

A Model for Monitoring the Effects of the Mackenzie Gas Project on the Health and Well-being of Communities in the Mackenzie Valley

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1. Introduction

Monitoring of the impact of the Mackenzie Gas Project on the health and well being of Aboriginal communities in the Inuvialuit, Sahtu, Gwich'in, Deh Cho and northern Alberta communities is fundamental to mitigating total project effects. Communities in the region already face a significant burden of poor health, when compared to other populations in Canada, which makes them vulnerable to other stresses and pressures created by the proposed development.

While some of the stresses and pressures of the project are known, how individuals, families and communities will ultimately respond to the changing social, economic, cultural and ecological landscape in the north over time is uncertain. Government and proponent efforts to track changes in the health of communities is important for ensuring the adequacy of proposed mitigations, however, top down approaches to monitoring have not historically been empowering to local people. As noted by O'Neil and others, a culture of resistance against health surveillance has emerged in many jurisdictions. Given that local capacity to cope, respond and / or adapt to the pressures of development is fundamental to mitigating effects, monitoring approaches that facilitate community monitoring or '*watching, listening, learning, and understanding and adapting to change*' at the local level are critically important.

The paper identifies some theoretical and methodological approaches, as well as some perspectives on the benefits, opportunities and challenges of community involvement in social monitoring of the effects of the proposed Mackenzie Gas Project. The content of the paper is based on a review of interventions related to "monitoring", "social impacts", "community well-being" made by the proponent, governments and Aboriginal organizations.

Table 1 – Examples of Indicators Proposed during the Assessment Process by Interveners and Proponent

		IN	GW	SH	PR	TER	FED
Health Outcome	Births / Infant Mortality					HSS / S-E Agr.	
Health Outcome	Life Expectancy		GTC			HSS	
Health Outcome	Disease / Death from Injury					HSS / S-E Agr.	
Health Outcome	Psycho-Social Illness (Depression) Suicide		GTC		EIS	HSS	
Health Outcome	FASD				EIS		
Health Outcome	STDs / HIV (Communicable Disease)			Sahtu	EIS	S-E Agr.	
Health Outcome	Self-Rated Health Status		GTC			HSS	
Health Determinant	Community Infrastructure and Services		GTC	Sahtu	EIS	HSS	HC
Health Outcome/ Determinant	Substance Abuse (Youth)		GTC	Sahtu	EIS	HSS	RCMP
Health Outcome / Determinant	Domestic Abuse		GTC		EIS		
Health Outcome/ Determinant	Gambling			Sahtu			
Health Outcome / Determinant	Smoking		GTC				
Socio-Economic Determinant	NWT Economic Activity (e.g. investment)						
Socio-Economic Determinant	Migration					S-E Agr.	
Socio-Economic Determinant	Annual Work Patterns					S-E Agr.	
Socio-Economic Determinant	Education (Attainment / Enrollment/Graduation)		GTC	Sahtu	EIS	ECE	HC
Socio-Economic Determinant	Employment/Unemployment		GTC	Sahtu	EIS		
Socio-Economic Determinant	Working Conditions						HC
Socio-Economic Determinant	Income / Spending Patterns		GTC	Sahtu	EIS	S-E Agr.	
Socio-Economic Determinant	Personal Health Practices / Coping						HC
Health Outcome/ Determinant	Family/Social Structure Dynamics (stress)		GTC	Sahtu			
Health Outcome/ Determinant	Healthy Child Development						HC
Health Outcome/ Determinant	Child Abuse / Neglect (Children recv. Services)					S-E Agr.	
Health Outcome / Determinant	Children in Care						
Health Outcome/ Determinant	Family Disruption					HSS	
Health Outcome/ Determinant	Community Services		GTC			ECE, S-E Agr.	
Health Outcome/ Determinant	Housing / Homelessness		GTC	Sahtu		S-E Agr.	
Social Determinant	Social Support / Social Status					HSS	HC
Social Determinant	Violence and Crime / Incarceration Rates		GTC	Sahtu		S-E Agr.	RCMP
Economic Determinant	In Migration			Sahtu			
Cultural Determinant	Culture / Aboriginal Languages			Sahtu		ECE	HC
Socio-Economic / Cultural Determ.	Hunting, fishing, trapping						
Socio-Economic / Cultural Determ.	Traditional Food Consumption					S-E Agr.	
Environmental Determinant	Physical Environment						HC

A literature review related to health and well-being, as well as knowledge and experience gained working with Lutsel K'e Dene First Nation (1995-2001) in the assessment and monitoring of diamond mining activity in the Slave Geological Province area of the Northwest Territories also guided the development of the report.

