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Editorial / Éditorial

Introduction / Introduction

Research Articles / Article de Recherche

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Editorial: New Frontiers in Northern Economic Development

Ken Coates*

The winter of 2025-2026 has been tough across the North American North, with a combination of lengthy periods of extreme cold, disconcerting global geopolitical unrest, U.S. President Donald Trump's unexpected verbal attacks on Canada and Greenland, and increasing pressure to accelerate resource development in the region.

For northern governments and Arctic peoples, circumpolar political unrest adds to the continuing pressures of climate change, economic marginalization, colonization, challenges to the harvesting economy, cultural loss and revitalization, high costs, and the like. Charting a path forward for the North has become increasingly difficult, particularly as security and defence considerations place growing pressure on northern and national governments to address infrastructure and remilitarization challenges. These are, to put it mildly, difficult times.

CanNor (the Canadian Northern Economic Development Agency) plays a vital role in community and regional economic development. Since its establishment in 2009, CanNor has invested millions of dollars annually in personal and business development in the Canadian North. The organization has made impressive contributions to special company initiatives, emerging firms, sectoral initiatives, urgent financial assistance, and other economy-building measures. The *Northern Review* was delighted when CanNor approached the journal to encourage additional dissemination of research on northern economic development. They placed no constraints on the journal and exercised no editorial control or oversight over the special issues. CanNor's support for free and independent academic inquiry and analysis has been exemplary.

The articles in this issue of the *Northern Review* reflect the diversity of opportunities and challenges for improving economic conditions in the Arctic and Subarctic regions. The collection includes studies of the intersection of climate change and economic development, a fascinating conversation about Indigenous

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engagement with critical minerals and nuclear waste in the Provincial North, community engagement with renewable energy development, the impact of modern treaties on economic development, the prospects for deep-sea mining in the Arctic, and the continuing evolution of northern oil and gas development. These papers and dialogue expand the CanNor-inspired debate about the economic future of the Canadian North.

At present, the Canadian North has one of the most government-dependent economies in the world. This applies at the personal and family levels as well as at the regional level, which is highly reliant on government spending, particularly investments on public infrastructure and support for food, transportation, energy, social housing, and the like. The resource sector has long been lauded as a key to regional and national prosperity, but the sector has disappointed more often than not. For every medium-term burst of activity associated with something like the diamond mines in the Northwest Territories, there are numerous examples of commercial failure or unrealized or lost economic potential.

The North, and northern Indigenous communities in particular, are looking for greater economic opportunity and for opportunities to expand the private sector. Success remains sporadic and highly focused, with a few bright spots (like Arctic tourism) offset by numerous areas of underdevelopment (including high technology/innovation, Arctic oil and gas in Canada, and the private sector generally). Northern incubators have had small, individual successes, but no grand victories. Furthermore, the size and dominance of government, offering high wages, excellent benefits, and the ability to routinely "raise" the private sector for skilled workers, may actually impede commercial development in the North.

The articles in this collection highlight clear realities. The regulatory and political environment is in flux, most notably from the re-emergence of Indigenous governance. Much of the North's resource potential remains unknown and underdeveloped. Emergent fields (like deep-sea mining) will press against the margins of regulation. There is an urgent need to engage constructively with northern communities. The economic landscape of the North is changing very rapidly. The *Northern Review* is determined to remain at the cutting edge of regional conversation about the commercial future of the region, just as CanNor, our excellent partner in producing this issue of the *Northern Review*, continues to be a critical actor in the support and encouragement of business and economic development in the North.

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Éditorial : Nouvelles frontières du développement économique du Nord

Ken Coates*

L'hiver 2025-2026 fut rude pour l'ensemble du Nord nord-américain, marqué par une combinaison de longues périodes de froid extrême, un désarroi géopolitique mondial inquiétant, des attaques verbales imprévues du président américain Donald Trump contre le Canada et le Groenland, et des pressions croissantes pour accélérer le développement dans la région.

