertaken for low-level flying. It deals with issues encountered mainly "in town" at Happy Valley / Goose Bay. Similar tables containing other variables would be more appropriate for smaller communities, and for identifying and assessing impacts on Aboriginal land use activities.

Table 4.1. In-Town Issues and Concerns: SEIA of Low-Level Flying in Goose Bay Labrador

ISSUE	CONCERN
The Economy	▪ Jobs ▪ Training ▪ Business opportunities ▪ Monopolization of investment ▪ Boom-bust cycle ▪ Dominance of wage economy
Infrastructure	▪ Capacity
Housing	▪ Availability ▪ Affordability
Noise	▪ Hearing impairment ▪ Annoyance
Public Health and Social Well-Being	▪ Sexually transmitted diseases ▪ Sexual assault and violence ▪ Prostitution ▪ Alcoholism and drugs
Base-Town Relations	▪ Municipality-base relations ▪ Civilian-base relations

Source: ESAS Inc., 1993.

It should be noted that the table covers a range of social fields. It includes the economy, listing concerns about jobs, training, business and wage economy dominance. It covers community physical concerns, including the capacity of local infrastructure and the availability of housing at an affordable cost. It covers public health issues such as the effect of aircraft noise on hearing and the impact that large numbers of outsiders might have on STDs and the abuse of alcohol and drugs. Finally, it covers socio-political matters concerning relations between the developer and the community.

4.2.2. Determining Social and Economic Baseline

The next step in SEIA is to determine the social and economic baseline. Baseline data is the foundation of any SEIA. It establishes the condition of the social and economic environment at the time the development is proposed, and indirectly captures changes that have already taken place. It is done through a variety of techniques, including interviews, statistical data collection, and review of relevant policies and plans effecting people in the study area. Outcomes include community profiles and the identification and verification of additional issues and concerns.

Baseline data also lay the groundwork for making predictions about the changes that may take place in the immediate and distant future following the implementation of a project. Ultimately, the purpose of baseline data collection is to find out where the communities impacted by the proposed development stand, so that the analyst can determine what change a new development proposal will bring. Normally, baseline data collection is one of the greatest costs of any EIA budget.

4.2.3. Predicting and Analyzing Social and Economic Impacts

Once issues and concerns are known and baseline information is compiled, information must be analyzed to predict what the impacts will be. The goal of social and economic impact prediction and evaluation is to establish how the social and economic environment will change[8] with the introduction of the project. These predictions are the core of SEIA. If done right, impact prediction and effects analysis enables the analyst to assess the project's compatibility with local and regional values, stated objectives concerning community development, socio-political development and renewable resource economy. Ultimately, the process should allow parties to make an informed decision on whether or not they want the project at all.

This is done by conducting further consultation and by applying social and economic research techniques. Often research techniques include the study of impacts of projects in the past and from regions with similar social and economic characteristics, and the use of impact scenarios and modelling (*a selection of social and economic techniques are discussed in section 4.3).*

Conventionally, the questions posed in impact prediction are "What would the future be like without the development?" and "What would the future be like with the development?" The difference between the two futures – although extremely challenging to predict in SEIA - is the impact or effect of the development (see Figure 4.4). This difference, or the incremental change, is evaluated.

[8] *The focus is almost always on adverse or negative effects.*

The challenge in predicting effects is to separate changes that are already taking place in society from the effects that a development may have. Identifying and measuring social and economic impacts of projects involves identifying the chain of causes and effects and deciding how far to trace indirect impacts. The standard practice now is to trace the impacts as far as they are measurable. Changes most often measured include changes in expenditures (sales), income, employment, tax revenues, population growth, property values, and so forth.

Figure 4.3 – Conceptual Framework for Predicting Impacts

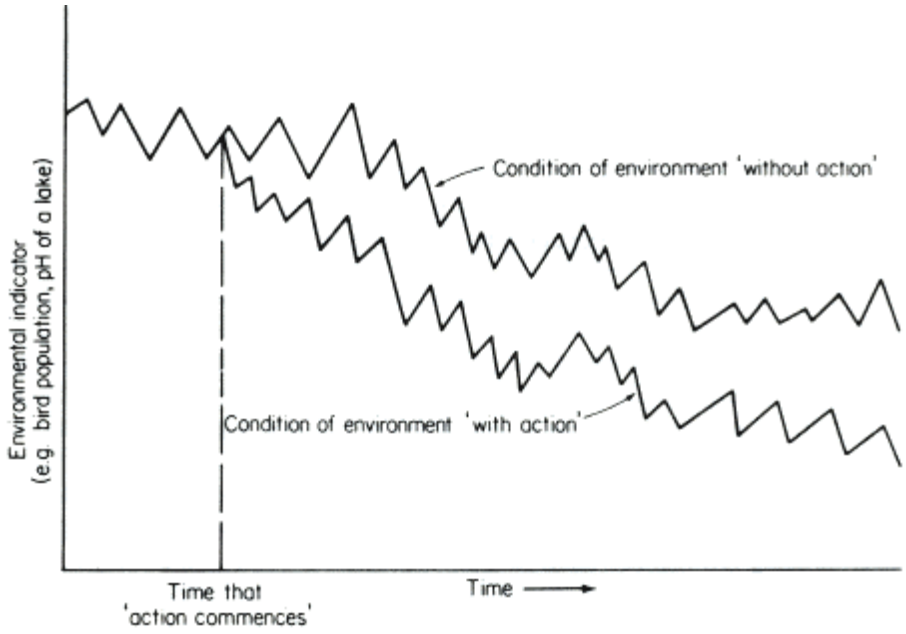


Figure 4.3 Conceptual framework for assessing environmental changes. The reference condition is the 'without-action' condition and, because of naturally occurring changes, is not necessarily the present condition. The downward slope of the curves is for illustration only; an upward trend may occur in some cases. (SCOPE homepage. www.icsu-scope.org. Accessed June 2002)

Impact prediction and effects analysis also require a clear grasp of the relationship between the scoping questions, the impacts, and the Valued Social and Economic Components (VSCs) identified by the effected public. Ideally, each of these will be linked to indicators that are already measured at the population-level and are suitable for use in predicting changes in the population with the project and without the project. As discussed in section 3.3, an understanding of the social and economic thresholds is useful in this respect, particularly if the significance of adverse impacts is to be determined.

4.2.4. Significance Determination

The next step in SEIA is significance determination. Generally, significance determination is undertaken to decide whether or not to proceed with a project based on the social acceptability of a change. Significance determination is done by comparing residual impacts from the project (i.e., the impacts that are predicted to occur with the implementation of a

mitigation measure) against accepted thresholds or benchmarks, and determining whether a given impact has breached or is about to breach a threshold. This requires consideration of both context and intensity. Context means putting the proposed development and identified effect in the appropriate setting (i.e., geographical, demographic, etc.). Intensity means establishing the extent of the change. If the change is acceptable then, depending on the legislative jurisdiction, it means determining if proceeding with the project is justified on other grounds. If a change is unacceptable and not justified, then the project is rejected.

Significance determination is most straightforward when there are pre-existing legal thresholds of acceptable change, such as those defined in the *Canadian Environmental Protection Act*. In these circumstances, it is easy to determine if a threshold will be breached (Lynch-Stewart 2001). More often, however, thresholds are absent. This is especially true for social and economic effects. For SEIA, evaluators must instead rely on other means to make a significance determination. These may include consideration and interpretation of guidelines, policy statements, research studies, indicators, and of course, consultation with impacted people.

4.2.5. Mitigation, Management and Monitoring

Monitoring of social and economic impacts occurs after the SEIA is complete (project approval). It is important for adaptive management of social and economic impacts, and contributes to the knowledge base for future assessments, particularly with respect to project indicators research. Within the context of the SEIA, however, mitigation measures are normally identified. Mitigation is the prevention or minimization of an impact, through such measures as the provision of social support services, on-the-job training or education. The first rule of development design is to avoid impacts, and therefore impact avoidance should focus foremost on the project design and the prevention of an impact in the first place. The practice of EA has over three decades come to accommodate significance determination after mitigation on the residual effects of the development.

Monitoring programs are generally established to confirm the effectiveness of mitigation or to verify the assumptions made during an environmental assessment. Good monitoring should include an evaluation of results, and have specific management alternatives contingent on those results. Monitoring programs are almost exclusively project specific, and, with few exceptions, the information gained is not actively shared with a broader audience. Instead, it is simply used to verify that a permitting measure is being upheld.

To summarize, SEIA generally involves five steps: scoping and issues identification, social and economic baseline, predicting and analyzing impacts, determining the significance of impacts and mitigation, management and monitoring resulting from SEIA. Within and between each step, specific tools are required. A selection of tools for SEIA are described in the following section.

4.3. Tools for Social and Economic Analysis

SEIA is a practice that can proceed from a variety of perspectives. Different tools from the social and economic fields may be applied in SEIA depending on the nature of the proposed project. For example, the overall significance of a project to the broader economy might necessitate a cost-benefit analysis. Contaminants might be seen as a potential problem to public health, suggesting risk-benefit analysis to assess health impacts. Important concerns which raise considerable uncertainty, but which require a definite answer, might be addressed through one of the following approaches.

4.3.1. Analysis of Social Issues

Many consultative techniques are used in SEIA to identify issues, predict impacts and plan for mitigation. These include surveys, public meetings, workshops, focus groups, networks, and checklists.[9] Although not all techniques are described in this paper, the techniques identified in Table 4.2. are effective for identifying present vulnerability and identifying development futures, and, most important, for involving stakeholders in the identification of issues and concerns. Once issues and concerns are identified, the social analyst normally consults case studies of similar projects to compare impacts. If time permits, focused ethnographic research may be carried out. Where time does not allow for in-depth study of social change, rapid cultural appraisal techniques can be used.

4.3.2. Analysis of Economic Issues

Economic issues are given substantial emphasis in SEIA. The standard goals are fiscal analysis, through which a project's potential *contribution* to various sectors of the economy and to various levels of government is assessed. It is increasingly common for economic assessments of large mega-projects to quantify the *costs and benefits* of environmental impacts, cost effectiveness of mitigation and, where possible, environmental and social costs of intangibles (for example, value of country food or costs of pollution) in dollars.

In some cases, the environmental and social cost / benefit estimates provided in the SEIA are then used to perform an overall economic analysis of the project. An overall economic analysis evaluates the total economic value of a project (e.g. will the project provide society, overall, with overall positive benefits or not?). Cost-benefit analysis is the most commonly used tool for this type of analysis.

[9] The following paragraphs are based on ESAS Inc., Manual for Assessing the Effects of the Construction of Government of Nunavut Incremental Office Space and Housing, Report to Nunavut Tunngavik Inc., Draft of March 26, 1998

Table 4.2: Tools for Social Analysis

SOCIAL ANALYSIS TECHNIQUES	DESCRIPTION	ISSUES
Surveys / Questionnaires	▪ Continuous or one-time ▪ Targeted at impacted individuals (e.g. those employed during project, workers spouses, etc)	▪ If a carefully designed survey keeps turning up a particular answer, causality is suggested ▪ Poor design can yield inadequate responses
Focus Groups / Workshops	▪ Held in groups of 6 or less (the smaller the group, the more productive the session) of individuals well informed on a particular topic ▪ Collaborate to move towards consensus on key issues.	▪ A well-conducted focus group / workshop can yield a great deal of very useful information and insight. ▪ Moderate disagreement would normally suggest that there should be no attribution until more evidence of causality has been obtained
Community Meetings	▪ Held in public to identify community-based concerns ▪ Provides opportunity for open dialogue	▪ Effective when identifying broad issues regarding impacts (e.g. do you think what is happening is good or bad?) ▪ Good indicator of public support / unhappiness ▪ A poorly organized public hearing can be counter productive, leading to polarization of views; to unfounded fears about the socio-economic impacts of the project; or to unfounded confidence in the project.
Networks / Technical Advisory Committees	▪ Experts on particular issues relevant to the assessment process who lend advice on an ongoing basis (community leaders / policy analysts)	▪ Difficult to establish. Development can take time and energy
Checklists	▪ Matrices are useful in ensuring relevant impacts are identified. Design requires giving consideration to key component impacts of a project. ▪ Checklists may help identify gaps and omissions.	▪ Useful in making inter-community comparisons – identifying how various communities may see things differently.
Ethnographic / Ethnohistoric Studies	▪ Focused study of the impacts of development on indigenous communities on social organization ▪ Carried out by trained community or academic researchers at the community level	▪ Difficult to carry out in the timeframe of an SEIA. Alternative is the Rapid Ethnographic Assessment Procedures (REAP) of cultural mapping, in-depth interviewing, focus groups supplemented with limited survey research.

