

Research Article

## Social Considerations in Mine Closure: Exploring Policy and Practice in Nunavik, Quebec

Miranda Monosky

Geography, Memorial University of Newfoundland

Arn Keeling

Geography, Memorial University of Newfoundland

**Abstract:** Northern Canada has a long history of poorly remediated and outright abandoned mines. These sites have caused long-term environmental hazards, socio-economic disruptions, and threats to Indigenous communities across the North. Given the potential legacy effects of improper mine closure, best practice guidelines now suggest that mine closures address not only environmental remediation, but also include robust plans for mitigating social and economic impacts, and that companies engage early and consistently with impacted communities. This research seeks to understand how social and economic planning and community engagement for closure are governed in Nunavik, Quebec. Through semi-structured interviews with government and industry actors and an analysis of regional and provincial mining policy, this research demonstrates that mine closure regulations remain vague when describing how companies should involve impacted communities in mine closure planning, and governments largely neglect to regulate the social aspects of mine closure. This article discusses why an overreliance on impact assessment and overconfidence in closure regulations are creating risks for Nunavimmiut. Without regulatory change, future closures may continue to result in unemployment, social dislocation, costly abandoned sites, and continued distrust in the industry.

---

## Introduction

Mine closure is a distinct and inevitable phase of the “mining cycle” (Laurence, 2006). Mine closure planning encompasses more than just the final phase of a mine’s life and involves a range of complex and interrelated issues that impact both the environment and adjacent communities. A precise timeline for closure cannot be perfectly predicted as it often occurs due to economic factors that make extraction unprofitable as opposed to the absolute exhaustion of an ore body. Mine proponents and operators must begin planning for closure as early as the project development phase, while the effects of closure last long after reclamation and relinquishment are complete (Kabir et al., 2015; Owen and Kemp 2018).

Across northern Canada, mineral development and mine closure have left problematic social and environmental legacies for northern and Indigenous communities. Historically, mine operators in northern Canada suffered minimal repercussions for not complying with already-lax closure requirements, resulting in a plethora of abandoned sites and legacy impacts (Dance, 2015; Mackasey, 2000; Office of the Auditor General of Canada, 2002). These include toxic contamination, stunted economies, social dislocation, and disruptions to Indigenous access to traditional lands (Archer & Bradbury, 1992; Bowes-Lyon et al., 2009; Lapalme, 2003; Roberts et al., 2000; Rodon & Lévesque, 2015; Sandlos & Keeling, 2012, 2016b). Furthermore, Indigenous peoples were largely excluded from conversations about resource policy and mineral development on their lands, leaving them with little say in matters related to mine closure (Buell, 2006; Hipwell et al., 2002; Horowitz et al., 2018).

Over the last thirty years, federal, provincial, and territorial governments in Canada have implemented more robust regulations to protect the environment and ensure mining companies engage with communities (Alderson et al., 2019; Cowan et al., 2010; Dance, 2015; Hart & Hoogeveen, 2012). Yet, despite overall improvements to resource policy and regulation, there is a marked lack of attention in closure planning directed to the social, economic, and historic factors (Bainton & Holcombe, 2018; Beckett & Keeling, 2019). Furthermore, while requirements for community engagement have broadly been improved, mine *closure* as a distinct phase continues to suffer from policy gaps and inconsistencies (Dance, 2015); companies often must exceed the minimal government requirements in order to produce good closure outcomes (Fidler, 2010; Morrison-Saunders, 2019). In their review of international mine closure policies, Bainton and Holcombe (2018) point to the tendency for even robust closure legislation to lack detail on how requirements will be implemented, or in any event lack the political willingness to enforce them. They argue that there is need for a global examination of legislation

and policy mechanisms for “embedding social considerations into the closure process and curbing divestment strategies to avoid closure costs” (p. 473).

This article responds to Bainton and Holcombe’s (2018) call to evaluate the social aspects of closure policy and legislation, while building on Dance’s (2015) broad survey of remediation governance in northern Canada, by providing a detailed regional case study of mine closure regulations in Nunavik, Quebec. This study seeks to understand how Nunavik’s unique configuration of provincial, regional, and Inuit governance has responded, or not, to the challenges of social impacts and community engagement in closure planning. This article asks: what does mine closure governance look like in post-land-claim Nunavik, and how might policies and governance models be improved to better facilitate the long-term involvement of Nunavimmiut in closure planning? These questions are particularly pressing given the number of advanced mineral exploration projects in Nunavik (Séguin, 2021), the presence of an abandoned, unremediated asbestos mine site (Carney, 2017) and two operational mines, as well as the overall trend toward northern devolution and self-governance in the region (Rodon, 2014).

Drawing on expert knowledge from interviews and policy analysis, this article examines the roles that regional and provincial governments play in mine closure policy and planning. We produce a figurative “map” of mine closure governance in the region and highlight regulatory shortcomings that are producing risks for Nunavimmiut. As the findings show, ill-defined or non-existent regulations have allowed mine operators in Nunavik to employ quite different community engagement and closure planning strategies. While ample regulations exist for mine development and operations, and proponents must go through the Environmental and Social Impact Assessment (ESIA) process, there are few follow-up and enforcement mechanisms once the mine is operating. Existing regulations also give far more attention to the physical environmental aspects of mine closure than social and economic considerations, leaving communities vulnerable to post-mining disruptions. Moving towards greater self-governance and increasing the authority of regional organizations is one possible avenue to addressing these issues, as these bodies are largely directed by Nunavimmiut and thus understand the needs, concerns, and priorities of the region better than southern-based provincial authorities.

### **Context: Closure Planning in Northern Canada**

The regulatory landscape for mine closure planning in Canada has evolved considerably over the last thirty years. Today, companies must demonstrate how they have engaged with nearby Indigenous communities during impact assessments, and local Indigenous governments, territorial land and water boards, and impact and benefit agreements (IBAs) have given northern and Indigenous communities

greater leverage with extractive industries (Dance, 2015; Fidler, 2010; Hodgkins, 2018; O’Faircheallaigh, 2018; Veiga et al., 2001; Xavier et al., 2015). While not a regulatory body or formal legal requirement, the growing recognition of corporate social responsibility and social licence to operate are further incentives to enhance social and environmental outcomes by industry actors (Holley & Mitcham, 2016; Prno & Slocombe, 2012; Xavier et al., 2015).

In their review of mine remediation policy across northern Canada, Dance (2015) found that remediation efforts for both new and legacy mines are complicated by jurisdictional overlap within different territories and regions, as well as a lack of any clear remediation visions or policy linkages between them. They also argue that mine remediation suffers from the inability of proponents and regulators to adequately account for the cumulative, historic challenges experienced by northern communities. While Indigenous organizations have tried to strategically utilize the opportunities created by devolution to control and protect their lands, project reviews and environmental assessments take up significant time, energy, and financial capacity (Dokis, 2015; Keeling et al., 2019).

These policy and capacity challenges result in highly variable closure planning strategies and practices. Closure plans across northern Canada suffer from vague descriptions of community engagement, inconsistent or non-existent application of community knowledge, and a lack of any meaningful acknowledgement of the socio-economic aspects of closure (Monosky & Keeling, 2021). In cases where companies do attempt to engage with Indigenous Knowledge (IK), it is often tokenized and only used to supplement existing scientific data about plants and animals (Baker & Westman, 2018; Monosky & Keeling, 2021; Sandlos & Keeling, 2016a; White, 2006). The limited inclusion of Indigenous Knowledge and community expertise results in the failure of closure planning to recognize important exposure pathways for contaminants, the complexities of risk perception, and more holistic understandings of life in the North (Cassady, 2007; Hoogeveen, 2016; Poirier & Brooke, 2000; Tsosie, 2015; Tyrrell, 2006).

While Dance (2015) points to the numerous and substantial challenges to mine remediation across the North, they also state that when remediation efforts sufficiently draw upon Indigenous Knowledge and local participation is encouraged, many of the worst impacts of resource development can be mitigated. The trend toward devolution in northern resource governance has created new opportunities for Indigenous co-management and regulatory authority that may point the way toward more robust consideration of environmental and social impacts across the entire mining cycle (White, 2020; Dance, 2015; Rodon & Lévesque, 2015). In this article, we focus particularly on the role of regional co-management organizations in Nunavik in reviewing, regulating, and engaging northern communities on these questions.

## Study Area and Methods

Nunavik is Quebec's northern region, covering one-third of the province from the 55<sup>th</sup> parallel north to the Hudson Strait coast of Quebec (Figure 1). It is also one of four regions within Inuit Nunangat. Today, it is home to over 13,000 people, 11,800 of whom (85%) are Inuit (Statistics Canada, 2017). The population resides in fourteen communities that trace the coast of Hudson's Bay and Ungava Bay.

Natural resource development has been closely tied to the development of contemporary local and regional governance systems in Nunavik. Contentious and destructive hydroelectric dam developments in the 1970s pushed Quebec into treaty negotiations with Cree and Inuit, leading to the James Bay and Northern Quebec Agreement (JBNQA) signed in 1975. This treaty created Nunavik's current land regime, which provides Inuit with special rights to the land, albeit to only a small portion of the territory. The JBNQA also created many of the region's current government bodies, like Makivik Corporation, the Kativik Regional Government, the Kativik Environmental Quality Commission, and the Kativik Environmental Advisory Committee (Fabbi et al., 2017; Nungak, 2017; Rodon, 2014). Later, in response to the consistent, high level of interest in Nunavik shown by extractive industries, regional governments also produced the Parnasimautik Consultation Report and Nunavik Inuit Mining Policy (Makivik Corporation, 2014, 2015), both of which outline Inuit visions for the future of Nunavik and stress the importance of resource development in consultation with and for the benefit of Nunavimmiut (Fabbi et al., 2017; Rodon, 2014).