Pour les gouvernements nordiques et les peuples arctiques, ce désarroi politique circumpolaire s'ajoute aux pressions continues des changements climatiques, de la marginalisation économique, de la colonisation, des défis à l'économie traditionnelle nordique, de la perte et de la revitalisation culturelle, des coûts élevés et bien d'autres encore. Définir l'avenir du Nord s'avère de plus en plus complexe, particulièrement alors que les pressions croissantes en matière de sécurité et de défense obligent les gouvernements nordiques et nationaux à répondre aux défis d'infrastructure et de remilitarisation. Ces temps sont, pour le moins, difficiles.

CanNor, l'Agence canadienne de développement économique du Nord, joue un rôle vital dans le développement économique des communautés et des régions. Depuis sa création en 2009, CanNor investit des millions de dollars chaque année dans le développement des personnes et des entreprises du Nord canadien. L'organisation a contribué de manière impressionnante à des initiatives spéciales pour les entreprises, les entreprises émergentes, les initiatives sectorielles, l'assistance financière d'urgence et d'autres mesures pour bâtir l'économie. Le *Northern Review* a eu grand plaisir lorsque CanNor a contacté le journal pour encourager davantage dissémination de la recherche sur le développement économique du Nord. L'agence n'a imposé aucune contrainte au journal et n'a exercé aucun contrôle éditorial ou supervision sur les numéros spéciaux. Le soutien de CanNor aux investigations académiques et aux analyses disponibles librement a été exemplaire.

Les articles de ce numéro du *Northern Review* reflètent la diversité des opportunités et des enjeux pour l'amélioration des conditions économiques dans les régions arctiques et subarctiques. La collection comprend des études à l'intersection du changement climatique et du développement économique, une conversation fascinante sur l'engagement autochtone avec les minéraux critiques et

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les déchets nucléaires dans le Nord provincial, l'engagement communautaire avec le développement des énergies renouvelables, l'impact des traités modernes sur le développement économique, les perspectives de l'exploitation des fonds marins arctiques, et la continuité de l'évolution du développement pétrolier et gazier nordique. Ces articles et discussions enrichissent le débat inspiré par CanNor sur l'avenir économique du Nord canadien.

À l'heure actuelle, le Nord canadien possède l'une des économies les plus dépendantes de l'État au monde. Cela s'applique aux niveaux personnel et familial, ainsi qu'au niveau régional, qui dépend massivement des dépenses gouvernementales, en particulier en infrastructures publiques, soutien alimentaire, transport, énergie, logement social et autres et autres priorités comparables. Le secteur des ressources est depuis longtemps salué comme clé de la prospérité régionale et nationale, quoique décevant à maintes reprises. Pour chaque pic d'activité à moyen terme lié aux mines de diamants ou autres dans les Territoires du Nord-Ouest, il existe de multiples cas d'échecs commerciaux ou de potentiel économique perdu ou inachevé.

Le Nord, et les communautés autochtones nordiques en particulier, recherche des occasions économiques et des opportunités d'élargir le secteur privé. Les réussites demeurent sporadiques et fortement concentrées, ponctuées de quelques points positifs (tels que le tourisme arctique), contrebalancés par de multiples faiblesses structurelles (y compris en technologies de pointe, innovation, pétrole et gaz arctiques au Canada, et dans le secteur privé en général). Les incubateurs nordiques ont connu de petites réussites individuelles, mais sans grandes victoires. De plus, la taille et la domination du gouvernement, offrant de hauts salaires, d'excellents bénéfices et la capacité à « solliciter » régulièrement le secteur privé pour de la main-d'œuvre qualifiée, entravent bel et bien le développement commercial dans le Nord.

Les articles de cette collection mettent en lumière ces réalités évidentes. L'environnement réglementaire et politique est en pleine mutation, notamment en raison du retour en force de la gouvernance autochtone. Une grande partie du potentiel des ressources au Nord reste inconnu et sous-développé. Les domaines émergents, comme l'exploitation des fonds marins, mettront à l'épreuve les limites réglementaires. Il existe un besoin urgent de s'engager de manière constructive avec les communautés nordiques. Le paysage économique du Nord est en rapide mutation. Résolu à demeurer à la pointe des réflexions régionales sur l'avenir commercial de la région, le *Northern Review* continue de jouer un rôle essentiel dans la promotion et le soutien du développement économique et commercial au Nord, tout comme CanNor, notre précieux partenaire pour la réalisation de cette édition du *Northern Review*.