Analysis of economic impacts is technical and quantitative, and requires fiscal and technical capacity if it is to be undertaken in the course of economic impact assessment. It often uses one or more of the specialized methods described in Table 4.3. It should be noted that each method has its place and cannot readily replace the others.

Table 4.3 –Tools for Economic Analysis

ECONOMIC ANALYSIS TOOLS	INTENDED USE
Fiscal Analysis	▪ Determines project viability, flows to government and the redistribution of such funds among levels of government.
Input/output analysis	▪ Concerns inter-industry flows and the contribution a project might make to various sectors of the economy and to final demand.
Cost Benefit Analysis (CBA)	▪ Determines the overall value of a project to society and supports decision making on the allocation of society's resources.

Fiscal Analysis

Fiscal analysis focuses on the inter-relationship between project viability and government costs and revenues. It does not include any non-economic other social impacts. Government obtains revenues from a project through a variety of taxes, fees, and royalties. Government may also impose conditions on the developer that will raise the costs of government institutions managing and monitoring the environmental and socio-economic standards of a project. If the net cost of all of these elements is too high, the project will not proceed. A balance is required.

Fiscal analysis also concerns intergovernmental relationships with respect to project revenues and costs. Senior levels of government (e.g., the federal or provincial governments) may, by law, receive a larger proportion of the revenues from a project, while costs fall disproportionately on more junior governments (e.g. territorial; municipal). Again, through fiscal analysis and consequent negotiation, appropriate balances can be struck.

Cost Benefit Analysis

Cost Benefit Analysis (CBA) is a tool that provides a comprehensive, overall assessment of the worth of a project to society. It requires an understanding of the full costs and benefits of projects, both internal and external[10], as well as tangibles and, to the extent they are measurable, intangibles.

[10] *External costs and benefits are the indirect costs and benefits imposed by the project on society.*

The analysis of the project's costs and benefits yields a total cost or benefit dollar figure for the purpose of decision-making. Depending on the nature of the analysis, the result provided may be in the form of:

- *net benefits* (excess of benefits over costs), the measure most frequently used in CBA;
- *benefit/cost ratio*, used to assess which of a number of investment options makes the largest contribution to social welfare; or
- *internal rate of return*, used to determine how a project compares to alternative investment opportunities available to society.

CBA requires a high degree of rigor and formality, and is a useful tool – especially for larger projects. Its usefulness has long been recognized by regulatory agencies in Canada and the United States. In a 1987 report, the US Environmental Protection Agency (EPA) strongly endorsed the technique, stating that CBAs it had undertaken to that date cost about $(US)10 million, but were instrumental in bringing about regulatory improvements estimated at over $(US)10 billion (in ESAS 1993).

As stated above, for large projects some review panels have asked that government prepare cost-benefit analyses. It is normally not part of the information required from a developer as part of an SEIA because of its complex nature. For larger projects, SEIA practitioners should be able to request that governments undertake this type of analysis in order that that broader social and economic benefits and cost issues are addressed

In Part B, the Review Board considers the requirement for use of CBA for larger projects.

Input / Output Analysis

Input-output analysis is used both to display the flows of all goods and services within an economy and to calculate overall demand. The basic distinction that is made in input-output analysis is between 'Final Demand' (goods and services sold to households, governments, and for exports and investment), and 'Intermediate Demand' (goods and services sold to other producers in the same or other industries). Sales of steel products by steel producers to car manufacturers are an example of Intermediate Demand, while sales of cars by car manufacturers is an example of Final Demand. The 'Total Demand' for goods and services in any economic sector can be calculated by adding intermediate and final demand.

If the Total Demand in all economic sectors is added together, the result is the Gross Domestic Product (GDP), one of the fundamental measures in national accounting. Input-output analysis is used for various types of economic analysis within and outside government, and is particularly important for analyzing structural adjustment in industry (European network on chain analysis for environmental decision support website, accessed July 2002).

The construction of an input-output table requires a large amount of data on inter-industry flows and other variables. Governments are often the only organizations with adequate resources for designing these models, and collecting and analysing the required data. Other agencies wishing to use input/output models must often rely on existing models developed by government.

4.3.3. Measuring Intangibles

As can be seen from Table 4.3, it is the convention to value things by assigning a dollar figure to them. Income from employment, levels of construction, and even recreation and health services are usually quantified this way. Nevertheless, there are elements, generally referred to in the economic literature as "intangibles", which people regard as important but that are difficult to value in monetary terms. How, for example, should one value a scenic watercourse that is about to be flooded because a dam is being planned? How might one argue that it should not be flooded because it is more valuable than the generation of power over the lifetime of the dam?

An approach put forward by Peter Maniate and Donald Carter in 1973 suggests assigning a rank to all components of an analysis: both those to which a monetary value can be assigned, and those to which a monetary value is not usually assigned. They then suggest assigning a monetary value to the latter in accordance with where it falls in the ranking. For example, if it falls between a tangible component which has been assigned a value of $10 million and another that has a value of $8 million, it would seem reasonable to assign it a value of $9 million +/- $999K.

The valuation of intangibles presents numerous challenges in SEIA. For example, the value of country food can be estimated in monetary terms by comparing such food to store-bought food of similar nutritional value and assigning the price of store-bought food to it (see Ames et al, 1988). The value of other social and cultural activities associated with the production of that food, however (including time in summer camp or fish camp), are extremely subjective; it is unlikely that a real dollar value can be assigned to them. This suggests that there is no substitute for discovering and resolving public concerns by thorough discussion of the value of intangibles.

4.3.4. Other Useful Tools for SEIA

A number of other tools have been developed to help address social and economic matters during an SEIA. The following are noteworthy.

Risk-benefit analysis

Risk-benefit analysis (RBA) compares the consequences of proceeding with a decision that bears considerable risk to its related benefits. In SEIA, RBA is almost exclusively used in the evaluation and regulation of hazards to human health. The reduction of risks is assumed to decrease costs associated with morbidity and mortality.

RBA is based on the notion that when people perceive that risks are not within their control they become "risk- averse". They may continue with a behaviour, but they will want to know their chances of being negatively affected. In such cases, the subject's *perceived* risk may be relatively low, perhaps much lower than the *statistical* risk estimated from actuarial tables. Perceptions of risk may, of course, also be higher than statistical risk.

Risk may be estimated by a variety of means - experimentation in the laboratory, morbidity and mortality data, or reference to analogues. Because reducing risks also bears costs,

however, the challenge becomes the determination of *acceptable* risk, which defines the boundary at which the costs of further risk reduction begins to exceed the benefits of greater public safety and well being. Acceptable risk estimation will most often result in a unclear zone within which political and regulatory decisions will need to be made.[11]

Delphi

Delphi is a sophisticated form of brain-storming. As a tool, it works formally or informally, in large or small contexts. It may involve face-to-face meetings, or the responses of separate experts to a set of repeated questionnaires, or a combination of the two. For SEIA, it means bringing together selected experts to identify issues, in multiple rounds, comparing their analyses and making significance judgements.

Delphi has a number of limitations. Some feel that the Delphi method tends to lead to a predetermined outcome. It can also be, or be perceived as, a strategy for excluding the public from decision-making that requires public input. Delphi should therefore always be used in combination with public consultation.

To summarize, SEIA is a practice that can proceed from a variety of perspectives and by the use of a variety of tools. Multiple methods should be used to identify social issues and concerns, with a strong emphasis on consultation with the affected communities and vulnerable groups. Similarly, determining the overall economic impact of a project, which should be a requirement for large projects, will require the use of specific tools, such as CBA.

The final section of Part A takes a closer look at issues facing SEIA as it moves towards a sustainable development approach. In this discussion, examples of improvements in practice are reviewed, particularly as they pertain to its practice in Northern Canada.

4.4. Challenges Facing SEIA with Respect to Assessing Sustainability

SEIA processes face a number of challenges when viewed from the perspective of the essential elements of a sustainability approach. What follows is a discussion of some key challenges in carrying out SEIA in a manner that is supportive of sustainable development. Some of these challenges have been addressed in the context of the MVRMA and are discussed in Part B of this paper.

4.4.1. Analysis Limited to Effects of Projects

Most existing frameworks for SEIA focus on single industry projects. There is, however, no theoretical reason that SEIA should not also be applied to institutional changes to policies and programs in northern development. While it is understood that SEIA could not, if given this breadth of scope, resolve all matters of policy, it could assist in illuminating

[11] *See, for example, Regulating Pesticides, National Academy of Sciences, Washington, 1980.*

fundamental social, economic and political issues (Usher 1993, p.117). In other jurisdictions (e.g. Europe) SEIA tends to allow for this broader scope of assessment.

4.4.2. Absence of Integrated Resource Management Frameworks

In many jurisdictions SEIA is carried out without adequate linkages to related land use policy frameworks or ongoing management and monitoring of projects underway. For SEIA to have a positive effect, it is best integrated into a resource management system that takes into account relevant policies related to land use, as well as social and economic development policy. In the North, land use planning is particularly important in the context of SEIA because it identifies community values and acceptable uses of land and water that have been carefully identified through strategic planning and research. In the Mackenzie Valley, the *Mackenzie Valley Resources Management Act* (MVRMA) provides an excellent framework for integrated SEIA, as outlined in Part B, section 5.1 of this paper.

4.4.3. Developer-Driven Analysis

Prevailing practice is to have the developer assemble socio-economic data and prepare documentation on a proposed development project. Some may argue the advantage to this is public savings that result from shifting the cost of preparing background research, analysis, and documentation to the private sector. However, this approach has been criticized on two grounds: (1) it can put the developer into the powerful position of speaking on behalf of communities, taking on an inappropriate role; and, (2) the developer becomes better informed than government authorities on community resources and well-being.

4.4.4. Broadening Participation and Inclusion of Different World Views

To be effective, SEIA must obtain representation of key grass-roots, professional, technical and social groups, including youth, women and Aboriginal people, to ensure diverse voices are heard. There are three main challenges to equitable and representative participation and to ensuring an appropriate balance of perspectives relating to social and economic issues.

1. *Incorporating Traditional Knowledge into SEIA:* Until recently, the views and values of western scientists were usually predominant in the SEIA process, with local values and knowledge (traditional knowledge, or TK) of communities left aside. In the last decade, good practices have been developed regarding the integration of TK in EIA[12] and in many jurisdictions it is required that developers collect traditional knowledge in the course of an EA.