Since the signing of the JBNQA, the region has seen the abandonment of the Asbestos Hill (Purtuniqu) mine (1972–1984, owned by Société Asbestos Limitée), and the development of two nickel mines: Raglan Mine (1997–present, owned by Glencore), and Nunavik Nickel (2012–present, operated by Canadian Royalties), shown in Figure 1. Notably, Asbestos Hill operated before the creation of Nunavik's modern political landscape. The company was not required to consult with nearby communities or ensure that they saw any benefits (such as preferential hiring, profit sharing, etc.) from the mine, other than the wages earned by employees during operations. Inuit employees were, in any case, few in number. Weak provincial regulations led to widespread asbestos contamination at the mine site and Deception Bay, and when the mine shut down in the 1980s virtually no remediation occurred (Carney, 2016; Poirier & Brooke, 2000; Roche, 1992). After decades of inactivity, the site was finally put on the provincial list of abandoned sites in 2019 (MERN, 2020).

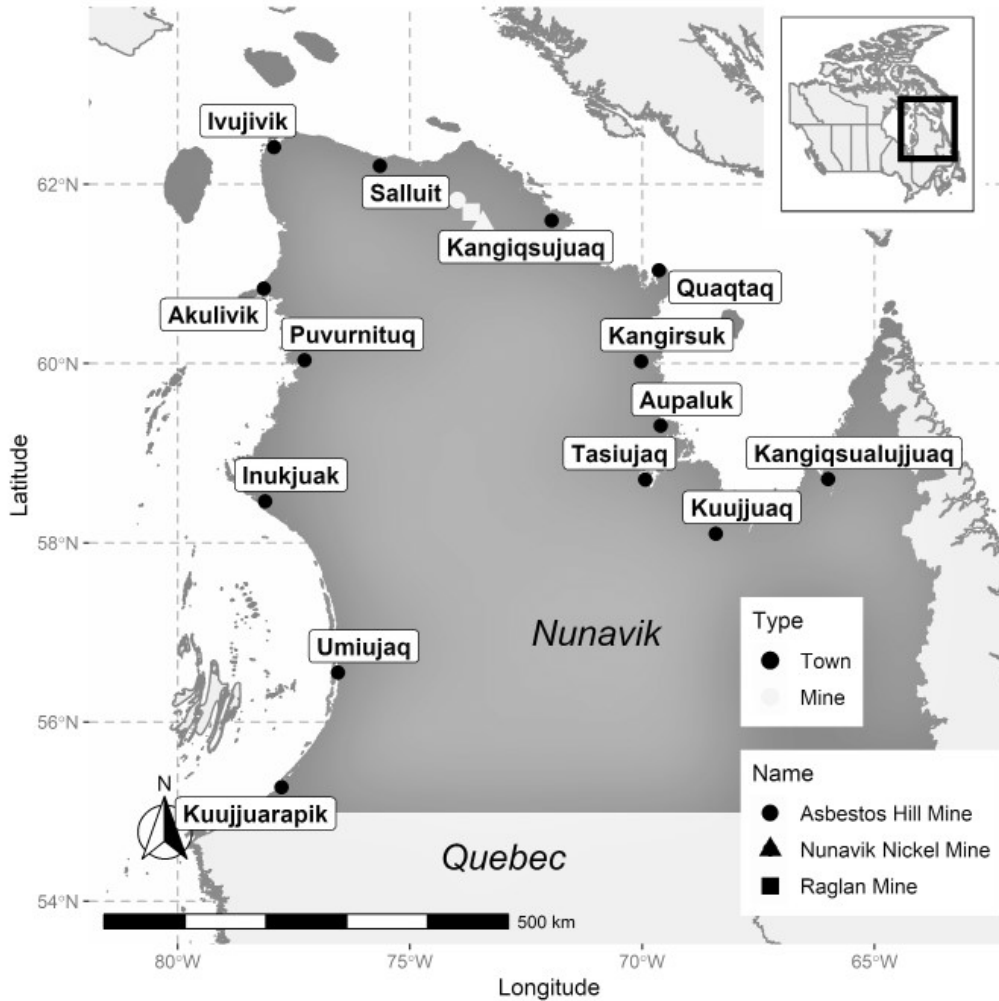


Figure 1. Map of Northern Villages in Nunavik, Quebec as well as active and abandoned mine sites included in this study. Map produced using “sf” and “ggplot2” packages (Pebesma, 2018; Wickham, 2016) in R v4.1.1 (R Core Team, 2021). Geographic boundaries provided by Statistics Canada and village and mine coordinates extracted from Google Maps.

By contrast, both Raglan Mine and Nunavik Nickel began development after the JBNQA, which meant their operations were subject to the completion of an environmental and social impact assessment. Additionally, the legacy of Asbestos Hill and vocal pushback to the hydroelectric dams of the 1970s fueled both community and corporate desire to work together to produce better outcomes for Nunavimmiut. Falconbridge, Raglan Mine’s original owners, would go on to sign the first IBA between a community and mining company in Canada in 1995, and Canadian Royalties would follow suit with its impact benefit agreement in 2008.<sup>1</sup> The two agreements differ in their details, but generally contain provisions for preferential hiring of Inuit, preferential contracting for Nunavik businesses, training programs, profit sharing, and requirements for environmental protections (Bird & Nixon, 2004; Rodon, 2018; Séguin & Larivière, 2011).

These IBAs also require ongoing consultation between the signatories. For example, the Raglan Mine Closure Plan Subcommittee (henceforth referred to as the Raglan Closure Subcommittee) was established in 2018 in response to community requests for more information regarding tailings management and remediation. The subcommittee has created a consistent, long-term means of collaborative closure planning, although the site is not expected to close until 2041. The subcommittee is made up of representatives from the mine and its three IBA signatories (the Northern Villages of Salluit and Kangiqsujaq, and Makivik Corporation), as well as environmental and social mine remediation experts, student researchers, and other guests to provide additional technical support. The goals of the subcommittee are to both increase knowledge about closure and remediation, and also collaboratively develop a closure plan that protects and benefits Nunavimmiut (Raglan Mine, 2019).

Thus, mining and mine closure in Nunavik operate within a relatively new and complex web of governance systems that include multiple regional authorities with different but sometimes overlapping mandates, two IBAs, and a land claims agreement that provides some special rights to Nunavimmiut on some of their territory. All these arrangements are nested within the provincial regulatory system of Quebec, which has its own complicated set of ministries, operating procedures, and political agendas.

This research combined semi-structured interviews with government and industry actors in Nunavik and Quebec and a review of mining and mine closure regulations in the region. All interview participants were involved in the execution or regulation of mine closure in some way: interview participants working for regional and provincial governments were involved in either policy development or project assessment, and participants working for Raglan Mine and Nunavik Nickel held executive level positions where they were directly involved in closure planning and/or community engagement.

Importantly, this research was developed in partnership with the aforementioned Raglan Closure Subcommittee. Both authors have been involved with the work of this subcommittee (either through official membership or as a graduate student researcher), and through this involvement it was determined that a detailed analysis of the region's governance structures would be valuable information for the subcommittee's work. Continuous feedback from the committee helped ensure that the methods and direction of this research were appropriate and useful. It was determined by the subcommittee that research within the Northern Villages would not be appropriate due to existing research fatigue experienced by these communities. It was decided that a "study up" approach would be more appropriate, where existing power structures are questioned instead of the individuals disenfranchised by those structures (Nader,

1972). While some participants from regional governance bodies were Inuit, participants were not recruited on the basis of Inuit identity.

A total of fifteen individuals were interviewed over nine sessions in 2019 and 2020 (Table 1).<sup>2</sup> Participants were asked questions related to their knowledge and experience with mine closure planning, as well as their organization's priorities and strategies for regulating or executing mine closure and community engagement. Policy and guidance documents from Nunavik and Quebec were also examined to supplement this data (Table 2). This involved a close reading of regulations, policies, and guidelines produced by the Government of Quebec, Makivik Corporation, and the Kativik Environmental Quality Commission pertaining to mining, mine closure, and Indigenous consultation. Relevant text related to requirements for (1) socio-economic closure planning, (2) community engagement, and (3) incorporating Indigenous Knowledge into closure plans were recorded and compared to understand patterns and gaps in policy. After careful examination of data from both the interviews and policy review, five main themes emerged that form the basis of this article's results: multi-level closure governance; regulatory gaps around social impacts; environmental and social impact assessment; "old" versus "new" mining; and avenues for community engagement.

Table 1. Information about interview participants

Interview #	Participant Affiliation	Date of Interview	Method
1	Makivik Corporation	April 2019	In person
2	Makivik Corporation	April 2019	In person
3	Kativik Regional Government	May 2019	In person
4	Kativik Environmental Advisory Committee	May 2019	In person
5	Raglan Mine	May 2019	In person
6	Kativik Environmental Advisory Committee	June 2019	Phone
7	Nunavik Nickel <sup>1</sup>	June 2019	Phone
8	Nunavik Nickel	June 2019	Phone
9	Kativik Environmental Quality Commission <sup>2</sup>	February 2020	In person
10	Kativik Environmental Quality Commission	February 2020	In person
11	Kativik Environmental Quality Commission	February 2020	In person
12	Kativik Environmental Quality Commission	February 2020	In person
13	Kativik Environmental Quality Commission	February 2020	In person
14	Kativik Environmental Quality Commission	February 2020	In person
15	MELCC	July 6, 2020	E-mail

<sup>1,2</sup> The two Nunavik Nickel participants were interviewed at the same time, and the six KEQC participants were interviewed as a group.