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Introduction: Northern Economic Development Special Issue

Canadian Northern Economic Development Agency

The Canadian Northern Economic Development Agency (CanNor) contributes to the development of sustainable, innovative, diversified, and resilient territorial economies across Nunavut, the Northwest Territories, and the Yukon. With offices in Iqaluit, Yellowknife, Whitehorse, and Ottawa, CanNor collaborates closely with Indigenous governments, territorial partners, northern and Arctic businesses, as well as communities, to ensure that economic growth in the territories is inclusive. Through streamlined project support and a strong emphasis on Indigenous participation and leadership, we aim to help build territorial economies that unlock the potential of the North to contribute to one Canadian economy that benefits everyone.

CanNor is pleased to partner with Yukon University to support this second special issue of northern economic development research articles that highlight inclusive climate stewardship and adaptation, renewable energy development, and deep-sea mining considerations. CanNor's continued partnership with Yukon University creates more opportunities to share knowledge about the region during a time of growing national and international interest in the North.

The territories sit at the heart of Arctic sovereignty, climate resilience, and nation-building. CanNor plays a critical role in strengthening the economic foundations that support Canada's presence and preparedness in this pivotal part of the country. Recent CanNor investments to advance diversified and dynamic territorial economies include:

- In Nunavut, CanNor provided early funding for the Iqaluit Nukkiksautiit Hydroelectric Project, which has advanced to the Major Projects Office for further review. Nunavut's first fully Inuit-owned clean energy developer, the Nunavut Nukkiksautiit Corporation, is leading this effort and advances reconciliation and Arctic sovereignty through community-driven clean power.

- In the Northwest Territories, CanNor supported the Western Arctic Marine Training Centre (based in Hay River, Northwest Territories) to expand Transport Canada-certified training and increase the number of locally trained skilled seafarers to meet strong demand for these professionals. Marine transportation in the territories plays an important role in Arctic sovereignty, food security, and critical supply deliveries, but the sector has been limited by the availability of skilled seafarers.
- In the Yukon, building on a previous investment toward the design and engineering feasibility study for the Yukon Gathering Place (Convention Centre), CanNor provided an additional $56.25 million towards its construction, in partnership with the Yukon government and Chu Níikwän LP, the Kwanlin Dün First Nation's development corporation. This investment will help drive economic growth and job creation by strengthening the Yukon's tourism industry and by attracting meetings, conferences, and events to the territory. It also increases opportunities for northern Indigenous communities and businesses to participate in the economy.

CanNor will continue to deploy place-based approaches that support business development, community capacity, and economic diversification, while advocating for territorial priorities within federal decision making to ensure that public investments generate durable economic opportunities for Northerners. The Agency will prioritize foundational infrastructure stability, Indigenous economic participation, and capital alignment in sectors critical to long-term resilience, such as responsible resource development (including critical minerals), defence and Arctic sovereignty, clean energy, northern food systems, fisheries, housing innovation, and knowledge-driven industries. CanNor will also continue to support small and medium-sized enterprises (SMEs) in improving productivity, innovation, and competitiveness, including through the adoption of digital and advanced technologies.

CanNor continues to pursue new opportunities for meaningful, locally engaged, and globally relevant research that can be applied to northern economic development and the priority areas noted above. The Agency welcomes inquiries from interested academics, institutions, industry representatives, and research networks.

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Introduction : Article du numéro spécial sur le développement économique du Nord

Agence canadienne de développement économique du Nord

L'Agence canadienne de développement économique du Nord (CanNor) contribue au développement d'économies territoriales durables, novatrices, diversifiées et résilientes au Nunavut, dans les Territoires du Nord-Ouest et au Yukon. Disposant de bureaux à Iqaluit, Yellowknife, Whitehorse et Ottawa, CanNor collabore étroitement avec les gouvernements autochtones, des partenaires territoriaux, des entreprises et des communautés du Nord et de l'Arctique pour garantir l'inclusivité de la croissance économique territoriale. En simplifiant le soutien aux projets et en mettant l'accent sur la participation et le leadership des Autochtones, CanNor souhaite favoriser le développement d'économies territoriales capables de libérer le plein potentiel du Nord et de contribuer à une économie canadienne unifiée dont bénéficiera l'ensemble de la population.