2. *Ensuring the Inclusion of Women's Views and Gender Analysis in SEIA:* Women's organizations argue that women's views on the socio-economic impacts of projects have been largely ignored by developers, and in the development of guidelines for

[12] *See Abele, 1997.; Duerden, F and Kuhn RG 1998; Grenier, L. 1998; Johnson, 1992; Nakashima, D.J. 1990; Ryan, J., Robinson, M. 1990; Sallanave, J. 1994.Stevenson, M. 1997, Usher 2001.*

study of project impacts (Archibald and Crnkovich 1999; NWT Status of Women 1995; Tongamuit Inuit Annait Ad Hoc Committee on Aboriginal Women and Mining in Labrador 1997). Women's rights organizations in the North have intervened in the case of many larger scale developments, suggesting that unless detailed gender analysis guidelines are applied to all stages of SEIA (including baseline research, impact assessment, mitigation and monitoring), SEIA will "miss 52% of the population". In the case of the Diavik Diamond review in 1995, the NWT Status of Women Council reported that the analysis of impacts on "community well-being" did not take into account perspectives on women and families, and that women were not consulted appropriately regarding their views on impacts (NWT Status of Women, 1995, p.31).

3. *Supporting Public Participation:* Public participation can be impeded by a lack of intervener funding. Members of the public or special interest groups who want to participate in SEIA processes often lack the funds that permit them to prepare a presentation that is technically and legally sound, and that therefore draws attention. The National Round Table on the Environment and Economy (NRTEE) has addressed the importance of a "level playing field":

> *Obstacles to effective participation are especially significant when projects raise complex technical issues and when other parties to environmental assessments have access to legal counsel and expert witnesses. Since participants in environmental assessment must generally substantiate their concerns through direct evidence or by cross-examining developers on their environmental impact statements, a sophisticated knowledge of the issues and an ability to marshal information and arguments effectively are required. For many interveners, including Aboriginal communities, overcoming these obstacles requires time and money. All too often, both are in short supply* (NRTEE 2001, p.63).

In Part B, section 6, considerations for the improvement of incorporating TK, application of gender analysis and improving public participation in SEIA under the MVRMA are provided.

4.4.5. Predicting Impacts without Adequate Baseline Data

A major challenge for SEIA is the lack of appropriate social, economic, and cultural baseline data. In the north, there is still considerable reliance in small communities on the mixed subsistence-based economy. It can be argued that the standard tools used in SEIA for measuring economic baseline (e.g. labour force surveys, census, and regional GDP accounts) have left much of the economy "under-measured" and, from a policy perspective, unacknowledged (Usher 2001, p.11). With mounting pressures in the North, SEIA experts suggest that there remains an urgent need for continued study of traditional land use and its economic value. In particular, they recommend data characterisation that can more precisely model the mixed economy.

When data collection is carried out in the absence of information, methods used, including community questionnaires, surveys and anecdotal information from public meetings, tend to provide only sketchy information on social organization and change. One option,

particularly where project impacts pose significant threat to traditional land use, is to reassert the importance of ethnographic and ethno-historical methods (Usher in Waldrum (ed). 1993, p.119). Some jurisdictions are calling for thorough and integrated study of traditional land use in the context of SEIA, as was the case in a recent significance study commissioned by the BC EA Office, "*Determining the Impact of the Tulsequah Chief Mine Project on the Traditional Land Use of the Taku River Tlingit First Nation"* (Staples, 1997 on BC EA Office homepage, accessed May 2002)[13].

The study did, however, identify limitations with respect to the lack of baseline data on the traditional economy, and stated that because of this constraint a qualitative assessment predominated. It was suggested that this created some uncertainties with respect to assessing system resilience, the significance of individual and cumulative effects, establishing thresholds for adverse effects and confidence of proposed mitigation.

In Part B, section 6, considerations for the improvement of baseline data provision for SEIA under the MVRMA are provided.

4.4.6. Determining the Significance of Social and Economic Effects

As discussed in section 4.2.3, thresholds are required to determine significance of impacts. Given the dynamic nature of our global society and economy, however, most often social and economic thresholds are not well understood. There is also an increasing legal requirement in EA to provide consistent evidence respecting significance. In a recent federal court case under the *Canadian Environmental Assessment Act*, Justice Dawson[14] ruled that sufficient evidence must be gathered and presented so that it is possible for another person to come to a similar conclusion based on the same evidence. This suggests that work on thresholds need to continue.

In Part B, section 6, considerations are provided for the requirement to establish thresholds for use in SEIA under the MVRMA.

4.4.7. Lack of Tools and Techniques for Addressing Smaller Projects

Many of the frameworks and processes in place for SEIA are designed for larger projects, and are not appropriate for the assessment of smaller ones (e.g. culverts, roads, etc.). There

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[13] The objective of the study was to determine whether, or how, the project might change the pattern of the Taku River Tlingit's (TRT) land use and what the significance of such changes might be to the Tlingit culture and economy. After documenting current land use, as well as social and economic relations that form the basis of the community, the study examined possible trends for change in the absence of the project, and looked at the potential significance of potential impacts to the abundance, distribution of resource and land use practices.

[14] Red Hill Creek Expressway (http://decisions.fct-cf.gc.ca/fct/2001/2001fct381.html). Justice Dawson concluded that "This is not to say that scientific certainty is required as to the existence of a deleterious effect on migratory bird populations in order for a referral to panel review to be properly grounded. However, there must be a valid basis on which to conclude that a real possibility exists that a panel would be able to conclude that, in this case, there would be a significant adverse effect on migratory bird preservation. That necessary condition to engage the process was absent. The necessary relevant information was noted to likely be unavailable for a long time and might never be available.

does appear, however, to be some movement towards standards and guidelines for the assessment of smaller projects where tools such as risk assessment, class assessments and policy screens are applied. These guidelines use existing national or regional standards and policies to determine whether small projects may put the environment, including humans, at risk. Socio-economic criteria included in these approaches include existing land use policies and human health standards.

In Part B, section 6, considerations for the requirement to establish guidance for scope and scale of SEIA under the MVRMA are provided.

4.4.8. SEIA and Impact and Benefit Agreements

A final challenge facing SEIA is the question of identifying proper mitigation in the absence of information about Impact Benefit Agreements (IBAs) or Participation Agreement content (CARC 2000, n.p.). IBAs, while not an absolute requirement of the resource management regime in the Mackenzie Valley[15], have become an industry standard in the NWT and are intended to serve as a means of providing benefits to communities in the course of development projects.

IBAs are legal contracts between the developer and the First Nation, and do not become part of the public record; they are often signed after the completion of the environmental assessment. This leaves impact assessment without a basis for verifying and determining the appropriateness of proposed mitigation in IBAs.

In Part B, section 6 specific considerations respecting IBAs and their relationship to SEIA are provided.

4.5. Part A Summary: Movement Towards Sustainability Through SEIA?

To ensure that social, cultural and economic impacts of major developments on communities can be identified through SEIA, and then managed to counteract the vulnerability of communities and the Mackenzie Valley as a whole, several clear challenges face the practice of SEIA. These include:

- Ensuring that sustainable development principles can be addressed through the SEIA process;
- Ensuring the harnessing of long-term benefits from all development;
- Building SEIA processes that are adaptive and which can provide for ongoing assessment of social and economic impacts;

[15] Some land claim agreements such as the Nunavut Final Agreement explicitly require that an IBA be negotiated before a "major development project" can take place on Aboriginal land, and even set specific guidelines about agreement contents. In other instances, the government may demand an IBA for a particular mining project, as was the case with the Ekati mine in the Northwest Territories, whose approval was made contingent on the negotiation of an agreement between the Australian company BHP and local communities.

- Ensuring national, territorial and community-based indicator frameworks are in place and made relevant to the SEIA process;
- Developing measurements which provide a better indication of community health and well-being;
- Providing guidance to developers on how to carry out good SEIA, through the establishment of guidelines and preferred methods and approaches that work in the Mackenzie Valley;
- Ensuring broad participation in the SEIA process, specifically respecting the use of Traditional Knowledge, ensuring that women's views are taken into account and that adequate funding is in place for interveners;
- Access to adequate baseline data related to social and economic conditions of communities and the region, particularly with respect to the mixed economy;
- Identifying appropriate mitigation to ensure communities are benefiting from development; and,
- Ensuring that the full cost of development to community and regional government are addressed through the course of a SEIA.

In Part B, the concepts, approaches and challenges presented and summarized above are specifically addressed within the context of the Mackenzie Valley and the practice of SEIA under the MVRMA. A preliminary examination of the operational framework that currently exists for the conduct of SEIA in the Mackenzie Valley is undertaken, and proposed improvements are suggested in relation to two areas:

(1) enhancement of community, public and institutional participation in community preparedness and SEIA; and
(2) technical approaches for the conduct of SEIA.

Both of these approaches support – at a general level – the concepts of adaptive management, increased public participation and continued collaboration between developers, community and government on issues that will impact upon the effectiveness of SEIA in the Mackenzie Valley. Specific improvements and recommended action items are provided.

PART B:

PROTECTING THE SOCIAL, CULTURAL AND ECONOMIC WELL-BEING OF RESIDENTS IN THE MACKENZIE VALLEY: RECOMMENDATIONS FOR IMPROVEMENTS TO SEIA UNDER THE MACKENZIE VALLEY RESOURCE MANAGEMENT ACT

This part of the discussion paper defines approaches based on the concepts and challenges outlined in Part A for carrying out social and economic impact assessment (SEIA) in the Mackenzie Valley under the *Mackenzie Valley Resource Management Act.*
Specifically, Part B:

- Outlines the **current legislative and policy context** for the conduct of SEIA in the Mackenzie Valley, and **describes government and industry initiatives** relevant to the establishment of an adaptive SEIA process (Section 5); and,

- **Identifies requirements and provides recommendations** for moving towards good practice that enhance industry and stakeholder participation and the technical processes required to carry out SEIA that support the principles of sustainable resource management decision-making (Section 6).

5. OPERATIONAL FRAMEWORK FOR SEIA IN THE MACKENZIE VALLEY

As outlined in Part A, SEIA in many jurisdictions is not entrenched within broader integrated resource management frameworks. The *Mackenzie Valley Resources Management Act (*MVRMA*)* is, in itself, a legislated movement towards good SEIA practice, providing for institutional arrangements that promote local involvement of Aboriginal peoples and the public.

As described in Part A, section 3.2, essential elements for sustainable development approaches in assessment include institutional capacity, which requires:

- Clear assignment of responsibilities and provision of ongoing support in SEIA decision-making process;
- Institutional capacity for data collection, maintenance and documentation; and,
- Monitoring of social and economic impacts.

This section considers the current operational framework for social and economic impact assessment (SEIA) under the MVRMA. It begins with a brief overview of the legislative and operational changes that have occurred since the 1998 passage of the MVRMA (1998). Roles and responsibilities of the Review Board and other boards and government agencies are outlined, and information about the current state of government, industry and other initiatives relevant to the practice of SEIA is provided.

5.1. Changes to the Resource Management Regime in the Mackenzie Valley

Over thirty years ago, Mr. Justice Thomas Berger headed a Commission of Inquiry on the proposed Mackenzie Valley Arctic Gas Pipeline Project (Berger Commission). Following three years of community hearings in the Mackenzie Valley and formal hearings in Yellowknife, he recommended that no pipeline should proceed until land claims had been settled. The report highlighted socio-economic impacts as being among the most critical issues facing the northern communities (Berger 1977).

The Berger decision had a resounding impact on the way SEIA is practiced in the Mackenzie Valley, and the ends it serves. Peter Usher writes,

> *The implications of Aboriginal organizations' response to the case for land claims during the Berger inquiry for approaches to SIA was that the proposed pipeline project had to be evaluated not according to the technical or value-free criteria, but rather the terms of the vision of the people whose communities it would effect. The question was better cased in terms of whether the project would help or hinder the realization of that vision. Where the technical model of SIA focused on economic well-being as measured by income and employment, the political model emphasized social well-being, self-determination, and the centrality of cultural values and social institutions (in Dyck and Waldrum (eds.) 1993, p. 112).*

Since the conclusion of the Berger Inquiry, the Mackenzie Valley has undergone a significant political, economic and social transformation, including comprehensive changes in the resource management regimes as a result of the settlement of land claims. These changes, specifically as they relate to the roles for SEIA, are briefly reviewed below.