Table 2. Government documents related to mining and mine closure that were examined

Authority	Document
Government of Quebec	Environmental Quality Act (2020a)
Government of Quebec	Section 23 Schedule 3 of the James Bay Northern Québec Agreement (1985)
Government of Quebec	Mining Act (2020b)
MELCC	Directive 019 sur l'Industrie Minière (2012)
MERN	Guidelines for Preparing Mine Closure Plans in Québec (2017a)
MERN	Guidelines of the Ministère de l'Énergie et des Ressources Naturelles in the Area of Social Responsibility (2017b)
MERN	Aboriginal Community Consultation Policy Specific to the Mining Sector (2019)
Makivik Corporation	Nunavik Inuit Mining Policy (2015)
Makivik Corporation	Nunavik Guidebook: Mineral Exploration, Mining Development and the Nunavik Region (2011)
Kativik Environmental Quality Commission	Information and Public Consultation Procedure (1998)

## Results and Discussion

### *Multi-Level Closure Governance*

Mine closure planning in Nunavik occurs within a landscape of multi-level and evolving governance systems (see Figure 2). Provincially, the Ministère de l'Environnement et de la Lutte Contre les Changements Climatiques (MELCC) and Ministère de l'Énergie et des Ressources Naturelles (MERN) play the greatest role in regulating mine closure. The Province of Quebec has final decision-making authority for all aspects of mineral development in Nunavik, including mine closure. The MELCC and MERN are responsible for governing how mine closure happens, what mine closure plans must contain, and the standards for remediation (MERN, n.d.). At the regional level, Makivik Corporation, the Kativik Regional Government (KRG), the Kativik Environmental Advisory Committee (KEAC), and the Kativik Environmental Quality Commission (KEQC) all have varying roles in regulating the mine industry and ensuring Inuit participation in decision making. Only the KEQC has a defined role in closure planning through the impact assessment process and their regular review of closure plans. Makivik may sit on committees with mining companies where closure is discussed (such as the Raglan Closure Subcommittee), but these engagements originate more from negotiated agreements than from government regulations.

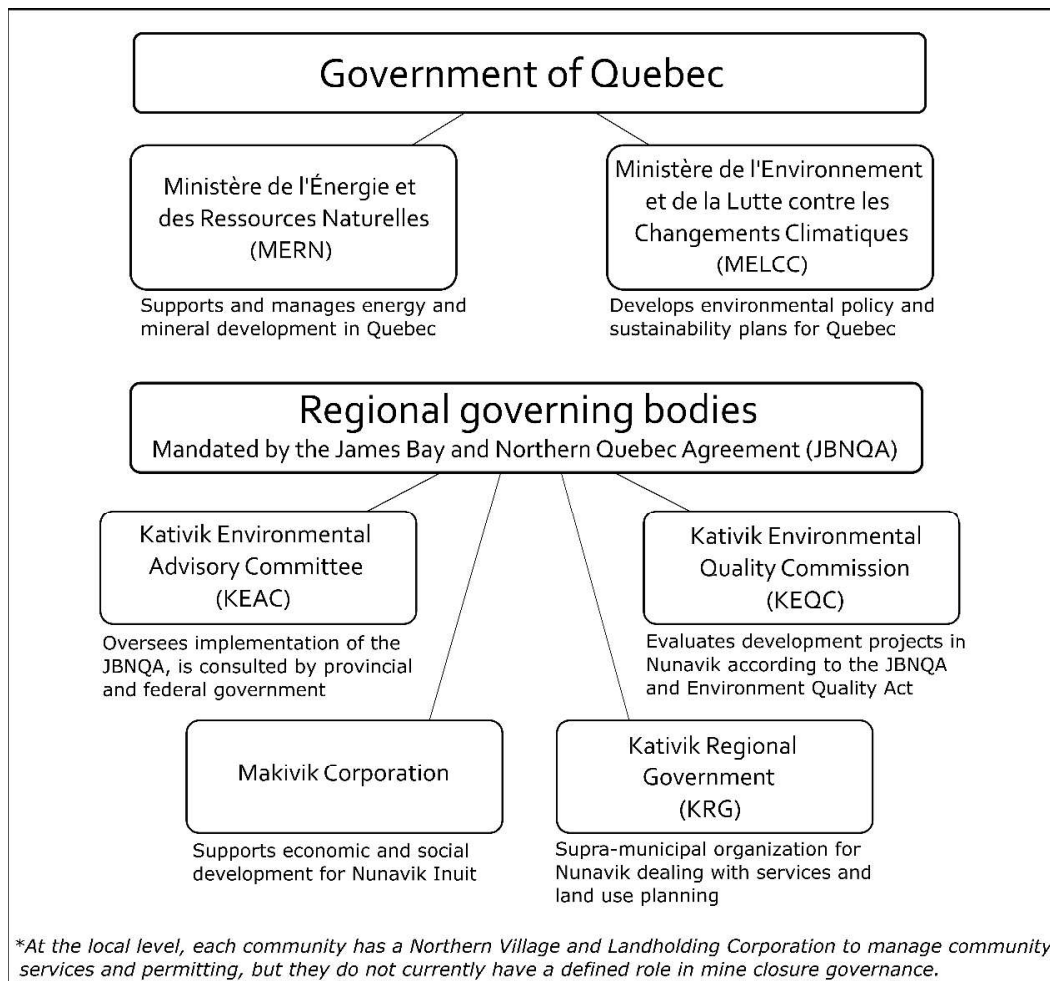


Figure 2. Diagram showing the provincial and regional authorities that play a role in mine closure governance in Nunavik.

Much of the region's influence over mineral development and mine closure comes from the KEQC. Unlike most other land claims agreement signatories throughout Canada, the KEQC has decision-making power regarding lands and resources (Rodon, 2018). However, this committee's power comes largely from the ESIA that occurs during the planning phase of a project's life (Interview #1). Before beginning work on a project, proponents must provide the KEQC with preliminary information about the proposed development. The committee determines whether or not an impact assessment is required and the scope of that assessment, which typically involves public consultations and research to determine the possible social and environmental impacts of the project (MELCC, 2020). Based on the ESIA, the KEQC can recommend either to deny or approve the project and, if approved, outlines the conditions under which the project must be developed (Interview #15). After the impact assessment has concluded and the project is approved, the proponent must submit documentation of their

activities each year for additional review by the KEQC, although these yearly updates do not go through individual impact assessments or go out for public review (Interview #6).

Other regional authorities fill an advisory role to government and industry, with little formal decision-making power. The Kativik Environmental Advisory Committee makes policy recommendations to relevant governing bodies to ensure that the environmental and social protection regime outlined in the JBNQA is upheld. It meets throughout the year and facilitates research into the possible effects of provincial and federal policy changes. The KEAC's mandate includes pursuing actions "regarding sustainable development, the safeguarding of biodiversity, climate change, and the quality of life of the residents of Nunavik" (KEAC, 2020). In 2018, for instance, it provided feedback on draft regulations stemming from the provincial Environment Quality Act and requested that new protections regarding adverse effects on wetlands and other bodies of water be extended to Nunavik.

Makivik Corporation also advises government and industry, with the primary purpose of promoting regional social and economic priorities. Makivik is, as one participant described, "the watchdog for Nunavik Inuit rights and interests," encouraging good industry practices that are in line with the values of Nunavimmiut (Interview #1). It receives, administers, and invests JBNQA compensation funds for beneficiaries, and facilitates economic development to improve the lives of Nunavimmiut. In 2002, for example, Makivik entered a partnership with the Government of Quebec, called the Sanarrutik Agreement, that outlined a shared economic vision for development in Nunavik. It focused on mining and energy development as a means to improve living conditions for Nunavik residents (Makivik Corporation, 2015). In 2015, in response to the province's Plan Nord, which promoted resource development in Nunavik but without any consultation with Nunavimmiut, Makivik created the Nunavik Inuit Mining Policy. The guiding principle of this policy is to ensure that "Inuit derive significant direct and indirect social and economic benefits during the exploration, development, operating and restoration phases of mining activity in Nunavik" (Makivik Corporation, 2015, p. 12). However, the policy has no enforcement mechanisms, and "in terms of authority and making regulations and policies, [Makivik is] not set up for that" (Interview #2).

Lastly, the Kativik Regional Government acts as a municipal-level public government for the region and as such is more focused on service provision and land-use planning; and it provides technical assistance to the Northern Villages. It has jurisdiction over all of Nunavik and is involved broadly in inspections and follow-up with regard to mining activities and the environment, including issuing certificates of authorization for mineral exploration. In 2020, the KRG revised

the region's master land-use plan, which influences where exploration and mining activities can take place based on public safety and protected areas. The previous master land-use plan was adopted in 1998 and required companies to notify the KRG about their activities and consult with adjacent communities (Interview #3). The 2020 master land-use plan includes more recently created parks and protected areas, which further limits where development can occur. Revisions also created zoning by-laws that allow the KRG to reject certain activities (Interview #3). KRG's Renewable Resources, Environment, Lands and Parks Department acts as a liaison between the MELCC and the communities on environmental issues and assists in addressing specific environmental concerns (Kativik Regional Government, 2019).

Because most of these regional authorities act as advisors to the province and to industry, the ability of regional authorities to participate in decision making relies on the relationship between the two levels of government. Participants from regional authorities mostly expressed confidence in their good relationships with the province, despite issues like the lack of consultation for Plan Nord. They explained that Quebec regulators have always agreed with the KEQC's recommendations and conditions for development proposals (Interview #1, #3). One participant explained that the recent amendments to the Mining Act included a consultation policy that was directly connected to the Nunavik Inuit Mining Policy's principle of transparent communication (Interview #1). However, the KEQC has never outright rejected a project, thus it remains unclear if the province would support this kind of decision (Rodon, 2018).

Regional governments are also limited in the resources they have available to them should they need to address issues of environmental contamination or improper mine site/exploration site cleanup. A member of the KEAC explained that KRG, as with some other organizations in Nunavik, is limited in its ability to access federal grants because of its status. When discussing some of the tensions between regional, provincial, and federal governments, they explained,

A large part of it has to do with funding and it's funding the Quebec Government doesn't have. Quebec wants to assume control ... this is something we're working on, because it stretches into the cleanup of contaminated sites and other federal funding programs related to the environment. Nunavik isn't recognized in those programs. We're not eligible. (Interview #4)

In fact, in 2018 the KEAC sent a letter to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), which brought attention to how frequently the Northern Villages and KRG are excluded from federal funding programs intended for Indigenous and northern communities. The letter argued that important environmental priorities have not been addressed because of limited

financial support from both Quebec and Canada (KEAC, 2019). The remediation of Asbestos Hill is moving much more slowly than regional authorities and community members would like, and this reliance on provincial action and lack of access to funding may be major contributors (Interview #6).