CanNor est fière de s'associer à l'Université du Yukon pour appuyer ce deuxième numéro spécial de la Revue du Nord sur le développement économique du Nord. Dans ce numéro, les articles de recherche sur le développement économique nordique mettent en lumière la gestion inclusive du climat et l'adaptation climatique, le développement des énergies renouvelables ainsi que les enjeux liés à l'exploitation minière en eaux profondes. Grâce à ce partenariat continu avec l'Université du Yukon, CanNor multiplie les occasions de faire connaître la région, à un moment où le Nord suscite un intérêt croissant, tant à l'échelle nationale qu'internationale.

Les territoires sont au cœur de la souveraineté dans l'Arctique, de la résilience aux changements climatiques et de l'édification de la nation. CanNor joue un rôle essentiel dans le renforcement des fondements économiques qui appuient la présence et l'état de préparation du Canada dans cette région cruciale du pays. Voici quelques investissements récents de CanNor visant à promouvoir des économies territoriales diversifiées et dynamiques :

- Au Nunavut, CanNor a accordé un premier financement au projet hydroélectrique Iqaluit Nukkiksautiit, qui a été soumis à l'examen du Bureau des grands projets. La Nunavut Nukkiksautiit Corporation, la toute première société de développement d'énergie propre du Nunavut appartenant entièrement aux Inuits, dirige cette initiative qui fera progresser la réconciliation et la souveraineté de l'Arctique grâce à l'énergie propre produite par la communauté.
- Dans les Territoires du Nord-Ouest, CanNor a accordé du financier au Western Arctic Marine Training Centre (établi à Hay River, Territoires du Nord-Ouest) pour accroître l'accès aux cours certifiés par Transports Canada et augmenter le nombre de marins qualifiés formés localement pour répondre à la forte demande pour ces professionnels. Le transport maritime dans les territoires joue un rôle important dans la souveraineté de l'Arctique, la sécurité alimentaire et les livraisons de fournitures essentielles, mais le secteur est limité par le manque de marins qualifiés.
- Au Yukon, en s'appuyant sur un investissement antérieur dans la conception et l'étude de faisabilité technique du Yukon Gathering Place, CanNor a versé 56,25 M$ supplémentaires pour la construction de ce nouveau de congrès, en partenariat avec le gouvernement du Yukon et Chu Níikwän LP et la société de développement de la Première Nation des Kwanlin Dün. Cet investissement stimulera la croissance économique et la création d'emplois en renforçant l'industrie touristique du Yukon et en facilitant l'organisation de réunions, de conférences et d'événements au Yukon. Il multiplie également, pour les communautés et les entreprises autochtones du Nord, les possibilités de participer à l'économie territoriale.

CanNor continuera à déployer des approches locales qui soutiennent la création d'entreprises, la capacité des communautés et la diversification économique, tout en défendant les priorités territoriales dans le processus décisionnel fédéral pour garantir que les investissements publics génèrent des débouchés économiques durables pour les habitants du Nord. Par ailleurs, l'Agence concentrera ses efforts sur la stabilité des infrastructures de base, la participation économique des Autochtones et la répartition des capitaux dans les secteurs essentiels à la résilience à long terme, comme l'exploitation responsable des ressources (y compris les minéraux critiques), la défense et la souveraineté dans l'Arctique, les énergies propres, les systèmes alimentaires nordiques, la pêche, l'innovation en matière de logement et les industries fondées sur le savoir. CanNor aidera également les petites et moyennes entreprises (PME) à améliorer leur productivité, leur capacité d'innovation et leur compétitivité, notamment par l'adoption de technologies numériques et de pointe.

CanNor demeure à l'affût de nouvelles possibilités de recherche significative, ancrée localement et pertinente à l'échelle mondiale, qui pourraient être appliquées au développement économique du Nord et aux domaines prioritaires susmentionnés. L'Agence invite les universitaires, les institutions, les représentants de l'industrie et les réseaux de recherche à lui soumettre leurs projets de recherche.