5.1.1. Integrated Resources Management

The Gwich'in and Sahtu agreements[16] were the first modern land claim agreements to be settled in the Mackenzie Valley. The agreements are based on a set of objectives, which correspond with several of the guiding principles of sustainable development outlined in Part A, Section 3. They include:

[16] *Gwich'in Comprehensive Land Claim Agreement (GCLCA, 1992) and the Sahtu Dene and Metis Comprehensive Land Claim Agreement (SCLCA, 1993)*

- Participation in decision making concerning the use, management and conservation of land, water and resources;
- The protection and conservation of wildlife and environment of the settlement area for present and future generations;
- Recognition and encouragement of the way of life for Gwich'in / Sahtu beneficiaries based on the cultural and economic relationships between them and the land; and,
- Encouragement of self-sufficiency and enhancements to participate fully in all aspects of the economy.

The process for participation in decision-making concerning the use and management of land, water and resources is outlined in Chapters 24 and 25 of the Gwich'in and Sahtu agreements respectively. They required the passage of the *Mackenzie Valley Resource Management Act* (MVRMA), which established a legal process for an integrated resource management (IRM) framework that includes a decision-making system for land use planning, land and water regulation, environmental assessment and review, cumulative impact monitoring and environmental auditing. It also incorporates consideration of wildlife management board policies created in the respective land claim areas with respect to harvesting levels and wildlife and forest management. Most importantly for SEIA, the MVRMA sets out an explicit requirement to consider the direct social and economic impacts of developments, whereas previously there was only a requirement to consider the indirect effects.

5.1.2. Role and Responsibilities of MVRMA Boards

The functions described above are administered by public management boards for land use planning, land and water regulation, and environmental impact assessment. The roles and responsibilities of boards in the evaluation of social, cultural and economic impacts of proposed developments are listed in Table 5.1.

Each of the Boards established under the MVRMA is required to implement guiding principles similar to those in section 115. Section 115 outlines sustainable development-based guiding principles for the application of Part 5. It states,

> *The process established by this Part shall be carried out in a timely and expeditious manner and shall have regard to (a) the protection of the environment from the significant adverse impacts of proposed developments; and (b) the protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley.*

The MVRMA includes provisions for the coordination of the activities of land and water boards, regulatory authorities and the Mackenzie Valley Environmental Impact Review Board (the Review Board) during an EA process (s. 62, s. 24(2)). It is important to note that, as the effects evaluation proceeds from preliminary screening to environmental impact review, the rigour of social and economic effects assessment increases.

Table 5.1: Role of MVRMA Boards in IRM and SEIA Effects Evaluation

BOARD	MANDATE	ROLE IN SOCIAL AND ECONOMIC EFFECTS EVALUATION
Land Use Planning Boards	▪ Develop and implement plans in their respective settlement regions that provide for the conservation, development and use of land, water and other resources. ▪ Confirm all authorities granting licences, permits, leases or interests relating to the use of land and water in the settlement regions shall conduct their activities and operations in accordance with the plan.	▪ Set broad parameters for land and water use based on the social, cultural and economic values of the stakeholders in the region. ▪ Provide a general sustainability framework within which proposed development is evaluated for potential social, cultural, economic effects.
Land and Water Boards	▪ Screen permit and licence applications to determine (a) conformity to land use plans, (b) whether, if in conformity, there might be significant adverse effects or public concern. ▪ Issues permits and licences	▪ Undertake a detailed effects evaluation of a specific development proposal through preliminary screening ▪ Must consult on and consider social, economic and cultural impacts of application
Mackenzie Valley Environmental Impact Review Board (MVEIRB)	▪ Conducts environmental assessments ▪ Orders environmental impact reviews	▪ Scopes the possible social, economic and cultural effects of proposed development and directs developers to undertake detailed study and development of EA Reports ▪ Assesses the possible effects based on technical evaluation of EA Report ▪ Conducts full environmental reviews if assessment concludes with significant concern

Role of the MVEIRB

Under the MVRMA, the Review Board is responsible for environmental assessment (EA) and environmental impact review (EIR) in the Mackenzie Valley. It carries out these functions when a development has been referred because of public concern or

the possibility of environmental impacts. When an environmental assessment is occurrs, there is a requirement to identify and examine social and economic impacts.

5.2. Government, Industry and Community Involvement in the SEIA Process

The Review Board has the mandate to set guidelines for the conduct of SEIA, for the processes of Part 5 of the MVRMA. Other groups that make a primary contribution to SEIA are the federal and territorial governments, the developer and affected communities. This section describes in brief the role of government, industry and communities in the assessment of social and economic impacts under the MVRMA.

5.2.1. Government of the NWT

The GNWT plays a key role in the SEIA process derived from its legal responsibility for delivering programs and services for most aspects of health, social services, education, training, cultural well-being and economic development in the NWT.

Territorial departments and agencies, including Resources, Wildlife and Economic Development (RWED), Municipal and Community Affairs (MACA), the Bureau of Statistics, Department of Transport (DOT) and Health and Social Services (HSS) have a variety of roles and responsibilities that *indirectly but substantially* affect SEIA, including:

- The establishment of public policy with respect to socio-economic sustainability and associated strategies (*see Part A, Section 3.4 for a discussion of sustainable development and non-renewable resources policy)*;
- Provision of programs and services in areas such as healthcare, social services, education, public transportation and infrastructure, municipal infrastructure services in non-taxed based communities, community policing, forest management and economic development in both the traditional and wage economies.

GNWT initiatives which have a *direct* impact on SEIA include:

1. ***Provision of Social and Economic Baseline Data to Developers***
   The GNWT, when asked, has assisted developers in collecting baseline data for environmental assessment reports. This has included estimating GNWT revenues to be generated by development, and estimating economic impacts of projects using its input/output model.[17]

2. ***Monitoring of Socio-Economic Agreements***
   Under the MVRMA, follow-up and monitoring can be required as a condition of project approval, in order to verify predicted impacts, to confirm whether commitments are being met and are effective, and to allow adaptive management of unexpected effects. In response to this, the GNWT has established, through socio-

[17] *GNWT response to discussion paper survey. June 2002.*

economic agreements, a framework for industrial monitoring that uses available indicators in combination with shorter-term subjective indicators captured through surveys. The results are published in an annual report that provides data used to strengthen opportunities and mitigate negative impacts of each project. For the public statistics, social and economic indicators have been chosen that match the possible effects predicted during the SEIA. The choice of indicators also considers the type of data available, so that the monitoring program can be sustained over the long-term (GNWT 2000a, p.2).

Current monitoring initiatives include those resulting from the socio-economic agreements for BHP (1996) and Diavik (1999). GNWT has developed socio-economic indicators for follow-up monitoring programs for both BHP and Diavik (*see section 5.3.2 for a table of indicators from these projects).*

3. Social Indicators Project - Social Agenda

In 2001, a commitment was made by the GNWT to balance social and economic development, ensuring the well-being of people and the environment under the Social Agenda initiative. While the Agenda has many objectives, its basic goal is to ensure Northerners benefit from opportunities associated with economic development, while ensuring that social problems are avoided or mitigated (GNWT, 2001b).

A key component of the Social Agenda is its work on social indicators [18]. Development and finalization of social indicators will be undertaken by experts on social, cultural and economic issues in the NWT through the establishment of a Social Agenda Monitoring Group that will comprise a cross-section of GNWT departments (ECE, HSS, MACA, NWT Bureau of Stats), Aboriginal governments, private sector, and various service providers.

5.2.2. Government of Canada

The federal government maintains a primary role in social, cultural and economic promotion and stability in the Northwest Territories. It carries on many of these functions in partnership with the GNWT and Aboriginal organizations.

The Department of Indian Affairs and Northern Development (DIAND):

- is the primary department responsible for ensuring that First Nation rights are not infringed;
- promotes economic development of the north through its mining, and oil and gas programs (e.g., benefits plans);
- negotiates and receives royalty payments for mineral, oil, and gas development for the federal government;
- is the primary land holder;
- provides health care to First Nations persons; and,

[18] *Indicators are expected by 2003-2004.*

- manages mineral rights.

Other departments and agencies with social and economic mandates in the federal system include Health Canada (health programs for First Nations), Human Resources Development Canada (Aboriginal employment), Industry Canada (Aboriginal economic development) and Statistics Canada (vital social and economic statistics on northern communities).

Two federal initiatives that effect SEIA under the MVRMA include the review and approval of oil and gas benefits plans and the development of cumulative effects models under the MVRMA.

1. Benefits Plans

Under the *Canadian Oil and Gas Operations Act* (COGOA), DIAND approves development Benefits Plans prior to the National Energy Board issuing authorizations or approving Development Plans for oil and gas development. A benefits plan outlines how a developer will support Canadian contractors, goods and services for the project. The legislation also requires that any benefits plan submitted "include provisions to ensure that disadvantaged individuals or groups have access to training and employment opportunities and to enable such individuals or groups or corporations owned or cooperatives operated by them to participate in the supply of goods and services used in any proposed work or activity referred to in the benefits plan" (Keeping 2000, n.p.)

In the context of SEIAs related to oil and gas projects, benefits plans act as mitigation measures to assist with the reduction of adverse impacts on the social, cultural and economic environment, and enhance the positive effects of development.

2. Cumulative Effects Assessment and Monitoring

With respect to the federal role in SEIA, two key multi-stakeholder programs are of note. The first is the cumulative impacts monitoring program (CIMP) and audit for the Mackenzie Valley under Part 6 of the MVRMA. The other is the Cumulative Effects Assessment and Monitoring Framework (CEAMF), a broad framework for cumulative effects monitoring for the entire NWT. Both programs are developing frameworks for the assessment and monitoring of cumulative effects, including social and economic issues (referred to as community health and wellness).

Both the CIMP and CEAMF initiatives use valued social and economic components (VSCs) and indicators as a means of identifying limits of acceptable change in the social and economic sphere, and have conducted thorough state of knowledge reports including the identification of gaps and challenges respecting project-level assessment of social and economic impacts in the NWT and the development of thresholds, VSCs, and associated indicators (CEAMF / CIMP homepage, accessed July 2002).

5.2.3. Developers and Communities

Under the MVRMA, the developer is responsible for carrying out SEIA as part of the overall Developer's Assessment Report submitted to the Review Board. This requires the collection of information respecting:

- existing economic and social environment of communities that could be expected to experience impacts, including employment, education and training, infrastructure, and social and cultural resources;
- government revenues and costs; and,
- predicted impacts after mitigation, including cumulative impacts, on valued social, economic and cultural components, including human health (VSCs).

The MVRMA requires that the developer consult all impacted communities to identify issues and concerns.

5.3. Status of Initiatives Affecting Social and Economic Impact Assessment in the Mackenzie Valley

This section provides a preliminary scan of issues respecting sustainable resource management in the NWT and the resource management framework under the MVRMA, based on a review of existing policy and management program documents[19].

5.3.1. Inter-Governmental Cooperation on Social and Economic Issues

As outlined in Part A, section 3.2, assessing the sustainability of projects requires clearly defined vision, goals and objectives, and a consistent means of public participation in larger development decisions. The GNWT has made extensive policy and strategy commitments respecting sustainable development, non-renewable resources and the balancing of social and economic development (*see Sustainable Development Policy, Non-Renewable Resources Development Strategy and the Social Agenda)*. It is not clear, however, that equivalent inter-governmental strategies (federal, territorial, Aboriginal) are in place, or that these strategies are working in tandem to establish clear sustainable development objectives, development thresholds and parameters for acceptable resource management practice[20]. There are many processes underway in the Mackenzie Valley, including the settlement of land claims, devolution, negotiation of self-government, and the current establishment of protected areas. This wide range of initiatives creates some uncertainty and confusion about the state of sustainable development goals and objectives.