### *Social Impacts and Regulatory Gaps*

The focus of regional and provincial government closure policies is largely on physical, environmental remediation, which aligns with observations made elsewhere that remediation prioritizes the physical over the social and economic (Bainton & Holcombe, 2018; Beckett & Keeling, 2019; Cohen, 2017). Statements about whether and how companies should assess and mitigate negative socio-economic impacts either do not exist, are ill-defined and unhelpful, or are not related to closure specifically. The Nunavik Inuit Mining Policy sets out objectives and corresponding actions for proponents to minimize the negative social and environmental impacts of mineral development, but the policy does not specify what these negative impacts are and there are no actions related to the social aspects of closure (Makivik Corporation, 2015). Quebec's guidelines for preparing closure plans state that "reclamation techniques may affect wildlife, plants and the social environment" and that "the reclamation of accumulation areas must attain technical, environmental, and social objectives" (MERN, 2017a, p. 27). However, this document does not define "social objectives" and provides no guidance on how to measure success in meeting them.

There are effectively no explicit requirements to assess, address, or mitigate the socio-economic impacts of mine closure, beyond the limited attention this issue receives in ESIA processes. The Mining Act, Environment Quality Act, and Guidelines for Producing Mine Closure Plans in Quebec discuss the requirements for the environmental, technical, and engineering aspects of closure in great detail, while the social, economic, and cultural aspects are considered only in relation to a mine's construction and operation phases. The Nunavik Inuit Mining Policy states that an impact assessment must be completed for mineral exploration and mine operations, but not for closure (Makivik Corporation, 2015). The MELCC's Directive 019, which sets out the Ministry's expectations and is used in evaluating a project, states that proponents must indicate how the project might influence a community's traditional way of life, including changes to the accessibility of areas used for hunting, fishing, and trapping (MELCC, 2012). While this statement *should* apply to the post-closure environment because project evaluations *should* clearly address impacts throughout the entire mine lifecycle, it is not explicitly indicated, and the directive does not include a discussion of how or if these changes should be mitigated.

Although not directly connected to the socio-economic dimensions of closure, interview participants often pointed to requirements for financial security and environmental monitoring as examples of good closure governance. These requirements are certainly positive modern changes to closure governance, but they may still fall short of preventing poor closure outcomes. Mining companies are required to pay financial securities to their respective territorial or provincial government to guarantee the availability of funds in case the company is not able to fulfill its remediation duties. Specific requirements differ between jurisdictions, but the 2013 additions to the Quebec Mining Act require that the amount must cover the full cost of expected remediation work for the site, including the cost of necessary studies, land rehabilitation, and environmental characterization studies (MERN, 2017a; Ravinsky, 2013). Most often, these securities are credit guarantees from banks, and are held by the province until the company has relinquished the site or proven itself unable to complete the remediation work. However, these securities rarely cover the full costs of remediation and do not account for socio-economic planning or the perpetual care often needed (Dance, 2015; Office of the Auditor General of Canada, 2002). In the Guidelines for Preparing Mine Closure Plans in Quebec (MERN, 2017a), closure cost-estimation guidelines make no mention of the costs of social and economic planning, and the Raglan Mine and Nunavik Nickel closure plans only detail cost estimates for the environmental remediation of the mine site (Canadian Royalties, 2016, 2019a, 2019b; Raglan Mine, 2019). Furthermore, the financial guarantees in Quebec do not cover the cost of unanticipated events like disasters and spills (Canada's Ecofiscal Commission, 2018).

Post-closure monitoring requirements, too, do not account for cumulative impacts or the long-term care that is often needed, do not extend to areas outside of the mine site, and in cases of abandonment can be underfunded due to the shortcomings of financial securities and cutbacks to government programs (CCSG Associates & MiningWatch Canada, 2001; Kuyek, 2011; Raffensperger et al., 2011). For a company to relinquish a mine site back to the government, Quebec requires a minimum of ten years of post-closure monitoring with five consecutive years meeting environmental quality standards (MELCC, 2012). The province can extend monitoring requirements beyond ten years if needed, and "polluter pays" laws give the province additional avenues for ensuring companies are held responsible for their pollution. However, the duration of environmental monitoring is relatively insignificant when considering the perpetual nature of some mine waste (Hudson-Edwards et al., 2011), especially acid-generating wastes such as those possibly present at Raglan Mine and Nunavik Nickel. Potentially, toxic mine waste often remains on site forever along with the risks that it poses to the environment and nearby communities. Questions of post-closure

monitoring and perpetual care were not discussed much in interviews, as the focus was primarily on community engagement and socio-economic planning, but these are important issues that the region will inevitably have to face when Raglan Mine and Nunavik Nickel close.

The socio-economic impacts of closure, while largely absent in policy, are relatively well known to regional actors. Indeed, there appears to be a disconnect between what regional authorities know about closure and what policy accounts for. Many regional participants recognize that the communities have benefitted from mining activities in the region but remain skeptical that these benefits are contributing to community sustainability, or that they will last long after closure (Interview #1; #2; #3; #4; #9; #12), a sentiment shared in Blangy and Rixen's (2016) exploration of the complicated impacts and benefits of gold mining in Nunavut. Concerns about the abrupt decline or end of employment, tax and business revenue, and profit-sharing arrangements came up just as frequently in the interviews as did issues of tailings stability, water quality, and landscape changes. Participants expressed concern about the impact that mine closure may have on a community's ability to maintain infrastructure and services, and how unemployment could affect the health and well-being of families and communities (Interview #1; #2; #3; #9; #13). Another issue was the possibility that Inuit will lose their jobs without transferable skills or employment opportunities in other industries in the region or community. One participant summarized many of these negative closure outcomes when they explained,

When these people stop working there at the mine, that will be 2.5 million dollars a year [in wages and compensation] that will disappear ... The standard of living might drop, some families might have difficulty paying rent, buying food, and maybe some other social impacts will happen at home. Contractors too, it is not only for employees, Air Inuit is making money, other companies in Nunavik are making money [from the mines]. (Interview #9)

Furthermore, Nunavik-based participants frequently discussed environmental issues in the context of their human impacts. Regional actors expressed concern that the port facilities at Deception Bay on the Ungava coast, used by Raglan Mine and Canadian Royalties, are becoming increasingly polluted, which could limit community members' abilities to continue their subsistence activities after closure (Interview #2; #3; #9).<sup>3</sup> Nunavik-based participants described both environmental and human characteristics when explaining their ideal scenario for mine closure: the site should be returned as close to its pre-mining state as possible (Interview #1; #2); there should be consistent long-term (i.e., over many decades or perpetual) environmental monitoring involving Inuit (Interview #1; #12); communities should be able to adopt infrastructure and materials from the

mine to benefit their own development (Interview #4; #9); and former employees should have transferable skills (Interview #3; #9).

These social considerations reflect more holistic understandings of community and regional well-being that are not accounted for in provincial closure regulations. Instead, the guidelines focus heavily on technoscientific processes for characterizing and stabilizing mine wastes, contaminated soils, and water systems on the mine site. While these components of remediation are essential for environmental protection, they often come at the neglect of other crucial factors for protecting northern communities (Monosky & Keeling, 2021). This shortcoming is despite the fact that regional actors appear to have a wealth of important knowledge that closure regulations could benefit immensely from.

### *Environmental and Social Impact Assessment (ESIA)*

The Kativik Environmental Quality Commission, through the ESIA process, plays the most direct role in regulating mine closure in the region. The ESIA process allows for regional governments and communities to communicate their needs and expectations for a new mine. While impact assessments are not specific to the closure and remediation stage, they are meant to account for possible impacts at every stage, from construction to closure. This means the KEQC does have some ability to assess and set conditions for the company's plan for closure. A preliminary closure plan is also provided to the KEQC as part of the ESIA process, which it can review, approve, reject, and set additional conditions for. But despite the important role that the KEQC plays in ensuring mining companies are acting in the best interests of Nunavimmiut, the province can overturn any of the KEQC's decisions at any point, meaning the province holds more formal power over Nunavik lands (Rodon, 2018).

Impact assessments, while important for controlling how projects are developed and for creating opportunity for public input, are not the best means for regulating closure and remediation. Impact assessments overvalue short-term benefits and focus predominantly on construction and operations, while long-term and cumulative impacts are underestimated or overlooked (Atlin & Gibson, 2017; Boerchers et al., 2018; Doelle & Sinclair, 2019). The time between an ESIA and closure can be decades, so the information about the mine site and affected communities presented in the impact assessment and preliminary closure plan may not reflect the conditions that exist at the time of closure, or account for the ways communities and their priorities evolve.

The main method for follow-up between the ESIA and closure is the requirement that companies resubmit their closure plan to the KEQC and MERN every five years to account for changes in the project (Interview #11). A KEQC



member explained that during these reviews, the committee can seek additional information from the company, send the closure plan back for revisions, or set additional conditions (Interview #7). It is MERN's responsibility to approve these interim plans, but MERN takes the KEQC's comments into account (Interview #10). However, of the ten northern Canadian closure plans examined by Monosky and Keeling (2021), the Raglan Mine and Nunavik Nickel closure plans were commonly cited as containing little detail about socio-economic aspects of closure, community engagement, and use of community knowledge. It appears that the shortcomings of these closure plans have gone unnoticed or unaddressed within the KEQC reviews. Thus, the ESIA process and regular review of closure plans produces closure plans that technically meet all regulatory requirements, but do not address any social aspects of mine closure. Either the ESIA process is not adequately accounting for important aspects of closure, or there are no effective follow-up mechanisms to ensure that the impacts identified in the ESIA are making it into closure plans.