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Research Article

The Future of Nature-Based Solutions for Climate in Northern Canada: Indigenous Knowledge, Land Stewardship, and Economic Development

Katharine B. Baldwin* and Bob Kayseas*

Abstract: Climate change is affecting Northern Canada at a rapid rate and posing challenges to Indigenous ways of life. Climate solutions in the North are often applauded for protecting carbon rich ecosystems, reducing greenhouse gas emissions, and cultivating economic development, but when northern Indigenous perspectives, world views, and leadership are not integrated, solutions become little more than green colonialism. Indigenous Peoples have been leading land stewardship initiatives for millennia. Implementing nature-based solutions for climate (NbSC) using Two-Eyed Seeing could provide intersecting benefits for Indigenous communities including cultural revitalization, economic development, youth empowerment, reconciliation, carbon storage, ecosystem stewardship, and biodiversity. The Athabasca Denesųłiné First Nations care for their Traditional Territory, Nuhenéné, across Northern Saskatchewan, the Northwest Territories, and Nunavut. Through interviews with members of the Athabasca Denesųłiné First Nations and supporting organizations, we consider six NbSC that could be options for sustaining Athabasca Denesųłiné Peoples, lands, and waters, and for supporting the local economy in the face of climate change. Our analysis, utilizing a structured evaluation criteria, suggests that the most appropriate NbSC for Nuhenéné territory are wildfire management, Indigenous-led area-based conservation, and supporting barren-ground caribou conservation. These recommendations assume leadership by Indigenous Peoples, stewardship of the land in line with Dene values, and recognition of the legacy of colonialism. Our work stems from a commitment to respect and honour Indigenous voices, build trustworthy relationships, and provide useful information for local communities, with particular attention paid to economic opportunities associated with climate mitigation and adaptation.

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Article de Recherche

L'avenir des solutions fondées sur la nature pour lutter contre les changements climatiques dans le Nord canadien : savoirs autochtones, gestion des terres et développement économique

Katharine B. Baldwin* and Bob Kayseas*

Les changements climatiques affectent le Nord canadien à un rythme accéléré, imposant des défis majeurs aux modes de vie des peuples autochtones. Les solutions climatiques dans le Nord sont souvent célébrées pour leur protection des écosystèmes riches en carbone, leur réduction des émissions de gaz à effet de serre et leur promotion du développement économique. Cependant, sans intégrer les perspectives, visions du monde et leadership autochtones du Nord, ces solutions ne sont guère plus que du colonialisme vert. Les peuples autochtones pratiquent la gestion des terres depuis des millénaires. La mise en œuvre de solutions climatiques basées sur la nature (SCBN), suivant l'approche du double regard, offrirait des avantages intersectionnels aux communautés autochtones, notamment la revitalisation culturelle, le développement économique, l'autonomisation des jeunes, la réconciliation, le stockage du carbone, la gestion des écosystèmes et la préservation de la biodiversité. Les Premières Nations Athabasca Denesųłiné prennent soin de leur territoire traditionnel, le Nuhenéné, qui s'étend sur le nord de la Saskatchewan, les Territoires du Nord-Ouest et le Nunavut. S'appuyant sur des entrevues avec des membres des Premières Nations athabascanes dénésųłiné et avec des organisations de soutien, nous examinons six SCBN qui pourraient convenir à la gestion des terres et des eaux athabascanes dénésųłiné, tout en appuyant les économies locales face aux changements climatiques. Notre analyse, en utilisant des critères d'évaluation structurés, conclut que les SCBN les plus adaptées au Nuhenéné sont la gestion des incendies forestiers, la conservation dirigée par les Autochtones et la conservation du caribou de la toundra. Ces recommandations privilégient le leadership des peuples autochtones, la gestion des terres conformément aux valeurs dénées et la reconnaissance de l'héritage colonial. Notre travail découle d'un engagement à respecter et rendre hommage aux voix autochtones, à bâtir des relations de confiance et à fournir des renseignements utiles aux communautés locales, avec un accent particulier sur les opportunités économiques découlant des mesures d'atténuation et d'adaptation climatiques.