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[19] Main sources of data are from the NRTEE 2001; CARC 2002; NWT CEAMF and CIMP status reports (2001, 2002); MVEIRB, MVLWB, DIAND 2001; .

[20] See Discussion Paper developed for DIAND CEAMF Program 2001. "NWT CEAMF: Current Context, 'Lessons Learned', Gaps and Challenges, p.29.

5.3.2. Implementation of the MVRMA

The largest challenge facing the IRM system in the Mackenzie Valley is that specific and crucial elements of the MVRMA remain unimplemented. Land use plans have not been approved under the Gwich'in or Sahtu agreements; the implementation of the CIMP program and audit is still incomplete. Without these essential elements, SEIA will be hampered by lack of regional land and water use thresholds. Other issues such as adequate Review Board funding have also been raised as impediments to good resource management practice (*see Gwich'in 5-Year Review* and NRTEE)

5.3.3. NWT Socio-Economic Indicators

Accurate baseline data linked to relevant and useful indicators and VSC initiatives is a required aspect for assessment of economic health of communities and regions, social issues, human health, and traditional land use.

A large number of indicators are being identified, tracked and analyzed through the Diavik and BHP projects (*see Table 5.2)*, and through vital statistics collected by the GNWT and Canada[21]. Some community-based monitoring and indicator work is also taking place, but is not generally supported over the long term except through intermittent funding opportunities.

Most indicators currently concentrate on wage economy, as a result of the present emphasis on full-time employment in light of increased opportunities and training associated with industrial development (MacLeod Institute 2002, p.59). There appear to be some consistency between the Diavik and BHP indicator lists. The DIAVIK socio-economic agreement includes an additional requirement to measure cultural well-being and net effects on government, an element that represents a positive addition to measuring socio-economic sustainability in the Mackenzie Valley. In the next year, the GNWT will be working on a more comprehensive socio-economic indicator program under the Social Agenda, which should prove useful for the purposes of SEIA.

An outstanding example of social and economic indicators is the Lutsel K'e, Dogrib Treaty 11 Council monitoring work on traditional knowledge of community health and wellness, carried out with funding from the West Kitikmeot Slave Study (WKSS homepage. Accessed July 2002). The result was 39 potential quantitative and qualitative indicators, falling into three general categories: self- government, healing and cultural preservation. Examples of indicators used include:

- ability to take leadership to address problems in the community,

[21] NWT Bureau of Statistics (since 1984). **Employment and Unemployment Estimates**; NWT Bureau of Statistics. **NWT Crime and Justice estimates**; NWT Bureau of Statistics / Statistics Canada. **National Population Health Survey**; NWT Department of Health and Social Services, Population Health Division (1999). **NWT Health Status Report**.; NWT Department of Health and Social Services (since 1987) **NWT Family Violence Data Base**; and NWT Department of Health and Social Services. **NWT Suicide Database**.

- number of job opportunities in the community,
- rates of disease such as cancer,
- reported incidents of poor mental / emotional health,
- opportunities to learn the Chipewyan language in the home and the community, and,
- changes in harvesting patterns and use of animals.

Table 5.2: BHP and Diavik Socio-Economic Indicators

Under the BHP and Diavik socio-economic agreement follow-up programs, the following indicators are being used to look at social and economic change resulting from development

BHP INDICATORS	DIAVIK INDICATORS
Social Stability and Community Wellness Indicators	
number of injuries	age-standardized injuries
number of potential years of life lost	
number of suicides	
number of teen births	
	single-parent families
number of children in care	children in care
number of complaints of family violence	number of mothers and children referred to shelters
number of alcohol- and drug- related crimes	police-reported crimes, according to the following categories:
number of property crimes	violent, property, drug-related, other
number of communicable diseases	communicable diseases
	(sexually-transmitted diseases, tuberculosis)
housing indicators	
Non-traditional Economy Indicators	
average income of residents	average income
	proportion of high income earners
employment levels and participation	employment
	participation rate
number of social assistance cases	social assistance cases
(now called income assistance cases)	(now called income assistance cases)
	registered businesses, bankruptcies and start-ups
high school completion	number of people 15 years and older with less than grade 9
	number of people 15 years and older with a high school diploma
Cultural Well Being Indicators	
	per cent of work force aged group engaged in traditional activities

	ratio of home-language use to mother tongue, by major age groups
Net Effects on Government Indicators	
Economic Diversification Indicators	
	The GNWT may also report the net effects on government of the Project, and secondary industry data.

A process for monitoring was also developed and a brief manual was produced to assist other communities in implementing their own community based monitoring.

As a final note on indicators, there also appears to be some support for the use of alternative measurement frameworks, including Genuine Progress Indices (GPI), in the NWT (*see Part A, section 3.3.1 and Appendix B for more information on GPI*). During the Diavik Review, the Canadian Arctic Resources Committee, an intervener on the project, supported the use of GPI as a means of describing the economic contribution of the diamond project in a more holistic manner (CARC homepage, accessed May 2002). Communications with Diavik suggest the company is beginning to consider the use of GPI to measure the progress of impacted communities, particularly with respect to social progress. This work is in very preliminary stages (Personal communication, Diavik Diamond Mines Inc. June 2002).

5.3.4. Social and Economic Thresholds

As noted in Part A, section 4.4.6, SEIA impact prediction, particularly for cumulative effects assessment, will be assisted with the establishment of thresholds that provide limits of acceptable change against which impacts of existing developments can be monitored and proposals for new developments can be assessed. A report by the MacLeod Institute (2002) identifies the requirement for a detailed review of potential indicators, which is currently being carried out under CIMP, and the development of a comprehensive matrix for socio-economic indicators (p.56). There has been little work done on thresholds in the NWT to date.

Table 5.3: Summary of Documented Requirements for Improvements to Resource Management Initiatives Affecting SEIA under the MVRMA

REQUIREMENT	STATUS	ACTION	RESPONSIBILITY
Territorial Sustainable Development Framework	NWT SD Policy and non-renewable development strategy have been developed	Approaches are required to ensure developers, communities and government share similar values respecting sustainable development (project by project and at a territorial policy level).	All stakeholders. Review Board will support more proactive participation approaches in SEIA consultation guidelines
Regional Land Use Planning	No completed land use plans are in place in settled or unsettled claim areas	Support, approve and implement land use plans and or interim measures in the absence of land claims.	Canada, Aboriginal governments and GNWT
SEIA Guidelines	To be developed.	Develop guidelines. Guidance should be provided by MVLWB and GNWT	Review Board, with input from MVLWB and the GNWT
Social and economic thresholds	No socio-economic thresholds have been determined	Work on thresholds will be carried out in the context of CIMP and CEAMF. Support for continued research on limits of acceptable change is required. *See CARC Thresholds and Carrying Capacity Research*	GNWT and DIAND, with input from all stakeholders. Technical working group with HSS, ECE, RWED, Bureau of Stats, community representatives. Social Agenda Working Group could coordinate.
VSCs, related indicators	VSCs and social / economic indicators are being developed by a number of agencies (GNWT) and developers (BHP and Diavik)	CIMP and CEAMF are conducting review. Collaborate with respect to appropriate social and economic indicators for oil and gas, mining impacts.	CIMP and CEAMF are beginning to work with GNWT and communities on VSC research
Mitigation of impacts	Socio-economic agreements, benefits plans (COGOA) and IBAs (voluntary)	Guidance on access to IBAs and benefits plan contents is required	Review Board will be developing guidance on socio-economic mitigation reporting requirements in SEIA guidelines

6. *ENHANCING PROJECT LEVEL SEIA: SPECIFIC CONSIDERATIONS AND REQUIRED ACTIONS*

This final section sets out consultative and technical improvements required to current SEIA processes under the MVRMA. Considerations and action items are provided with the goal of improving consultation and participation by communities in SEIA. Technical considerations are also provided for improvements to project scoping and issues identification, baseline requirements, predicting social and economic impacts, significance determination and mitigation and monitoring.

6.1. Inter-Agency Collaboration on SEIA Technical Standards

Inter-agency collaboration on SEIA technical standards, roles and responsibilities will be required to address the operational and planning gaps and challenges outlined in Section 5 (MVEIRB, MVLW, DIAND 2001). At an Integrated Resource Management workshop on Preliminary Screening and Environmental Assessment Workshop in September 2001, the establishment of a working group was recommended. To date this working group has not been established.

Some gaps, however, are being addressed. Efforts are being made to harmonize work on indicators between the GNWT Social Agenda Working Group, the Department of Health and Social Services, the Industrial Initiatives Unit at RWED and the Cumulative Impacts Monitoring Program at DIAND. Although the work is in preliminary stages, comments were provided to DIAND on draft indicators and work plans developed, including recommendations on the establishment of a "Human Health and Community Wellness VEC team", with the GNWT taking a lead role [22].

To conclude, the following improvement is required with respect to improving the conduct of SEIA in the Mackenzie Valley.

SEIA Improvement #1: Improve Inter-Agency Collaboration on SEIA

In response to the recommendation provided in the Preliminary Screening and EA Workshop held in September 2001, an SEIA Technical Working Group should be established to provide direction on the overall development of SEIA guidelines, and to inform the ongoing requirements for SEIA under the MVRMA.

[22] *The status of this VEC team is uncertain at this time. CIMP Human Health and Community Wellness VEC's: April 2002 Status Report.*

6.2. Adaptive SEIA Processes

First and foremost, adaptive management approaches should be applied to SEIA in a manner consistent with the *MVRMA*. As introduced in Part A (section 3.1), adaptive management is essential for assessing sustainability of projects. It is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs, and a learning process for all participants. The Review Board's responsibility may cease after the completion of the SEIA, but impact evaluation and adjustments continue over the life of the project, including closure. The ongoing monitoring, forecasting and evaluation informs communities, government, developers, and analysts as to the quality and effectiveness of the SEIA, including VSCs and indicators. Each party is then able to adapt and respond as required.

The introduction of adaptive management principles into SEIA under the MVRMA regime is particularly timely. The current state of SEIA under the MVRMA is relatively new; roles and responsibilities are under discussion and various components necessary for decision-making are in their formative stages. There exists tremendous uncertainty regarding social and economic systems due to their complex nature: the introduction of adaptive management approaches better reflects the dynamic state of these systems. Incorporation of the principles of adaptive management into SEIA will require enhanced participation by all parties in the SEIA process, the introduction of mechanisms to improve recurrent forecasting and provide links between EA, land use planning, monitoring and audit functions (Kennett and Donihee 2001 in Terriplan 2001, p.31), and improved inter-agency participation in SEIA.

Broader institutional participation in the SEIA process will be needed to ensure that links between policies and programs affecting SEIA are made. An important part of the SEIA process is gathering data on the broader social context within which a project is being proposed, and the conditions under which it will be evaluated. For example, the GNWT's Social Agenda indicators initiative may provide valuable information for determining the significance of a project's effects. The Gwich'in Land Use Planning Board has prepared a land use plan that sets out the public's vision for land use in the Gwich'in Settlement Area. This land use plan provides a summary of crucial social, cultural and economic values and thresholds respecting land use that can provide contextual information for SEIAs.

Implementation of an adaptive management approach will also require strengthening technical approaches to the evaluation of social and economic impacts. Here concentration on improvement to technical standards, in particular, on the direction provided to the developer and government in its terms of reference for SEIA is required. In doing so, the Review Board hopes to provide for the opportunity to carry out repeated forecasts and re-assessment of impacts as new information comes available. This will allow for lessons to be learned from the previous assessments, which then can be factored into future assessments.

SEIA Improvement #2: Improve Mechanisms for Making Adaptive Decisions

There is a need for a sustainable development framework approach to resource management that brings together public policy, research, monitoring, state-of-the environment reports, environmental assessment (including SEIA) and audits.