These findings, combined with the lack of formal and detailed regulations related to social impacts, echo Vivoda, Kemp, and Owen (2019), who note a diminishing attention paid to socio-economic aspects of closure as a mine moves through its lifecycle. In their examination of this in Australia, they found that “enabling elements are overemphasized in the early stages [of mine development], and restrictive elements underemphasized as mining projects approach closure” (Vivoda et al., 2019, p. 3). This, too, can be observed in Nunavik. A plethora of incentives exist to promote mineral development in northern Quebec, and these exist alongside relatively strict ESIA regulations to control the development of new projects. However, regulations for community engagement and mitigating socio-economic risks become weaker post-ESIA. Once the assessment is complete, the leverage is lost. The massive development agenda of Plan Nord came with government investments to promote resource extraction in the North (Rodon, 2017; Rodon & Schott, 2014). While Plan Nord emphasizes sustainable development, it does not advocate or provide resources for the proper closure and remediation of projects being incentivized by this program. Furthermore, as stated, existing regulations are not adequately addressing issues of social closure planning or ensuring community engagement. Provincially, the primary objective of the body most responsible for regulating mining and mine closure, MERN, is ultimately to promote and support responsible mining.

Within Nunavik, too, there are more mechanisms for enabling mining than restricting it. The Nunavik Mineral Exploration Fund (NMEF) trains Nunavik Inuit in mineral exploration and “assists the mineral exploration industry in the realization of different projects” (Séguin & Larivière, 2011, p. 8). Creating space

for Nunavimmiut to participate in and profit from mineral exploration in the region helps keep some of the money generated by these companies in the region and provides valuable skills training, but there is no similar mine closure fund to train Inuit in mine remediation, support closure-related Inuit enterprises, or promote the responsible and sustainable closure of the mines that may result from those exploration activities.

### *“Old” vs. “New” Mining*

A common theme across interviews was the separation between an older, problematic generation of mines and a new, socially responsible, and technologically sophisticated generation of mines (and by extension mine closure). Much of the regional authorities’ knowledge and experience about the environmental aspects of remediation come from a two-decades-long cleanup project for the many abandoned mineral exploration sites located throughout Nunavik. Companies were not required to clean up exploration sites before 1976, and so equipment, fuel caches, and chemicals were often left behind without any cleanup, especially if the equipment at the site became outdated and less valuable (Duhaime & Comtois, 2003). In the 1990s, the Kativik Regional Government began to formally look into the issue and 275 abandoned sites were identified and confirmed (Duhaime et al., 2005). Because of the negative attention these exploration sites were receiving, mineral exploration companies working in the region established the Fonds du Restor-Action Nunavik (FRAN) and, between thirty companies, raised \$2 million for restoration work. MERN contributed an additional \$4 million. Between 2000 and 2017, through FRAN, ninety priority sites were remediated, and work has now begun on an additional thirty (Interview #6). These sites range from being “minor,” with fewer than ten barrels and small pieces of equipment, to “major,” with buildings, trailers, heavy equipment, large batteries, and hundreds of barrels filled with hydrocarbon-based products, oil, diesel, and jet fuels (Interview #6).

Although the interview questions for this research were specific to mine closure, participants frequently spoke about these abandoned exploration sites. It was clear throughout most of the interviews that there is greater focus on, knowledge about, and experience with the cleanup of these sites than the long-term planning for the closure of fully operational mines. The experience with these sites provided valuable knowledge about environmental cleanup and brought attention to the tendency for some mining companies to leave materials behind when regulations are weak and consequences are unlikely. The remediation of major mine sites, though, are much more complex endeavours that require a much greater breadth of expertise and technical knowledge than regional authorities

currently have (Interview #6). Mine closure is also more likely to have challenging socio-economic dimensions than small exploration site cleanups.

The abandoned Asbestos Hill mine has also played a key role in shaping regional knowledge, concerns, and attitudes about closure. Carney (2017) details the legacies left behind by this mine, including the unremediated tailings, asbestos contamination at and between the mine site and the port at Deception Bay, and the ongoing health concerns that people in Salluit and Kangiqsujuaq have about that contamination. Participants working for regional authorities frequently pointed to Asbestos Hill as an example of poor outcomes related to mine closure and remediation. Interview participants referenced the harm caused by Asbestos Hill in describing their ideals and priorities for future closures. For instance, participants often referred to the poorly remediated and currently eroding tailings pile at Asbestos Hill and emphasized the importance of the tailings piles at Raglan Mine and Nunavik Nickel to be contained, stabilized, monitored, and made to blend into the surrounding environment. Participants also explained that neither the communities nor the region benefited from Asbestos Hill due to the lack of benefit-sharing agreements. As a result, profit-sharing, preferential hiring for Inuit, and preferential contracting for local and Inuit-owned businesses were priorities in negotiations with Raglan Mine and Nunavik Nickel.

Participants categorized Asbestos Hill, as well as the region's many abandoned exploration sites, as projects that existed during Quebec's past, poorly regulated mining regime. Asbestos Hill operated and closed before the Mining Act and Environment Quality Act were adopted, before closure plans were required for mine projects, and before IBAs and land claims agreements guaranteed benefits and protections for communities. The older generation of mines that operated before the 1990s did so in a regulatory landscape that facilitated development without concern for environmental and human impacts. By contrast, participants identified Raglan Mine and Nunavik Nickel as being part of the newer generation of mines operating within a system that ensures humans and the environment are protected through strict health and environmental standards, "polluter pays" laws, up-front financial securities, greater environmental monitoring, and a political landscape that empowers northern territories, regions, and peoples. However, the region continues to discover new abandoned exploration sites from the twenty-first century despite stricter regulations (Interview #6).

### *Avenues for Community Engagement*

Both provincial and regional governments require community engagement between mining companies and Indigenous communities, although this is largely limited to the early stages of a project's life. The James Bay and Northern Quebec Agreement recognizes the special status and rights of Nunavimmiut, which entitle them to

a level of involvement over and above the consultation mechanisms to which the general public of Quebec is entitled (Government of Quebec, 1985). However, the land regime established by the JBNQA does not specifically require community engagement on 85% of the region (Category III lands), with the remaining 15% covering the boundaries of the Northern Villages (Category I lands) and some additional areas where Inuit have special hunting, fishing, and trapping rights (Category II lands).<sup>4</sup> This does not mean Nunavimmiut and regional governments have no ability to be involved with developments occurring on Category III lands, but that those requirements come more through IBAs, industry goodwill, and the decisions of the KEQC, than from any specific regulation. Although the KEAC and Makivik do not have regulatory or decision-making power, they do put pressure on industry and government to influence decision making. Community members in the Northern Villages can bring any concerns to Makivik or the KEAC and those organizations can provide advice and/or bring these concerns to other governing bodies or the companies themselves (Interview #4).

Community engagement in mine closure planning, however, is not explicitly required by any level of government, and connections are scarcely made between engagement and closure planning. The most recent amendment of the Quebec Mining Act in 2013 now requires mining companies to establish a joint company–community committee that “must be established within 30 days after the lease is issued and must be maintained until all the work provided for in the rehabilitation and restoration plan has been completed” (Government of Quebec, 2020b), pointing to positive improvements in provincial requirements for community-engaged closure planning. However, provincial policies and regulations do not offer specific guidance for how broadly communities should be engaged or what issues should be addressed in this company–community committee, such as socio-economic impacts. The Mining Act simply states that the committee must exist, with no other guidance. On Indigenous territories, how this committee operates and what topics require what level of engagement would more likely be outlined in an IBA. Furthermore, these new regulations apply only to new mine sites.

In this context, the two companies operating in Nunavik have developed very different community engagement strategies. Despite both companies having signed IBAs that require company–community committees for the duration of the mine’s life, Raglan Mine has gone on to establish many more committees and working groups with their signatories, which are not mandated by their IBA. Most relevant to the question of closure and remediation, of course, is the existence of the Raglan Closure Subcommittee, which ensures a consistent platform for community members from Salluit, Kangiqsujuaq, and Makivik to learn about and contribute their own knowledge and standards to Raglan’s closure plan. The Raglan Closure Subcommittee is not legally required or originally a requirement

of their IBA but was deemed necessary by the company and community members (Interview #5). No similar closure committee exists for Nunavik Nickel.

Participants explained that Raglan Mine communicates more effectively and consistently than Nunavik Nickel. Some said that Nunavik Nickel provides less information to authorities and communities about their operations than Raglan Mine, and others said there was a complete lack of communication. One participant had coordinated with Raglan Mine on many occasions and explained that they have provided in-kind support for some regional projects despite having no obligations to assist the region in this way (Interview #6). In 2020 Raglan Mine also conducted a study to understand community perceptions of the company and its operations in terms of environmental integrity, social development, and business and economic benefits, which was well-received by regional authorities (Séguin, 2021). Based on the information provided by industry and government interview participants, it appears that Raglan Mine's strategy for community engagement is focused on an exchange of information between company and community while Nunavik Nickel's engagement is limited to providing information to communities.

Participants cited several challenges to successful community engagement in closure planning in the region. These include trust issues stemming from the negative legacy of Asbestos Hill and the mining industry's tendency to avoid speaking honestly about uncertainties and risk (Interview #7). One participant explained that fluctuations in the financial well-being of a company can also impact how frequently and effectively they engage with communities (Interview #5). Most often, though, participants spoke of communities having limited knowledge about closure and its possible impacts, making community-engaged closure planning difficult, which is consistent with the results of other research in Nunavik (Potvin, 2021). Participants also noted that it is difficult to focus on closure planning when mine operations and exploration projects create much more pressing issues that demand immediate attention. Both Raglan Mine and Nunavik Nickel have recently expanded or plan to expand their operations, and numerous exploration companies travel to Nunavik to take samples and speak to communities every summer (Interview #9). Ensuring Nunavik residents are benefiting from employment and training and that the environment is being adequately protected takes priority (consciously or unconsciously) over long-term planning for future closure. One is a clear immediate need, while the other is more easily forgotten or thought to be something that can be dealt with at a later date. One participant explained,

My children's kids might be the ones who have to close the mine, but my mind hasn't practiced thinking that out, what that entails ... I think we need to have that train of thought of saying, 'okay the mine is closing, what does that mean?' (Interview #2).