2. The Process of Monitoring – “Changing the Relations of Surveillance”

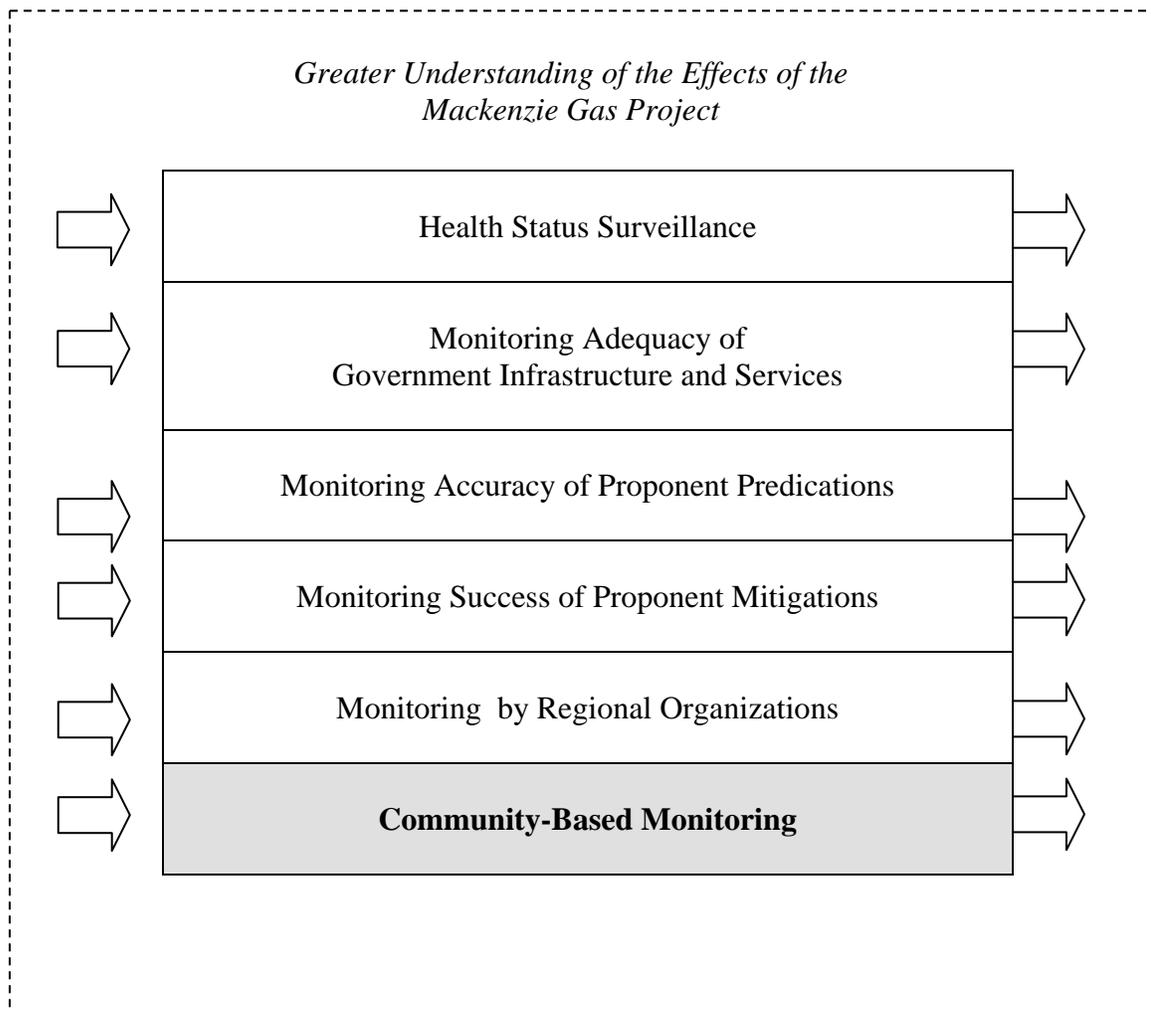
There is a range of monitoring programs that are currently in place or have been proposed in relation to the Mackenzie Gas Project. Health Canada, Statistics Canada and the Government of Northwest Territories already gather statistics or are involved in health status surveillance using many of the health outcomes and determinants that were identified as concerns in the EIS and by Aboriginal organizations, and government departments during interventions. In the Socio-Economic Agreement, the GNWT and the Proponent have agreed to monitor to determine the accuracy of predictions (impact hypotheses) and the effectiveness of proposed socio-economic mitigations (Section 8).