To assist with the development of mechanisms for making adaptive management decisions, the Review Board will:

- Support the establishment of an SEIA Technical Working Group with other agencies to ensure that mechanisms are developed;
- Provide consideration to enhancing public and institutional participation in the SEIA process through the enhancement of SEIA guidelines; and,
- Provide consideration to improvement of technical standards for SEIA under the MVRMA.

Sections 6.2 and 6.3 present preliminary recommendations for improvements to existing Review Board guidelines, terms of reference and the development of new standards that will serve to enhance existing approaches under the MVRMA.

6.3. Enhancing Public and Institutional Participation

Current Practice
Direction on consultation in the EA and EIR process is summarized in a Review Board draft guideline, where it states "*developers [are] to commence their discussions with affected communities, federal and territorial government departments and agencies as early as possible in the life of the development. In conducting an EA, the Review Board will request, from the developer a written record of their consultation beginning with preliminary screening*" (p.61, MVEIRB Draft EA Guidelines). The EA terms of reference also contain a requirement for public consultation and documentation of the findings.

Moving Towards Good Practice
A key consideration in SEIA is to ensure views of potential impacts are represented bya balanced consultative process, and participation by the effected public is broadened, by promoting open dialogue and cooperation between communities, government, and industry. Consultation should take place in a fair and equitable manner; expectations of the public and decision-makers must be clear. The process must lead to an understanding of what issues a society values most, what it would least like to see changed, and which groups in the population are most vulnerable. This may require asking questions in the course of public consultation such as,

- Is the community prepared for the proposed development? (Is it particularly vulnerable? Are there interim measures in place for land use?)

- Does the community have a "development path" in place (Are there existing land use plans, community economic development plans[23], etc)?
- What services are available to protect the vulnerable and are they adequate (health, social, community justice, women's shelters)?
- Does the community have the technical and fiscal capacity to analyze the project development and participate in the EIA process?

SEIA Improvement #3: Expand SEIA Consultation Guidelines

Current guidelines to developers for scope and approaches to community and government consultation, while appropriate and meeting the standards of EIA, could be expanded to: (a) provide direction to the developer on preferred approaches to initial consultation with communities and government; (b) provide requirements for the developer and impacted communities to discuss "community preparedness" for the project.

To expand consultation guidelines, the Review Board is considering the development of:

- Guidance to the developer on methodologies for appropriate cross-cultural consultation and communication of project description and identification of issues and concerns (use of visual media, plain language, Aboriginal languages, etc);

- Guidance to the developer on the prerequisite that SEIA research and consultations be conducted according to existing scientific licensing requirements under the *NWT Science Act* and in accordance with existing guidelines for working with Traditional Knowledge research[24];

- Requirements that initial consultations address sustainable development and community development policy frameworks in the Mackenzie Valley, and include both an exploration of what various groups want from a project and a determination of the project's congruence with values and expectations of residents and institutions in the Mackenzie Valley.

  Questions that could be asked include: What is the vision for the future? How does the project fit with this? What is valued highly, and what should not be changed under any circumstance? What might be willingly sacrificed for an improvement in income and quality of life?

- Requirements for the developers, governments and communities to, at initial stages of project approval, explore the current structure of the communities and their

[23] Community Development Plans are an important tool for communities to identify their vision, priorities, standards and expectations. Please contact GNWT Municipal and Community Affairs for more information.
[24] See Part A, section 4.4. Guidelines include: DCI 1991. Guidelines for the conduct of participatory community research to document TEK for the purpose of EA and environmental management. RCAP, n.d. "Ethical Guidelines for Research"; Aurora Research Institute 1996: Doing Research in the NWT.

measurable preparedness to participate in, and absorb, project-induced change, and the potential impact on government programs and services;

- Guidance to ensure that a broad cross-section of groups is consulted including, but not limited to:
  - traditional knowledge holders;
  - local entrepreneurs, businesses and business organizations e.g., NWT Mining Association, Chamber of Commerce;
  - front line workers delivering social and economic support services;
  - women and women's organizations, e.g. NWT Status of Women;
  - non-government organizations especially those that deal with social and economic issues;
  - government delivering social and economic programs and services.

6.4. Required Technical Improvements to SEIA[25]

To ensure that the technical processes for SEIA under the MVRMA support sustainable approaches, including adaptive management, the Review Board is considering specific improvements to its technical SEIA practice. The following provides an overview of the improvements the Review Board is considering.

6.4.1. Scoping and Issue Identification

Current Practice
At the scoping stage, the Review Board gathers information on issues of concern and relays them to the developer for response in the form of "terms of reference" (ToR). Some issues will already have been brought forward from the preliminary screening, and are considered during the drafting of EA terms of reference. Public consultations on the draft terms of reference are carried out with departments that have social and economic responsibilities (e.g., RWED, DIAND, MACA, HSS), First Nations, communities and non-government organizations (NGOs). ToR are then developed to provide a framework for the developers' SEIA Report.

The Review Board has, to some extent, standardized the process by using pre-existing terms of reference from past projects as a template. A noted deficiency with this approach is that it leaves the developer with a lot of latitude to identify issues and concerns, to undertake analysis and to propose mitigation; the developer may then fail to collect the evidence required to make social and economic decisions consistent with s. 115 of the MVRMA[26].

Moving Towards Good Practice

[25] *For a general overview of steps required to carry out SEIA, see section 4.2.*

[26] *This includes protection of the environment, and the protection of social, cultural and economic well-being of residents and communities of the Mackenzie Valley.*

Scoping defines the work to come and is largely responsible for the success or failure of the entire EIA. It is good practice to prepare standard terms of reference that are coherent and consistent in SEIA approaches. Good practice should see the development of standard questions that address principles of sustainable development and specific concerns related to oil and gas, mining, forestry and other "typical" development projects for the Mackenzie Valley.

SEIA Improvement #4: Standardize SEIA Terms of Reference

The Review Board is considering the development of standard SEIA Terms of Reference with consistent social, cultural and economic questions and reporting requirements, to ensure that questions linked to sustainability are consistently addressed through SEIA, and that systematic approaches are taken for small and larger project assessment.

To develop standard ToR and questions the Review Board will, in consultation with relevant agencies:

- Undertake research on existing models from other jurisdictions (e.g., *British Columbia Guidelines for the Preparation of an Application for a Project Approval Certificate* and *EA Guidelines for Oil and Gas Projects).* A key criterion for the standard ToR will be that the Review must retain the ability to adapt those terms of reference on a project-by-project basis if required. The standard ToR must also permit increased flexibility in ToR for smaller projects;

- Clarify expectations for social and economic impact boundary determination (e.g., employment catchment areas) and expectations for alternatives determination;

- Develop and refine a consistent and coherent set of sustainability questions to direct to developers or governments. Examples include:

  Impacts on traditional land use areas activities
  - What is the effect of the project's footprint on traditional use areas and activities? Include the direct and indirect effects (e.g., competition from other hunters) of the project and include the zone of influence.
  - What is the potential compensation required (valuation of harvest opportunity) to the harvester in the event of loss to the traditional use area (i.e., elimination by footprint of project)?

  Sustainable economic development
  - Demonstrate what level or percentage of funding was contributed towards economic diversification (to government), or,
  - Identify and describe impacts on existing or planned community infrastructure and community level-government programs and services.
  - What are the estimated incremental costs of the project to municipal governments directly affected by the project?

For an additional list of questions the Review Board is considering for standard terms of reference in SEIA, please refer to Appendix C.

- Research guideline criteria on scope and scale from other jurisdictions. For example, the *Nunavut Land Claim Agreement* uses a guideline for IBA requirements based on expected person years (PY) of employment or capital costs of projects.

> *"These terms of reference would apply to any development that would entail during any five (5) -year period, more than 200 person years of employment, or entails capital costs in excess of 10 million dollars, in constant 2002 dollars, including, where Government is the developer for a portion of a development project or directly related infrastructure, the capital costs and employment projections for the government portion of the project"*[27].

6.4.2. Determining Social and Economic Baseline

Current Practice
Under the current practice, the developer is required to describe the existing environment, including the social and economic environment, under six broad categories. These are:

- social and cultural resources;
- land and resource use;
- economy;
- human health;
- government; and,
- infrastructure.

Developers access existing information from government departments and agencies, or from community organizations. Where information is not available, developers must collect new data. Developers are required to give equal consideration to traditional knowledge.

Current Review Board process also requires that the developer provide explicit documentation of assumptions, models, and information sources, as well as information limitations and associated levels of uncertainty. As part of current practice, the Review Board also requires that the developer identify affected parties and communities, and collect data and information accordingly.

The Review Board is required to confirm the adequacy of the data provided by undertaking an analysis on the EA report submitted. It is assumed that government departments and agencies, community organizations and others reviewing the report are also validating the information collected and the method by which it is collected.

[27] *The figures presented are provided only as an example, appropriate values would have to be set for the Mackenzie Valley.*

Moving Towards Good Practice

Data collection must have a purpose, and must contribute to understanding the sustainability of a development proposal. The quality of baseline reports is influenced by scoping direction given to the developer, the availability of information, the quality of the data, and appropriateness of the techniques used to collect it. As noted in section 4.4, the SEIA baseline required, particularly with respect to social change and the net economic benefits and costs of projects to communities and the territorial government, often doesn't exist in the public domain. Available information (e.g. labour force surveys, census, and regional GDP accounts) may not be specific enough to answer key questions during an SEIA, and is certainly not adequate for measuring aspects of the mixed economy in many small communities in the Mackenzie Valley. All of these factors affect the accuracy and validity of predictions.

Data collected by government should be consistent with long-term sustainability objectives and principles of a particular region (sustainability indicators), and reflect SEIA needs. Indicator data collected through surveys, census, and monitoring programs should be categorized in such a way that they can assist in determining the current state of and trends within the social and economic environment se (*e.g. see UN state and response indicator approach, section 3.3*).

Although there have been advances in the use of TK in resource management in the Mackenzie Valley and the North in general, there is still more exploration required to understand how it fits into EIA, and particularly social and economic categories used in SEIA. Further measures are required to formalize the collection, analysis and use of TK so that it can be used as evidence of social and cultural change. To the extent possible, there should be transparency of procedure and equivalence in presentation between TK and scientific data and information (Usher 2001)[28]. Some Aboriginal groups in the NWT have developed guidelines for the appropriate use of TK in this context[29]. It is essential that communities and TK holders play a lead role in collecting TK information for the purposes of SEIA, and continue to be supported in their work to develop protocols for access, use and distribution of TK. Methods for the appropriate presentation of oral knowledge in EIA reports need to be developed.

SEIA Improvement #5 Social and Economic Baseline Determination

To improve baseline reporting in SEIA reports, the Review Board will make specific technical improvements to its ToR and guidelines, related to data sources (including the

[28] *Usher, P. Presentation to Northern Impact Assessment Seminar. Yellowknife, October 2001.*

[29] See Gwich'in Social and Cultural Institute, 2001. Draft Gwich'in Traditional Knowledge Policy.
Dene Cultural Institute 1991, Guidelines for the conduct of participatory community research to document traditional ecological knowledge for the purpose of EA and environmental management.
Yellowknives Dene First Nation 1995, Policy Guidelines for Yellowknives Dene TK; Saving our Community's Cultural Resources.

provision of financial data for economic impact assessment), the use of TK and conformity analysis requirements.

To improve social and economic baseline reporting in SEIA the Review Board will:

- Develop explicit requirements of reviewers that comments be provided on the quality of the data and information provided, method of collection, and assessment of its contribution to the understanding of the sustainability of a project.

- Provide input, through a forum such as an SIEA working group, on objectives and related strategies to improve baseline data collection, in particular advising on the types of information required to answer the questions that need to be asked in the course of an environmental assessment or impact review.

- Continually use its environmental assessment reports to the Minister of DIAND to comment on data issues encountered during the course of an SEIA, and make recommendations to departments and agencies on how their data collection policies and related procedures could be improved to better serve SEIA needs.