Despite these challenges and a lack of clear provincial guidance, interview participants stressed that community involvement in closure planning is important and worth pursuing. Most often, participants stated that closure-specific community engagement would be helpful for increasing awareness about the realities of closure. By participating in the process, companies learn from Inuit what they want from closure and Inuit in turn learn about closure and remediation options. In addition, community members would perhaps become more aware of and motivated to participate in closure planning. Community engagement, particularly with Elders, hunters, and landholding corporations, was seen as critical for restoring the site as close as possible to its pre-mining state, with healthy terrestrial and aquatic ecosystems to protect hunting, fishing, and harvesting activities. Lastly, it was recognized that participating in planning as well as the actual remediation work (both progressive and end-of-life remediation) can provide experience and help those involved find future employment. Local people are hired each year to assist with the cleanup of abandoned exploration sites in the region, and one participant expressed that it was valuable for both those participating (who made an income and could put the work on their resume) and those organizing the cleanup (who benefited from community members' knowledge about the local environment) (Interview #6). Mine closure also may provide procurement opportunities for regional and Indigenous businesses—if properly planned for.

## **Conclusion**

Given the existing mining and exploration activities in the region and the historic failings of Asbestos Hill, it is crucial to determine exactly how mine closure is being governed and where gaps exist in order to prevent future failures. The results of this work provide a detailed case study of closure governance and point to some key shortcomings in closure governance in Nunavik, including an overconfidence in existing regulations, overreliance on environmental and social impact assessments, the lack of clear socio-economic closure requirements, and a pattern of overlooking closure in community engagement processes. These shortcomings allow companies to develop and execute closure plans that lack adequate social planning and input from communities yet still meet minimal government requirements.

Vague or non-existent attention to the socio-economic impacts of mine closure is not unique to Nunavik or Quebec, but in fact provides another example of an international trend of passive government approaches to socio-economic mine closure planning (Xavier et al., 2015; Bainton & Holcombe, 2018). Weak, ambiguous, or absent regulations mean companies are left to make their own decisions about what social aspects should and should not be addressed in their closure plans, and the degree to which communities are involved in developing

those plans. These policy gaps are coupled with the overreliance on ESIA for both community engagement and identifying social impacts, a review process which can occur decades before a mine closes and which has no effective mechanisms for follow-up with regards to closure planning. These issues are exemplified by the closure plans for both Raglan Mine and Nunavik Nickel, which do not clearly address community concerns or present any plans for mitigating negative socio-economic impacts (Monosky & Keeling, 2021), despite both being approved by regional and provincial authorities. While IBAs serve as a possible mechanism for addressing many of these gaps and issues, they exist outside of formal regulatory systems and rely on private agreements (Cameron & Levitan, 2014).

While interview participants working within regional governing bodies expressed confidence in closure regulations as well as their relationship with the provincial government, this confidence obscures several remaining challenges, including the limits of financial securities and post-closure monitoring, poorly enforced environmental regulations, and the fact that new mines are just as susceptible to collapsing mineral markets and subsequent abrupt closures (Bebbington et al., 2008; Dance, 2015). As a result of shortcomings in provincial policies, mining companies and governments risk reproducing past failures. Unemployment, social dislocation, new and costly abandoned sites (like the Jericho and Wolverine mines, abandoned in 2012 and 2015 respectively), and continued distrust in the industry are all possible outcomes for Canada's current generation of mines.

However, regional interview participants also detailed mine closure ideals that were more holistic and ambitious than what is present in existing regulations. Thus, regional actors have both confidence in existing regulations *and* a wealth of knowledge and ideas about closure that these regulations would benefit immensely from integrating. For communities to be consistently and meaningfully included in planning for the future of sites operating on their traditional territories, regulatory authorities must create appropriate frameworks to require it, instead of leaving companies to decide for themselves if they have the time, resources, and motivation to partner with communities (for instance, through negotiated agreements). Creative, future-oriented thinking is needed to guarantee effective closure governance, not only to protect the physical environment but also to contribute to the long-term, post-closure sustainability of Nunavik communities and their traditional lands.

Ultimately, strengthening regional authority over closure planning (and mineral development broadly) is one possible avenue for improving outcomes. Protecting Nunavimmiut health, well-being, and future is built into the mandates of the Kativik Regional Government, Kativik Environmental Assessment Committee, Kativik Environmental Quality Commission, and Makivik. These

governing bodies have a more direct line of communication with the Northern Villages than the Government of Quebec, and Nunavimmiut occupy many positions within these organizations. Giving more control to regional authorities to make decisions and plan for the future of the region can better guarantee that those plans will meet the unique needs of Nunavik residents.

Instead of being a source of economic decline, environmental degradation, and social disruption, well-planned mine closure can create opportunities for community growth, sustainability, and empowerment (Bainton & Holcombe, 2018; International Council on Mining & Metals, 2019; Keenan & Holcombe, 2021). Community-engaged closure planning creates opportunities to centre the needs and expertise of the people who will inherit the land that is left behind and opens up space for co-learning between the company and community (Edwards & Maritz, 2019; Hoadley & Limpitlaw, 2008; International Council on Mining & Metals, 2019; Veiga et al., 2001). Including more voices, grounding closure planning in the real context of where operations are taking place, and setting clear, explicit goals for mitigating negative socio-economic impacts are closure practices that benefit both mining companies and communities (Owen & Kemp, 2018). Communities are their own experts. They know what they require to be healthy and successful after a mine closes, and so for mine closure to meet the needs of a community, they need to be able to contribute to closure planning.

### **Acknowledgements**

This work was generously supported by the grants from the National Sciences and Engineering Research Council of Canada network, Towards Environmentally Responsible Resource Extraction (TERRE-NET), grant no. 479708-2015, the Social Sciences and Humanities Research Council, and the Northern Scientific Training Program. The authors would like to thank members of the Raglan Closure Subcommittee for their support and guidance in developing this research and commenting on the manuscript. The authors would also like to thank Isabella Richmond for her GIS work, and Arielle Frenette for translating essential documents.



## Notes

1. Salluit and Kangiqsujuaq are signatories of the Raglan Mine IBA, called the Raglan Agreement. Salluit, Kangiqsujuaq, and Puvirnituk are signatories of the Nunavik Nickel IBA, called the Nunavik Nickel Agreement.
2. An interview with MERN employees took place in early 2020, however the transcript was not approved, and no reason was offered. This research took place in part during the widespread shutdowns associated with the COVID-19 pandemic, which could have played a role in the transcript not receiving final approval. The information from this interview does not contribute to the data used for this research, although it did provide helpful background information that we used to find relevant information elsewhere (e.g., specific policies relevant to mine closure or layperson explanations of regulations).
3. Raglan Mine does conduct environmental monitoring at this site. The point here is not to make any claim about whether the site is polluted or not, but to point to regional perceptions about the health and quality of a site that Nunavimmiut use for subsistence.
4. As per the JBNQA, Category I lands are Inuit owned; Category II are provincially owned but with exclusive hunting, fishing, trapping, tourism, and forestry rights for Inuit; and Category III lands are Crown land.

## References

- Alderson, K., Gilbride, B., Bundock, E., & Sanger, S. (2019, August 28). The new federal Impact Assessment Act. *Fasken*. <https://www.fasken.com/en/knowledge/2019/08/the-new-federal-impact-assessment-act/>
- Archer, K., & Bradbury, J. (1992). The life and death of a company town. In C. Neil, M. Tykkyläinen, & J. Bradbury (Eds.), *Coping with closure: An international comparison of mine town experiences* (pp. 169–191). Routledge.
- Atlin, C., & Gibson, R. (2017). Lasting regional gains from non-renewable resource extraction: The role of sustainability-based cumulative effects assessment and regional planning for mining development in Canada. *Extractive Industries and Society*, 4(1). <https://doi.org/10.1016/j.exis.2017.01.005>
- Bainton, N., & Holcombe, S. (2018). A critical review of the social aspects of mine closure. *Resources Policy*, 59(2018), 468–478. <https://doi.org/10.1016/j.resourpol.2018.08.020>
- Baker, J. M., & Westman, C. N. (2018). Extracting knowledge: Social science, environmental impact assessment, and Indigenous consultation in the oil sands of Alberta, Canada. *The Extractive Industries and Society*, 5(1). <https://doi.org/https://doi.org/10.1016/j.exis.2017.12.008>
- Bebbington, A., Hinojosa, L., Bebbington, D. H., Burneo, M. L., & Warnars, X. (2008). Contention and ambiguity: Mining and the possibilities of development. *Development and Change*, 39(6), 887–914. <https://doi.org/10.1111/j.1467-7660.2008.00517.x>