It has been consistently proposed by Aboriginal groups as well as some government departments that regional Aboriginal organizations and communities also be involved in monitoring. Simplistically, such involvement may involve the devolution of the responsibility for monitoring from government to the regional and/or local level. There are, however, weaknesses to this approach and opportunities for carrying out monitoring in ways that are more beneficial to communities.

Social monitoring like environmental monitoring is a science. Developing a system of monitoring change in human populations can be somewhat more challenging in that the process of monitoring itself can affect the very behaviors and conditions it attempts to address. In 2000, John O'Neil et al. published a paper in critique of conventional epidemiological surveillance titled, “changing the relations of surveillance”. The paper highlights two interrelated issues relevant to this discussion on social monitoring. The first of these issues relates to the negative nature of conventional health indicators and the way in which the use of such indicators engenders negative stereotypes.

In Canada, and elsewhere, epidemiological portraits of Aboriginal sickness and misery act as powerful social instruments for the construction of Aboriginal identity. Epidemiological knowledge constructs an understanding of Aboriginal society that reinforces unequal power relationships; in other words, an image of sick, disorganized communities can be used to justify paternalism and dependency (O'Neil et al. 1998: 230).

Figure 1 – Scales of Monitoring of the Mackenzie Gas Project



The argument being made is that social monitoring is not simply an act of collecting data and statistics – it is social process. What are the lessons for monitoring the impacts of the MGP? A review of some of the indicators proposed the proponent, government and Aboriginal organizations during the assessment process (Table 1) suggests that

monitoring done for this project may construct an image not unlike that described by O’Neil. Similarly to that in epidemiology, these negative indicators selected for monitoring the MGP may serve to create or perpetuate images and identities of dysfunction and mal-adaptation within the communities and elsewhere. To mitigate these negative images and identities, which can in turn perpetuate negative behaviors, additional indicators that reflect positively on communities should be considered. Positive indicators, while no less rigorously tracked or interpreted, can act as powerful and empowering points of reference in the monitoring process.

A second issue raised by O’Neil, relates to the imbalances of power and knowledge created by top-down approaches to epidemiological research. Those involved in defining, designing and implementing epidemiological research are often non-Aboriginal people, outsiders, academic or technical “experts” with a higher level of control over what kind of information is collected and how it is interpreted than local community members. In this kind of “experts-based monitoring”, communities have little power or influence. Greater community involvement in research and monitoring can help address these structural inequities.

Although O’Neil’s lessons were written to address concerns about epidemiological research, these lessons can be usefully applied to this discussion on monitoring of the social impacts of the Mackenzie Gas Project.

4. Theoretical and Methodological Issues:

Monitoring can facilitate Social Learning

There are many reasons why community involvement in monitoring is important. Similarly to the benefits of public participation in social impact assessment, community involvement in monitoring brings local and traditional knowledge about impact issues not available to institutions at larger scales. Including these local perspectives along with data from regional, territorial and national monitoring efforts can increase the validity of and depth of understanding about effects and how they might be mitigated. Community involvement in monitoring can also increase the legitimacy of monitoring programs and results; this issue of legitimacy is particularly important to consider in the Mackenzie Valley where community trust of territorial and federal government monitoring efforts is limited. Drawing on arguments made by sociologists involved in social impact assessment, community involvement in monitoring can also facilitate social learning at the local level. As classical social change theory suggests, if they are involved in generating and interpreting “knowledge” about what is going on around them, communities will be in a better position to moderate problems (buffer, cope or adapt) in ways that minimize health and social problems.

Many Social Impacts are not Predictable:

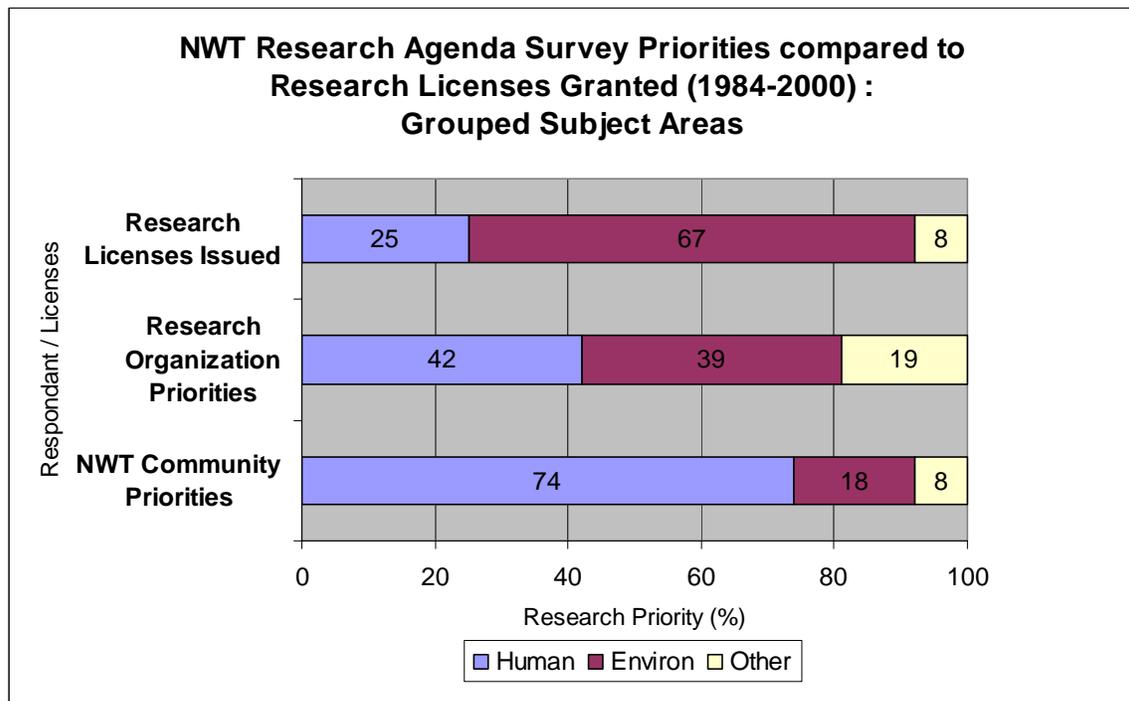
The socio-economic impact assessment has attempted to determine the potential impact of the Mackenzie Gas Project on the well-being of communities in the Mackenzie Valley. This is a complex effort as there are multiple and cumulative biological, psychosocial and environmental determinants behind problems such as drug and alcohol abuse. Impact hypotheses and predictions made by the proponent are based on a range of assumptions about how communities will respond to the opportunities and challenges associated with the project, however, the empirical evidence to support these assumptions is thin.

There is a significant lack of longitudinal data about how communities respond to large-scale development. The case studies used by the proponent provide some scattered evidence of the kind of social change taking place however, data from these regions has

not been comprehensively interpreted. Other case studies offered by the GNWT in their intervention are not particularly useful in that they emerge from very different socio-cultural contexts.

Within the Beaufort Delta and Mackenzie Valley, the degree of longitudinal data collection and rigor of socio-economic analysis has been limited. Through an examination of the number of research licenses issued by discipline, the research budgets of organizations such as the West Kitikmeot Slave Study Society, or federal programs such as the International Polar Year, one can quickly surmise that the level of effort and resources associated with biophysical baseline research and monitoring far outweighs that associated with health or social science research. While the first assumption may be that community social issues are off limits to research, this is not the case. Health and social issues were by far the highest priority according to community members surveyed by the Aurora Research Institute on research needs in 2001 (Figure 2).

Figure 2 – ARI Survey on Research Priorities (Adapted from ARI (2001)).



In addition to carefully considering the evidence around predicted effects and mitigations, it is important that the JRP be equally or more concerned with impacts that have not been predicted. At the end of this environmental assessment it is likely that the panel will conclude, as others have, that there is significant uncertainty associated with the Mackenzie Gas Project and its potential socio-cultural effects. Such acknowledgement of uncertainty and recognition that there are likely to be many unpredictable social outcomes from the project will undoubtedly increase the emphasis on precautionary mitigation efforts as well as on monitoring. Careful consideration of how communities and Aboriginal organizations will participate in social monitoring is key.

Institutional and Geographic Scale: Regional Versus Community-Based Approaches Monitoring

Individuals, households and communities create and respond to change in many complex and unpredictable ways; understanding the effects of the MGP on community health and well-being therefore requires consideration of the unique resources and capacities that individuals, households and communities have for capturing benefits and mitigating impacts.

Larger communities with a greater range of human, financial resources as well as infrastructure and services will have a greater capacity to buffer or absorb shocks associated with the “boom-bust” associated with the construction phase. Smaller communities are at a greater disadvantage than others. Both the federal and territorial government have emphasized the importance of monitoring using standardized measures of health or socio-economic status. Monitoring at a territorial or population level provides an understanding of statistically significant (macro) changes in health status and socio-economic determinants of health identified as relevant including: income, socio-economic status (e.g. income inequality), education, employment, social environment, physical environment (e.g. housing), lifestyle behaviors (e.g. smoking), child development (e.g. FASD) and health services. All these determinants have been robustly correlated in many different populations with both physical and mental health outcomes.