- Fund a workshop in 2002 that will consider TK and the environmental assessment process under the MVRMA.

- Develop, based on results of workshop, a TK guideline for EA under the MVRMA.

- Consider the development of a key SEIA contact database of agencies and organizations who have social, economic baseline data. This database would also include an index of the type of information available.

- Confirm that both developers and decision-makers in government have access to information related to royalties, payroll taxes, corporate taxes, and transfer payments as may be required to complete economic and fiscal analysis. This will improve the ability of SEIA's to address fiscal and overall economic impact of projects.

6.4.3. Predicting and Analyzing Social and Economic Impacts

Current Practice
The Review Board ToR require that the developer predict direct and indirect impacts that will result from the proposed development, after mitigation. This description of the residual impacts sets out magnitude, geographic extent, timing, duration, frequency, irreversibility of impacts, ecological resilience, probability of occurrence and confidence level. The developer must explain what those impacts mean to the future generations of the Mackenzie Valley. The Review Board also requires the identification of VSCs, and how they may change over the lifespan of the project.

The Review Board then undertakes a conformity and effects analysis. The latter is completed through its Information Request (IR) process and, if necessary, through public hearings. Usually, the IR is addressed to the developer, but the Review Board also has the authority to direct questions to federal and territorial government departments and agencies, communities, or any party they feel may have information necessary to evaluate the impacts of the project.

Moving Towards Good Practice
As outlined in section 4.2.3, predicting and evaluating social and economic impacts of projects is the most challenging part of any SEIA, since the socio-economic environment is always in flux. Good practice will require strengthening prediction and effects analysis, with the goal of distinguishing changes the proposed project may cause from those already occurring, or likely to occur.

Four issues must be addressed.

1. *Support for Community-based Study of Social Change.* Mackenzie Valley communities have undergone dramatic social change since the 1950s, including development impacts on small Aboriginal communities, their traditional land use patterns and the physical infrastructure requirements of larger communities. Studies of social and economic impacts in northern development have traditionally been carried out through study of social change (ethnography) by external scientists. This type of study is not commonly undertaken in the context of SEIA due to time restrictions of regulatory and assessment processes. Community-driven research of this nature will assist SEIA of industrial projects by supplementing information collected through public meetings, focus groups, workshops, [30] and other methods.

2. *Economic Impact Prediction* will be required to predict the overall economic impact of larger projects on the NWT. In such instances, the valuation of non-market activities requires attention, particularly where harvesters may require compensation for losses related to traditional activities. Cost effectiveness of mitigation, environmental and social costs and other intangibles must also be considered.

[30] *For an overview of social and economic analysis in SEIA, see section 4.3*

3. *Suitability of VSCs, Standard Social and Economic Indicators, Thresholds and Limits of Acceptable Change.* As discussed in previous sections of this paper (see sections 3.1, 4.2.3, 4.4.6, 5.3.4), these approaches are still not well understood within the context of SEIA, although they are being applied through current monitoring programs (CIMP and CEAMF) in the Mackenzie Valley. The key challenge in social and economic measurement arises from the difficulty of making comparisons, hence decisions, between competing VSCs (Terriplan 2002). How does the community decide on priority VSCs? For example, "if increased financial stability through wage economic activity was one goal, a decrease in the numbers of employed would be interpreted as a negative effect. If another goal in the community were the preservation of traditional activities, an increase in activities such as hunting, fishing and trapping would be interpreted as a positive. However, if the increased traditional activity is due to decreased wage employment, are the observed trends considered together assessed as positive or negative?" (p.85).

4. *Predicting longer-term social development trends:* Social and economic measurement categories of indicators for predicting longer-term social development trends at a territorial level may be worth further exploration by policy makers. One example is the use of "state" and "response" indicator categories (*see United Nations indicators approach, section 3.1)* in order to establish a baseline and then determine whether the economy or society has moved forwards or backwards. The application of alternate measurement approaches (e.g. Genuine Progress Indices) also warrants further investigation (*for an overview of GPI, see 3.3.1 and Appendix B).*

SEIA Improvement #6 – Guidance on SEIA Prediction Methods and Tools

To improve the overall social and economic impact analysis of projects, the Review Board wishes to carry out additional research to provide developers and other parties with guidance on preferred methods and tools for predicting social and economic impacts for the purpose of guideline development.

To improve the outcomes of SEIA impact prediction, the Review Board will, in consultation with appropriate agencies:

- Develop a guideline supporting the use of community-based socio-economic change research for the purposes of impact prediction, particularly with respect to larger-scale projects. The guidelines will encourage developers to use standard techniques alongside longitudinal survey / ethnographic research.

- Conduct research for the purposes of expanding guidelines for the overall impact evaluation of larger projects. This will explore in greater detail the use of specific tools like cost-benefit analysis, which more accurately predict the overall economic impact of development . Valuation of intangibles (e.g. the market value of potential losses to traditional economic activities) will also be given more consideration,

reflecting the requirement for wildlife compensation in the event of damage due to development impacts.

- Provide guidance criteria on the identification and consistent use of VSCs and their related indicators for use by the developer. Guidance criteria will be that they must be affected by the project, easily measured, and information on the indicator should be available.

- Support governments and non-government agency initiatives, as appropriate, related to the continued development of alternative means for measuring economic progress and social well-being in the Mackenzie Valley (e.g. full cost accounting approaches, Genuine Progress Indicators (GPI) and relevant indicators).

6.4.4. Significance Determination

Current Practice
Under the MVRMA, the responsibility for determining significance rests with the Review Board[31]. The Board expects developers, government, and communities to provide it the information necessary to make its significance determination. The necessary information may include legal thresholds, policy statements, or research information.

Although final significance determinations are made by the Review Board, the developer is expected to provide a fair description of the residual effect (e.g., duration, frequency, spatial extent, reversibility, and magnitude, etc.... and the importance of its overall environmental consequence) so that the impacts of a project can be put in the proper context, and the intensity of the effects appropriately evaluated by the Board.

Moving Towards Good Practice
As stated in Section 4.2.4, the legal requirements relating to proceedings for determining significance in Canada are becoming increasingly rigorous, especially when evidence must be provided. Given that the process under the MVRMA is evidence-based, it can be assumed that the Review Board and the parties making representations before it will need to be rigorous and specific about the basis for any decision taken.

Thresholds are extremely helpful for good practice in significance determination. In the absence of thresholds, an understanding of how other material may be interpreted into clear thresholds is helpful. Currently, thresholds research is being conducted with respect to biophysical impacts. For example, the federal Canadian Wildlife Service has been examining environmental benchmarks to assist them with their significance determination. Similarly, the Sahtu Land and Water Board has undertaken community surveys that suggest

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[31] The Minister of Indian Affairs and Northern Development may disagree with the Review Board's findings on the significance of an impact. Where no significance was found the Minister has 10 days to order a review. Where significance was found and the project proceeds without a review or was rejected as unjustified, and after consultation, order an environmental impact review. In doing so, the Minister must provide reasons for coming to a different conclusion; and identify the area likely to feel a significant adverse impact or significant public concern.

acceptable limits to change, which will be reflected in the land use plan. While establishing social thresholds may be extremely challenging, this possibility must be explored. If achievable, the development of defensible social thresholds will provide a valuable tool for more accurate significance determination.

Good practice also involves making biases clear, balancing views and, above all, ensuring that the information or "evidence" is an adequate basis on which to make a decision. Evidence for a significance determination may simply not be available; data may have never been collected, models for evaluating effects may not be refined enough to provide a definitive answer, or the thresholds may be too vague to provide adequate guidance. Where evidence is insufficient, then good practice may allow for the careful use of the precautionary principle[32] as the basis for making a decision[33], particularly when the circumstances warrant proceeding with caution.

SEIA Improvement #7 – Strengthen Significance Determination for Social and Economic Impact Evaluation

To improve significance determination in matters related to SEIA, the Review Board wishes to improve its understanding of appropriate residual descriptors for SEIA, social and economic thresholds, and the appropriate use of the precautionary principle.

To improve the outcomes of SEIA significance determination, the Review Board will, in consultation with appropriate agencies:

- Determine if more suitable social and economic descriptors exist for addressing magnitude, duration and frequency of social and economic residual effects.
- Encourage government initiatives respecting the development of social, cultural and economic benchmarks or thresholds appropriate to the Mackenzie Valley.
- Request, in the interim, government departments and agencies to provide their assumed thresholds, if available in existing standards, as a reference point, and explain why they feel this is an appropriate threshold.

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[32] Note: The Supreme Court in Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town) (http://www.lexum.umontreal.csc-scc/en/rec/html/hudson.en.html) ruled that it was acceptable to use the precautionary principle as a reason for not proceeding and that absolute certainty was not a requirement.

[33] The use of the uncertainty principle is more straightforward under the Canadian Environmental Assessment Act where uncertainty about the significance of effects is one of the decisions that may be made. That option does not exist under the MVRMA. However, the circumstances that make it necessary to use the precautionary principle as a basis of significance determination exist equally in the Mackenzie Valley. It is reasonable to develop a policy on the precautionary principle consistent with the MVRMA structure, as is being done by the Government of Canada already and led by the Privy Council Office.

- Develop a discussion paper and draft guideline on the use of the precautionary principle in the Mackenzie Valley for those circumstances where there is uncertainty about significance.

6.4.5. Mitigation and Monitoring of Social and Economic Impacts

Current Practice
It is the responsibility of the developer to prevent, avoid or reduce any potential impacts. The Review Board reviews proposed mitigation, seeks input or confers with experts and directly affected parties on the effectiveness of mitigation, makes recommendations as to appropriate mitigation, and determines which party they feel is responsible for making sure the measure is implemented. Additional measures may also be recommended in final reports to the Minister at the conclusion of the EA. The implementation and monitoring of mitigation measures is generally left to regulatory authorities; no report back to the Review Board is usually required. Where possible, mitigation measures are accommodated in licences and permits.

Under current resource management practices in the Mackenzie Valley, Impact Benefit Agreements[34] have become an industry and community standard, but are not a legislated requirement for most projects.

The mitigation challenge for social and economic impacts is enforceability. Under current legislation, there are no provisions through which social and economic mitigation can be enforced. This means that other mechanisms must be put in place to ensure that a measure is implemented. In the past, for larger projects, this has meant the negotiation of agreements that may be enforced in civil court.

The enforceability of mitigation measures has recently been the focus of a court challenge. In a recent EIA case in Alberta, the Federal Court of Canada ruled that the federal government must be able to enforce a mitigation commitment. Relying on another party (in that case, the provincial government) was not sufficient. While this was a CEAA-related case, the precedent contains lessons for the Mackenzie Valley.

Moving towards Good Practice
As discussed in section 3.4, community development initiatives (e.g. small business development funds, harvesting funds and improvements to infrastructure) are becoming standard as mitigation measures. Communities and developers should be provided with information on the types of mitigation that may be more supportive of good community development and of sustainable development in the longer term.

Another movement towards good practice is an assessment, through follow-up programs, of the effectiveness of recommended mitigation measures. This is an important element of

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[34] A distinction needs to be made between Impact Benefit Agreements, which are claims based, and Benefit Plans, which arise out of the Canada Oil and Gas Operations Act and are a legislated requirement for developers to document how they will provide opportunities and benefits for all northerners.

adaptive management, allowing the Review Board to learn from its assessments and improve future assessments.