- Beckett, C., & Keeling, A. (2019). Rethinking remediation: Mine reclamation, environmental justice, and relations of care. *Local Environment*, 24(3), 216–230. <https://doi.org/10.1080/13549839.2018.1557127>
- Bird, F., & Nixon, R. (2004). The Raglan Mine and Nunavik Inuit. In F. Bird & S. W. Herman, (Eds.), *International businesses and the challenges of poverty in the developing world: Case studies on global responsibilities and practices* (pp. 206–223). Palgrave MacMillan. [https://doi.org/10.1057/9780230522503\\_13](https://doi.org/10.1057/9780230522503_13)
- Blommerde, M., Taplin, R., & Raval, S. (2015). *Assessment of rehabilitation completion criteria for mine closure evaluation* [paper]. 7th International Conference on Sustainable Development in the Minerals Industry, Vancouver, Canada.
- Boerchers, M., Sinclair, A. J., Gibson, R. B., & Halden, N. M. (2018). “Sustainability is finding the next mine”: The complicated relationships among legacies, sustainability, and EA. *Environmental Impact Assessment Review*, 71(June 2017), 84–93. <https://doi.org/10.1016/j.eiar.2018.01.002>
- Bowes-Lyon, L.-M., Richards, J. P., & McGee, T. M. (2009). Socio-economic impacts of the Nanisivik and Polaris Mines, Nunavut, Canada. In J. P. Richards (Ed.), *Mining, society, and a sustainable world* (pp. 371–396). Springer. <https://doi.org/10.1007/978-3-642-01103-0>
- Buell, M. (2006). *Resource extraction development and well-being in the North: A scan of the unique challenges of development in Inuit communities* (Issue June). Ajumnginiq Centre, National Aboriginal Health Organization.
- Canada’s Ecofiscal Commission. (2018). *Responsible risk: How putting a price on environmental risk makes disasters less likely* (Issue July). <https://ecofiscal.ca/reports/responsible-risk-putting-price-environmental-risk-makes-disasters-less-likely/>
- Canadian Royalties. (2016). *Projet Nunavik Nickel: Plan de Restauration pour le Site de la Fosse Puimajuq du Projet Minier Nunavik Nickel* (Issue November).
- Canadian Royalties. (2019a). *Projet Nunavik Nickel: Plan de Restauration pour le Site de la Fosse Expo du Projet Minier Nunavik Nickel*.
- Canadian Royalties. (2019b). *Projet Nunavik Nickel: Plan de Restauration pour le Site Minier Allammaq du Projet Minier Nunavik Nickel* (Issue September).
- Carney, J. (2016). *Asbestos Hill: Inuit experiences with Nunavik’s first mine*. [Master’s thesis, Memorial University of Newfoundland].
- Carney, J. (2017). *Seeking Closure: Legacies of the Asbestos Hill mine in Nunavik*. <https://www.chairedveloppementnord.ulaval.ca/fr/seeking-closure-legacies-asbestos-hill-mine-nunavik>.
- Cassady, J. (2007). A tundra of sickness: The uneasy relationship between toxic waste, TEK, and cultural survival. *Arctic Anthropology*, 44(1), 87–98. <https://doi.org/10.1353/arc.2011.0106>
- CCSG Associates, & MiningWatch Canada. (2001). *Financial options for the remediation of mine sites: A preliminary study*.

- Cohen, T. (2017). Bringing country back? Indigenous aspirations and ecological values in Australian mine-site rehabilitation. In K. Jalbert, A. Willow, D. Casagrande, & S. Paladino (Eds.), *ExtrACTION: Impacts, Engagements and Alternative Futures* (pp. 137–150). Routledge.
- Costa, S. (2015). Social impacts of mine closure: Engaging employees and host communities in planning for closure. *British Columbia Mine Reclamation Symposium*, 1–8. <https://doi.org/10.14288/1.0305870>
- Cowan, W. R., Mackasey, W. O., & Robertson, J. G. A. (2010). *The policy framework in Canada for mine closure and management of long-term liabilities: A guidance document*. National Orphaned/Abandoned Mines Initiative.
- Dance, A. (2015). Northern reclamation in Canada: Contemporary policy and practice for new and legacy mines. *The Northern Review*, 41(2015), 41–80. <https://doi.org/10.22584/nr41.2015.003>
- Doelle, M., & Sinclair, A. J. (2019). The new IAA in Canada: From revolutionary thoughts to reality. *Environmental Impact Assessment Review*, 79(2019). <https://doi.org/10.1016/j.eiar.2019.106292>
- Dokis, C. A. (2015). *Where the rivers meet: Pipeline, participatory resource management, and Aboriginal-State relations in the Northwest Territories*. UBC Press.
- Duhaime, G., Bernard, N., & Comtois, R. (2005). An inventory of abandoned mining exploration sites in Nunavik, Canada. *The Canadian Geographer*, 49(3), 260–271. <https://doi.org/10.1111/j.0008-3658.2005.00094.x>
- Duhaime, G., & Comtois, R. (2003). Abandoned mining exploration equipment in Nunavik: Methods to identify and locate potential sites. In R. O. Rasmussen & N. E. Koroleva (Eds.), *Social and environmental impacts in the North: Methods in evaluation of socio-economic and environmental consequences of mining and energy production in the Arctic and Sub-Arctic* (pp. 353–354). Kluwer Academic Publisher.
- Edwards, J., & Maritz, A. (2019). Social aspects of mine closure: The elephant in the room. In A. Fourie & M. Tibbett (Eds.), *Mine closure 2019* (pp. 305–316). Australian Center for Geomechanics.
- Everingham, J., Mackenzie, S., Svobodova, K., & Witt, K. (2020). *Participatory processes, mine closure and social transitions*. Centre for Social Responsibility in Mining, University of Queensland.
- Fabbi, N. C., Rodon, T., & Finke, E. W. (2017). Makippugut (we are standing up): Public policy and self-determination in Nunavik. *American Review of Canadian Studies*, 47(2), 117–126. <https://doi.org/https://doi.org/10.1080/02722011.2017.1323824>
- Fidler, C. (2010). Increasing the sustainability of a resource development: Aboriginal engagement and negotiated agreements. *Environment, Development and Sustainability*, 12(2), 233–244. <https://doi.org/10.1007/s10668-009-9191-6>
- Garcia, D. (2008). Overview of international mine closure guidelines. *American Institute of Professional Geologists*, 9. <https://www.srk.com/en/publications/overview-of-international-mine-closure-guidelines>

- Government of Quebec. (1985). *James Bay and Northern Quebec Agreement Section 23, Schedule 3*. CQLR c C-67. <http://caid.ca/AggrJamBayNorQueA1975.pdf>
- Government of Quebec. (2020a). Environment Quality Act, Pub. L. No. Q-2. <http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/Q-2>
- Government of Quebec. (2020b). *Mining Act M-13.1*. <http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/M-13.1>
- Hart, R., & Hoogeveen, D. (2012). *Introduction to the legal framework for mining in Canada*. <http://www.miningwatch.ca/article/introduction-legal-framework-mining-canada>
- Hipwell, W., Mamen, K., Weitzner, V., & Whiteman, G. (2002). Aboriginal peoples and mining in Canada: Consultation, participation and prospects for change. The North-South Institute, 57.
- Hoadley, E. M., & Limpitlaw, D. (2008). *Preparation for closure — Community engagement and readiness starting with exploration*. In A.B. Fourie, M. Tibbett, I. Weiersbye, & P. Dye (Eds.), *Mine closure 2008: Proceedings of the Third International Seminar on Mine Closure* (pp. 845-851), Australian Centre for Geomechanics, Perth. [https://doi.org/10.36487/ACG\\_repo/852\\_78](https://doi.org/10.36487/ACG_repo/852_78)
- Hodgkins, A. (2018). Lost in translation? Exploring outcomes of Nunavut's resource development training and employment policies for Inuit of Northern Baffin Island. *The Northern Review*, 47, 31-57. <https://doi.org/10.22584/nr47.2018.003>
- Holley, E. A., & Mitcham, C. (2016). The Pebble Mine dialogue: A case study in public engagement and the social license to operate. *Resources Policy*, 47. <https://doi.org/10.1016/j.resourpol.2015.11.002>
- Hoogeveen, D. (2016). Fish-hood: Environmental assessment, critical Indigenous studies, and posthumanism at Fish Lake (Teztan Biny), Tsilhqot'in territory. *Environment and Planning D: Society and Space*, 34(2). <https://doi.org/10.1177/0263775815615123>
- Horowitz, L. S., Keeling, A., Lévesque, F., Rodon, T., Schott, S., & Thériault, S. (2018). Indigenous peoples' relationships to large-scale mining in post/colonial contexts: Toward multidisciplinary comparative perspectives. *Extractive Industries and Society*, 5(3), 404-414. <https://doi.org/10.1016/j.exis.2018.05.004>
- Hudson-Edwards, K. A., Jamieson, H. E., & Lottermoser, B. G. (2011). Mine wastes: Past, present, future. *Elements*, 7(6), 375-380. <https://doi.org/10.2113/gselements.7.6.375>
- International Council on Mining & Metals. (2019). *Integrated Mine Closure: Good Practice Guide*.
- Kabir, S. M. Z., Rabbi, F., Chowdhury, M. B., & Akbar, D. (2015). A review of mine closure planning and practice in Canada and Australia. *World Review of Business Research*, 5(3), 140-159.
- Kativik Regional Government. (2019). *Renewable resources, environment, lands, & Parks*. <https://www.krg.ca/en-CA/departments/renewable-resources>
- Kativik Environmental Advisory Committee [KEAC]. (2019). *2018-2019 annual report*.
- Kativik Environmental Advisory Committee [KEAC]. (2020). *KEAC action plan 2020-2025* (Issue March).

- Keeling, A., Sandlos, J., Boutet, J.-S., Longley, H., & Dance, A. (2019). Knowledge, sustainability, and the environmental legacies of resource development in Northern Canada. In C. Southcott, F. Abele, D. Natcher, & B. Parlee (Eds.), *Resources and Sustainable Development in the Arctic* (p. 17). Routledge.
- Keenan, J., & Holcombe, S. (2021). Mining as a temporary land use: A global stocktake of post-mining transitions and repurposing. *Extractive Industries and Society*, 8(3), 100924. <https://doi.org/10.1016/j.exis.2021.100924>
- Kativik Environmental Quality Commission [KEQC]. (1998). *Information and public consultation procedure*.
- Kuyek, J. (2011). *The theory and practice of perpetual care of contaminated sites* (Issue July).
- Lapalme, L.-A. (2003). *The social dimension of sustainable development and the mining industry: A background paper*. Natural Resources Canada. <https://publications.gc.ca/site/eng/9.686723/publication.html>
- Laurence, D. (2006). Optimisation of the mine closure process. *Journal of Cleaner Production*, 14(3–4), 285–298. <https://doi.org/10.1016/j.jclepro.2004.04.011>
- Laurencont, T., Garrood, T., Vidler, P., & Fawcett, M. (2019). Social provisioning for mine closure. In A. Fourie & M. Tibbett (Eds.), *Mine closure 2019*. Australian Center for Geomechanics.
- Mackasey, W. O. (2000). *Abandoned mines in Canada*. MiningWatch Canada.
- Makivik Corporation. (2014). *Parnasimautik consultation report*.
- Makivik Corporation. (2015). *Nunavik Inuit mining policy*.
- MELCC. Ministère de l'Environnement et de la Lutte contre les changements climatiques. (2012). *Directive 019 sur l'Industrie Minière*.
- MELCC. Ministère de l'Environnement et de la Lutte contre les changements climatiques. (2020). *Kativik Environmental Quality Commission (KEQC)*. Government of Quebec.
- MERN. Ministère de l'Énergie et des Ressources naturelles. (n.d.). *Legislative provisions*. Government of Quebec. Retrieved August 10, 2021, from <https://mern.gouv.qc.ca/en/mines/mining-reclamation/legislative-provisions>
- MERN. Ministère de l'Énergie et des Ressources naturelles. (2017a). *Guidelines for preparing mine closure plans in Quebec*.
- MERN. Ministère de l'Énergie et des Ressources naturelles. (2017b). *Guidelines of the Ministère de l'Énergie et des Ressources Naturelles in the area of social acceptability*.
- MERN. Ministère de l'Énergie et des Ressources naturelles. (2019). *Aboriginal community consultation policy specific to the mining sector*.
- MERN. Ministère de l'Énergie et des Ressources naturelles. (2020). Plan de travail 2020–2021: Restauration des sites miniers abandonnés. In *Government of Quebec*. <https://mern.gouv.qc.ca/en/mines/mining-reclamation/reclamation-of-abandoned-mining-sites/>
- Monosky, M., & Keeling, A. (2021). Planning for social and community-engaged closure: A comparison of mine closure plans from Canada's territorial and provincial North. *Journal of Environmental Management*, 277(September 2020). <https://doi.org/10.1016/j.jenvman.2020.111324>