Strong correlations between these social determinants (income, employment and education) and the health and well-being of Aboriginal people has also been found in Canada as evidenced in the Aboriginal Peoples Survey and other Statistics Canada data. There is however, increasing evidence of correlations between health outcomes and indicators of cultural continuity and self-determination.

Given the diversity of community contexts, a single set of macro level indicators will provide only a narrow perspective on the level of change. Single sets of indicators provide a population perspective but may say little about community specific change; they tend to facilitate community-community comparisons rather than focus on understanding important and detailed changes in one place over time. A community-based approach to indicator selection can help local members take greater ownership over specific health and social issues and provide a detailed foundation on which to identify impacts and potential mitigations.

Timescale – Social Effects are not Short Term

Although the construction phase of the project has a timeline of less than five years, the social implications of the project are far greater in scope. The effects of the projects have already begun; the amount of time dedicated to “pipeline issues” and the anxiety and social disruption resulting from the consultation and assessment phase are themselves effects. Some community members have suggested that the impacts of the Mackenzie Gas Project began over thirty years ago when the first proposal was developed. What is the long term contribution that the MGP to the health and well-being of northern communities? The frameworks for developing indicators in the next section suggest some approaches to answering that question.

5. Some Examples of Indicator Frameworks

There are many different theoretical frameworks that underlie the development of indicators and monitoring programs including those focused on health and well-being. A community-based monitoring approach may be based on one or more of the following impact models.

- **Stress-Response / Pressure-State-Response:** The most basic approach to social monitoring involves linking a specific stress to a specific social outcome. Stress-response models assume that a specific cause and effect relationship can be drawn between a stress (e.g. in-migration) and the response (e.g. increase pressure on housing). Pressure-state-response models are less reliant on cause and effect than stress-response approaches. They simply draw attention to correlations between stresses (e.g. in migration) and outputs (e.g. increase in violent crime); effects are correlated or inferred; no cause and effect relationship is defined. While cause and effect relationships are an ideal particularly in a resource development scenario, most social effects cannot be uniquely attributed to one single cause. A broader understanding of social systems is required.
- **Resilience:** The capacity to deal with uncertainty is understood as resilience. Resilience is defined in the complex systems literature as “the processes by which ecosystems maintain themselves in the face of perturbations and change.” (Gunderson 2000) In the community health literature, resilience is defined as “the capacity to “bounce back” in spite of significant stress or adversity.” (Mangham et al. 1997, p.1). It is important to distinguish between single and multiple equilibrium definitions of resilience.
- **Thresholds (including compliance):** Another approach to indicator development involves the identification of thresholds of significance. Significance may be attributed by the community or other agency involved in the monitoring process. There are many different types of thresholds - legal,

intensity, functional, subjective preference etc. While often quantitative, thresholds can also be qualitative and may be specific to place or a development issue. Once reached, a social threshold may trigger a particular mitigative response or intervention or sanction on the part of the community, company or government agency.

- **Healthy Communities and Sustainability:** Sustainability approaches to assessment and monitoring not only ask “what are the project effects?” but also asks “how does the proposed project contribute to or disadvantage the community in their journey towards health or sustainability?”. This sustainability approach, proposed by Robert Gibson inevitably suggests that we think about effects and their significance in relation to a set of values and criteria rather than the objective criteria (high, medium or low). For example, a community might ask: Will our community be healthier if the project is approved? To what extent will the project contribute to our efforts to preserve our Dene / Inuvialuit language? To what extent will the project increase our capacity for self-governance? A key value of the health communities and sustainability approach, when compared with conventional health and social monitoring focused on negative indicators, is that it focuses attention and seeks to chart community progress along a positive path or towards a positive outcome.
- **Mitigations Monitoring:** Another approach to monitoring involves launching a particular kind of intervention as a precaution or mitigation and monitoring its effectiveness. For many communities in the Mackenzie Valley, this approach to monitoring may be perceived as the most useful since it involves taking action to address known issues with the aim of ensuring these issues are not made worse as a result of the project. Studying the effectiveness of a new or enhanced healthy youth program is one example.

6. A Community-Based Approach to Monitoring

Social monitoring, like environmental monitoring, typically has five functions including 1) identification of key indicators and measures, 2) systematic data gathering around key indicators, 3) data verification, 4) data interpretation (including trend analysis) and 5) reporting.

Consideration should also be given to how these tasks and activities are carried out and the extent to which they are culturally appropriate and meaningful to those involved. While scientific rigor and reliability is important in ensuring the validity of monitoring results, if the monitoring system is overly technical and bureaucratic in nature, the process is less likely to bring benefits of social learning discussed above. A system of social monitoring in which local communities take ownership is more likely to encourage positive social change with results being integrated into community, regional and territorial social policy.

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