To improve mitigation in SIEA, Impact Benefit Agreements (IBAs) should be given more consideration in the SEIA process. IBAs are private contractual arrangements between the developer and a specific group of Aboriginal people, and therefore not part of the public domain. As a result, their contents may never be fully disclosed in the SEIA process. During the Voisey's Bay Review, the panel considered the inaccessibility of IBAs as an impediment to establishing the full range of potential benefits from the project[35]. The matter of disclosing the contents of IBAs in SEIA may not be easily resolved; however, the sequencing of IBAs in relation to SEIA may help ensure that IBAs can be strengthened based on recommendations of a broader public review of project impacts and suitable mitigation. Thus communities, who normally are at a capacity disadvantage at IBA negotiations, may be in a better position to negotiate an IBA with access to a completed impact assessment document. This is a requirement under the Nunavut Land Claims Agreement, where IBAs must be negotiated for all larger development projects and consideration is given to the timing of this process in relation to the EA.

SEIA Improvement #8: Linking Mitigation, Management and Monitoring to SEIA

To support adaptive management, where mitigation, management and monitoring processes are better integrated with the SEIA process, the Review Board is considering the development of guidelines for follow-up reporting on mitigation requirements, appropriate mitigation measures, and the sequencing of Impact Benefit Agreement negotiations in the context of SEIA.

To strengthen adaptive management related to SEIA within the context of mitigation, monitoring and management of project impacts, the Review Board will, in consultation with appropriate agencies:

- Carry out research and consultations, on types of mitigation measures that are acceptable to help mitigate adverse impacts and maximize benefits to northerners.

- Develop a guideline that requires follow-up reporting for determining the success or failure of mitigation measures and whether measures were implemented. This will include a procedure for consultation with effected communities and other agencies respecting the success of failure of programs and related mitigation initiatives (e.g. follow-up with land use planning boards, community groups).

- Carry out further investigation to determine the relative merits of encouraging developers and effected communities to conclude IBAs after results of SEIA are made public.

[35] *Personal communications, Peter Usher.*

7. CONCLUSION AND NEXT STEPS

SEIA must be carried out according to principles supporting sustainable development. It requires the support of resource management frameworks that inform and provide guidance on social and economic thresholds, agreed-upon limits of acceptable social change, and suitable measurements that can determine, in a genuine manner, whether the Mackenzie Valley is moving towards its sustainable vision, goals and objectives. This paper has described how the Review Board intends to strengthen its approach to SEIA. Most importantly, the Review Board wishes to ensure that guidelines will be consistent with, and ultimately contribute to sustainable development. This will mean increasing public participation, and strengthening the ability of the developer, affected communities and government departments to adequately predict and mitigate adverse impacts while ensuring that advantageous effects of the project are harnessed over the long-term.

Critical to the success of SEIA guidelines will be the support and partnership of other agencies responsible for developing, delivering and monitoring social and economic components required for the effective operation of adaptive SEIA. There is a continued need for agencies involved in SEIA to work together on SEIA approaches for the Mackenzie Valley. To initiate a partnership approach in this respect, the Review Board would like to engage stakeholders in further dialogue on the issues and approaches raised in this discussion, in order to address how, over the short and longer-term, stakeholders can ensure that appropriate and effective sustainable development principles become a permanent part of EA and SEIA processes in the Mackenzie Valley.

Next Steps: The MVEIRB will distribute this paper to, and consult with, organizations potentially involved in SEIA. Input from consultations will be applied to structuring a workshop. This will lay the groundwork for a guidance document on SEIA. The document will be produced following the workshop, with input from a broad array of organizations.

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APPENDICES

Appendix A: List of Stakeholders, Organizations Consulted on SEIA Issues

List of Organizations who responded to Questionnaire

- Northwest Territories Status of Women Council
- Two independent social and environmental activists
- Ecology North
- Gwich'in Social and Cultural Institute
- Sahtu Land and Water Board
- Mackenzie Valley Land and Water Board
- Dene Nation
- Environment and Conservation – Cumulative Impacts Monitoring Program Office, Department of Indian and Northern Development.
- Northern Oil and Gas Directorate, Department of Indian and Northern Development
- Government of the NWT
- TransCanada Pipelines

List of Government Officials Contacted for Specific Information

- Gay Kennedy, Director Policy and Planning, Municipal and Community Affairs, GNWT
- Dan Schofield, Director, School of Community Government, Municipal and Community Affairs, GNWT
- Doug Matthews, Director Minerals, Oil and Gas, Resources Wildlife and Economic Development, GNWT
- Juanita Robinson, Industrial Initiatives Consultant, Resources Wildlife and Economic Development., *GNWT*
- Debbie Delancey, Deputy Minister, Municipal and Community Affairs, GNWT
- Lorraine Seale, CEAMF, DIAND
- Meredith Seabrook, CIMP, DIAND

Appendix B: How are Genuine Progress Indices Developed?

See section 3.3.1 for a discussion of GPI

GPI looks at the economy from the point of view of the individual, and how various types of market and non-market activities affect him or her. It starts with the same accounting framework as the GDP, but then makes some crucial distinctions: It adds in the economic contributions of household and volunteer work, but subtracts factors such as crime, pollution, and family breakdown. How one source outlines the estimation of GPI is as follows:

GPI = (P – C)+ O, where

- P = Economic progress;
- C = The cost to society of economic activity, social and environmental decay; and
- O = Other factors, which may have a positive or negative value (BC Ministry of Finance, 1997)

According to the British Columbia Bureau of Statistics, the first step in developing a GPI is to determine a measure of economic progress (P) over time: The starting point for the GPI is consumer spending on goods and services, which makes up about two-thirds of total GDP. Consumer spending is adjusted by an index of income inequality that is based on the share of national income received by the poorest 20% of households each year. The assumption is that the well-being of society increases the most when the lot of its poorest members is improved, so when income inequality decreases, the GPI goes up.

The next step is to add in the value of non-market activities such as household work, parenting, and volunteer work. In the Mackenzie Valley, the value of the traditional economy would also be applicable. This is based on an estimate of the average amount of time spent on these activities, and an average hourly wage. Also included is the value of the services consumers receive from owning consumer durables such as cars, appliances and furniture (amortized over the life of the durable goods). Finally, an estimate of the value of the services of roads and highways constructed by governments is included. All other government services are excluded from the GPI, since they are deemed to be defensive in nature (correcting for social decay and erosions in the quality of life) and therefore do not increase social well-being.

These components are all added together to determine an initial estimate of economic progress: the benefits that consumers derive from market and non-market based economic activities. All other types of expenditures either do not enter the equation, or are viewed as costs because they are deemed to be defensive in nature, or because they do not add to the well-being of society.

The next step is to look at all of the costs associated with economic growth (C): In the GPI, these costs can be grouped into five main categories:

- Social decay (crime, family breakdown, and the cost of accidents)

- Loss of time: (leisure time, work time lost due to underemployment, and time lost due to commuting)
- Pollution (household pollution abatement, and costs associated with water, air and noise pollution)
- Environmental degradation (loss of wetlands, loss of farmlands, depletion of non-renewable energy resources, other longer-term environmental damage, the cost of ozone depletion, and the loss of old-growth forests)
- The cost of purchasing consumer durables (deducted to avoid double-counting)

The costs associated with each of these activities are estimated using a variety of different methods, many of which are largely based on a subjective evaluation. For example, variables such as the number of hours spent watching television, legal services, counselling, real estate and other costs associated with divorce are used to put a value on the cost of family breakdown. The net effect of all these deductions is to decrease the initial estimate of economic progress for 1994 by about 75 percent.

Finally, two components (O), which may have either a positive or a negative value, are considered:

- Net capital investment–a measure of the extent to which investment growth exceeds labour force growth (it is assumed that the amount of capital per worker must stay the same or increase).
- Net foreign lending or borrowing–a measure of the extent to which investment and consumer purchases are financed by lending from abroad.

Appendix C: Sample List of SEIA Sustainable Development Questions For Larger Projects

The following questions are draft sample questions the Review Board is considering in its development of future Terms of Reference for larger projects. The purpose of these questions is to generate discussion through SEIA, which may reveal information about the longer-term sustainability of proposed developments, based on locally-defined issues and concerns [valued social and economic components (VSCs)].

The sample questions provided are organized based on broad issues (potential VSCs) and potential indicators. The objective of this sort of approach is to consistently track issues related to sustainable development with each project. Ideally, the scope of assessment questions will be developed with some knowledge of the VSC of importance to the residents in the Mackenzie Valley and an understanding of the measures or indicators that are already being tracked.

Participation Requirement Questions
Broadening Consultation / Public Participation

1. ***Consultation Methods***

   These questions are important, in combination with consultation guidelines, to determine how the developer collected the information required from communities and from government agencies.

   - Describe the general corporate approach that will be taken to work with the affected communities.
   - Describe methods and procedures used to identify issues and concerns (VSCs), develop baseline information, and the success in reaching potentially vulnerable groups in the affected communities / region, including Elders, youth, renewable resources committees / HTOs, women's organizations.

2. ***Community Development Path***

   These questions are important to assist determining the general "fit" of the proposed project, prior to detailed study (SEIA) with regional and community-based development goals. They could be posed to developers, government and regional organizations.

   Sample VSC:
   - *Community self-sufficiency;*

   Sample Indicator:
   - *Participation in regional land use planning, existence of community development plans, # of locally-owned businesses.*

Sample Questions

- Specifically describe efforts to review the proposed project in relation to existing development paths of affected communities (for example, community development plans, land use plans and candidate / approved protected areas).

- Provide an analysis of the proposed project in relation to existing development plans or policies at the community and regional levels.

Technical Questions

3. Health and Social Services Infrastructure

This type of question is important for determining the sustainability of community health and social services with the introduction of a new permanent and temporary workforce.

Sample VSC:
- *Community Preparedness;*

Sample Indicator:
- *Measure of use of health or social services*

- What will be the impact of new permanent workers and temporary workers on:
    - recreational facilities;
    - libraries;
    - women's shelters;
    - police services;
    - elementary school class size
    - housing;
    - transportation;
    - police services; and / or
    - occupational therapy.

4. Compensation for Loss of Traditional Use Areas

These questions are central to understanding the potential impact, in economic terms, which projects may have on the traditional economy and will be useful for assisting with compensation issues. They could be asked to the developer and the effected community group (for example the local Renewable Resource Council).

Sample VSC:

- *Traditional economy;*

Sample Indicator(s):

- *% loss of traditional use areas;*
- *Economic value of country food*

Sample Questions:

- Discuss the footprint of the project's effect in relation to traditional use areas and activities? Include the direct and indirect effects, e.g., competition from other hunters, of the project and include the zone of influence.

- What is the economic loss of opportunity to the traditional hunter for the anticipated loss of access and loss of overall traditional use area (i.e., elimination by footprint of project)?

5. Economic / Fiscal Impacts

This question is aimed at determining if benefits from a project have been maximized. This question could focus on human and physical infrastructure.

Sample VSC:

- *Maximizing benefits;*

Sample Indicator:

- *New infrastructure;*

Sample Question
Describe:

- the infrastructure needs of the proposal,
- the current state of infrastructure into which the project is going,
- the expected impact of the new infrastructure including cumulative impacts
- proposed mitigation and residual effects; and,
- the state of the environment at the close of the project.

Further, evaluate (cost, fiscal, program and policy implications, environmental impact) and report on the relative merits of complete removal of infrastructure at the close of the project and leaving infrastructure in as a benefit to the NWT. Include a description of the care and maintenance of facilities after closure, if any are required. Describe alternate opportunities for the use of facilities after closure. Issues related to the transfer of ownership of facilities after closure, including consideration of potential public liability and risk.

6. Economic/ fiscal impact

This question would be directed at the GNWT and the federal government. It is meant to estimate the costs government would accrue due to the development. These costs may arise from pressures on services offered by either level of government.

Sample VSC:

- *Minimizing fiscal impact on government services;*

Sample Indicator:

- *Revenue flow vs. costs;*

Sample Questions:

- What are the total revenues (taxes, fees, royalties) that will accrue to the GNWT and the federal government?
- What are the costs predicted to arise as a result of the proposed project?