- Morrison-Saunders, A. (2019). The action is where the social is! The ecosystem services concept and other ideas for enhancing stakeholder engagement in integrated mine closure planning. *Proceedings of the 13th International Conference on Mine Closure, Australian Centre for Geomechanics, Perth*, 5–18. [https://doi.org/10.36487/acg\\_rep/1915\\_02\\_morrison-saunders](https://doi.org/10.36487/acg_rep/1915_02_morrison-saunders)
- Morrison-Saunders, A., McHenry, M. P., Sequeira, A. R., Gorey, P., Mtegha, H., & Doepel, D. (2016). Integrating mine closure planning with environmental impact assessment: Challenges and opportunities drawn from African and Australian practice. *Impact Assessment and Project Appraisal*, 34(2). <https://doi.org/10.1080/14615517.2016.1176407>
- Nader, L. (1972). Up the anthropologist: Perspectives gained from studying up. In Hymes, D. (Ed.), *Reinventing anthropology* (pp. 284–311). Pantheon Books.
- Nungak, Z. (2017). *Wrestling with colonialism on steroids*. Véhicule Press.
- O’Faircheallaigh, C. (2018). Aboriginal-mining company contractual agreements in Australia and Canada: Implications for political autonomy and community development. *Canadian Journal of Development Studies / Revue Canadienne d’études Du Développement*, 30(1–2). <https://doi.org/10.1080/02255189.2010.9669282>
- Office of the Auditor General of Canada. (2002). Abandoned mines in the North. In *Report of the Commissioner of the Environment and Sustainable Development*.
- Otto, J. M. (2009). Global trends in mine reclamation and closure regulation. In *Mining, Society, and a Sustainable World* (pp. 251–288). Springer. [https://doi.org/10.1007/978-3-642-01103-0\\_10](https://doi.org/10.1007/978-3-642-01103-0_10)
- Owen, J., & Kemp, D. (2018). *Mine closure and social performance: An industry discussion paper*. Centre for Social Responsibility in Mining, Sustainable Minerals Institute, The University of Queensland. <https://www.csr.uq.edu.au/publications/mine-closure-and-social-performance>
- Pebesma E (2018). Simple features for R: Standardized support for spatial vector data. *The R Journal*, 10(1), 439–446. <https://doi.org/10.32614/RJ-2018-009>
- Poirier, S., & Brooke, L. (2000). Inuit perceptions of contaminants and environmental knowledge in Salluit, Nunavik. *Arctic Anthropology*, 37(2), 78–91.
- Potvin, V. (2021). *Understanding and addressing the social impacts of closure at the Raglan Mine, Nunavik, Quebec*. Memorial University of Newfoundland.
- Prno, J., & Slocombe, S. D. (2012). Exploring the origins of “social license to operate” in the mining sector: Perspectives from governance and sustainability theories. *Resources Policy*, 37(3), 346–357. <https://doi.org/10.1016/j.resourpol.2012.04.002>
- R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>
- Raffensperger, C., Altman, R. G., Myers, N., Kuyek, J., Babicki, C., & Reilly, K. O. (2011). *Principles of perpetual care: The Giant Mine, Yellowknife, Northwest Territories* (Issue December).
- Raglan Mine. (2019). *Raglan mine closure plan*.

- Raglan Mine. (2019). *Raglan Mine Closure Plan Subcommittee annual report 2018/2019*. <https://www.glencore.ca/en/raglan/sustainability/environment/Closure-Plan-Subcommittee>
- Ravinsky, C. M. (2013). Changes to the Mining Act (Quebec). *Lavery Lawyers*. Retrieved November 13, 2021 from <https://www.lavery.ca/en/publications/our-publications/1732-changes-to-the-mining-act-quebec-.html>
- Rixen, A., & Blangy, S. (2016). Life after Meadowbank: Exploring gold mine closure scenarios with the residents of Qamini'tuaq (Baker Lake), Nunavut. *Extractive Industries and Society*, 3(2), 297–312. <https://doi.org/10.1016/j.exis.2015.09.003>
- Roberts, S., Veiga, M., & Peiter, C. (2000). *Overview of mine-closure and reclamation in the Americas*. IDRC-MPRI/UBC/CETEM.
- Roche. (1992). *Evaluation Environnementale: Emplacement minier de Purtunig (Asbestos Hill)*.
- Rodon, T. (2014). From Nouveau-Quebec to Nunavik and Eeyou Istchee: The political economy of Northern Quebec. *Northern Review*, 38(2014), 93–112. <https://thenorthernreview.ca/index.php/nr/article/view/327>
- Rodon, T. (2017). Development in Nunavik: How regional and local initiatives redefine sustainable development in Nunavik. *American Review of Canadian Studies*, 47(2). <https://doi.org/10.1080/02722011.2017.1347993>
- Rodon, T. (2018). Institutional development and resource development: The case of Canada's Indigenous peoples. *Canadian Journal of Development Studies*, 39(1), 119–136. <https://doi.org/10.1080/02255189.2017.1391069>
- Rodon, T., & Lévesque, F. (2015). Understanding the social and economic impacts of mining development in Inuit communities: Experiences with past and present mines in Inuit Nunangat. *Northern Review*, 41(2015), 13–39. <https://doi.org/10.22584/nr41.2015.002>
- Rodon, T., & Schott, S. (2014). Towards a sustainable future for Nunavik. *Polar Record*, 50(254), 260–276. <https://doi.org/10.1017/S0032247413000132>
- Sandlos, J., & Keeling, A. (2012). Claiming the new North: Development and colonialism at the Pine Point Mine, Northwest Territories. *Environment and History*, 18(1), 5–34. <https://doi.org/10.3197/096734012X13225062753543>
- Sandlos, J., & Keeling, A. (2016a). Aboriginal communities, traditional knowledge, and the environmental legacies of extractive development in Canada. *Extractive Industries and Society*, 3(2), 278–287. <https://doi.org/10.1016/j.exis.2015.06.005>
- Sandlos, J., & Keeling, A. (2016b). Toxic legacies, slow violence, and environmental injustice at Giant Mine, Northwest Territories. *Northern Review*, 42(2016), 7–21. <https://doi.org/10.22584/nr42.2016.002>
- Séguin, J.-M. (2021). Mining development in Nunavik: The need and challenges of IBA implementation [recorded virtual presentation]. In *Knowledge Network on Mining Encounters and Indigenous Sustainable Livelihoods Webinar Series*. <http://www.mineral.ulaval.ca/en/webinars>

- Séguin, J.-M., & Larivière, M. M. (2011). *Nunavik guidebook: Mineral exploration, mining development and the Nunavik Region*.
- Statistics Canada. (2017). *Région du Nunavik [Health region, December 2017], Quebec and Quebec [Province] (table)*. Statistics Canada Catalogue no. 98-316-X2016001.
- Tremblay, G. A., Hogan, C. M., & Cowan, W. R. (2011). Policy framework in Canada for mine closure and management of long-term liabilities. *2nd International Seminar on Environmental Issues in the Mining Industry*, 1–8.
- Tsosie, R. (2015). Indigenous peoples and the ethics of remediation: Redressing the legacy of radioactive contamination for Native peoples and Native lands. *Santa Clara Journal of International Law*, 13, 203–272. <http://digitalcommons.law.scu.edu/scujil><http://digitalcommons.law.scu.edu/scujil/vol13/iss1/10>
- Tyrrell, M. (2006). Making sense of contaminants: A case study of Arviat, Nunavut. *Arctic*, 59(4), 370–380. <https://doi.org/10.14430/arctic286>
- Veiga, M. M., Scoble, M., & McAllister, M. L. (2001). Mining with communities. *Natural Resources Forum*, 25(2001), 191–202. <https://doi.org/10.1111/j.1477-8947.2001.tb00761.x>
- Vivoda, V., Kemp, D., & Owen, J. (2019). Regulating the social aspects of mine closure in three Australian states. *Journal of Energy & Natural Resources Law*, 1–20. <https://doi.org/10.1080/02646811.2019.1608030>
- White, G. (2006). Cultures in collision: Traditional and Euro-Canadian governance knowledge processes in northern boards. *Arctic* 59(4), 401–414. <https://www.jstor.org/stable/40512844>
- White, G. (2020). *Indigenous empowerment through co-management: Land claims boards, wildlife management, and environmental regulation*. UBC Press.
- Wickham H (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag. <https://ggplot2.tidyverse.org>
- Xavier, A. M., Veiga, M. M., & Zyl, D. Van. (2015). Introduction and assessment of a socio-economic mine closure framework. *Journal of Management and Sustainability*, 5(1), 38–49. <https://doi.org/10.5539/jms.v5n1p38>