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Nuhenéné is the Traditional Territory of Black Lake, Fond du Lac, and Hatchet Lake Denesųłiné First Nations. Nuhenéné spans from the Athabasca Basin at the northern edge of the boreal forest in Saskatchewan to the Canadian Shield taiga and tundra of the Northwest Territories and Nunavut. The Athabasca Denesųłiné First Nations have been stewarding this carbon-rich landscape for millennia and have choices about how to steward Nuhenéné as the climate changes.

Like many Indigenous Nations, the Athabasca Denesųłiné have an intimate relationship with their Traditional Territory:

> To the Athabasca Denesųłiné, Nuhenéné is more than territory. It is home. It is where the caribou pass, where the fish feed the people, where the medicines grow, and where the spirits of the ancestors still walk … Everything the people are, their language, ceremonies, and values, comes from this land … (Ya'thi Néné Lands and Resources, 2025a)

Despite ongoing attempts by the Government of Canada over the past 200-plus years to disconnect Indigenous Peoples from their lands, environmental stewardship remains strongly ingrained in Athabasca Denesųłiné culture and law. Residents regularly spend time on the land as they hunt, fish, and gather food, and their connection with barren-ground caribou provides physical, spiritual, social, and cultural well-being. "Protecting Nuhenéné is not something [the Athabasca Denesųłiné] chose. It is a sacred duty passed down from the ancestors. The elders say: Take care of the land, and it will take care of you" (Ya'thi Néné Lands and Resources, 2025a).

This deep connection to place means that the effects of climate change are not felt only in the land and animals, but also in the cultural practices and daily lives of the Athabasca Denesųłiné. Northern Canada is warming at twice the rate of the global average (D'Orangeville et al., 2023) and many boreal forest and tundra areas are now carbon emitters instead of carbon sinks (Howard, 2025). Forest fires burn four times as much area as in the 1970s (Rutgers, 2025), lakes freeze five weeks later in fall (Settee, 2020), and weather is less predictable (Löf & Naomi, 2011). Barren-ground caribou migrations change as the animals navigate icy snow and burned forests (Kayseas & Baldwin, 2025; Löf & Naomi, 2011; Settee, 2020); muskox and polar bear travel further south and west, entering Saskatchewan (Dokis-Jansen et al., 2021; Settee, 2020); and fish spawning and migration shift (Kayseas & Baldwin, 2025; Löf & Naomi, 2011). For the First Nations that rely on the land, unsafe travel conditions, wildfire, and uncertainty around the arrival of migratory and seasonal food sources impact personal safety, cultural practices,

and subsistence harvests (Löf & Naomi, 2011), and may push people to rely more on wage labour (much of which comes from industrial resource extraction) in order to afford food at grocery stores. For Indigenous northerners, climate change is yet another act of colonialism, where those who have contributed least to the climate crisis are those most negatively affected (Hanaček et al., 2024).

The Athabasca Denesųłiné have an opportunity to respond to climate impacts affecting Nuhenéné and, at the same time, promote relationships with land and develop their local economy in ways that align with their values. Scientists have suggested that, for many ecosystems, continuing with business-as-usual stewardship could endanger human lives, ecosystem services, and Indigenous ways of life (Intergovernmental Panel on Climate Change [IPCC], 2022; Pelai et al., 2021). Engaging in land stewardship to adapt to and mitigate climate change could help the Athabasca Denesųłiné enact their responsibility to care for Nuhenéné, while also diversifying the economy away from its reliance on mining and towards a conservation economy. A conservation economy aligns well with Athabasca Denesųłiné values and is being pursued by local development organizations (Ya'thi Néné Lands and Resources, 2024). In a conservation economy, local communities care for the land and natural resources for future generations, while also creating business opportunities, such as renewable energy, ecotourism, fisheries, research, land management, Indigenous Guardians programs, healing and cultural centres, and new capital infrastructure investment. Investments in and income generated through conservation economies can have multiplier effects on the economy; in the Great Bear Rainforest and Haida Gwaii, for example, development of a diversified conservation economy created 118 new and expanded businesses between 2007 and 2022 (Coast Funds, 2022; Social Ventures Australia, 2016).

Envisioning the relationship with the land that the First Nations desire in fifty years or seven generations could help the Athabasca Denesųłiné make informed stewardship decisions today (see Sarkki et al., 2025). Nature-based solutions for climate (NbSC) are one framework for land stewardship that, when implemented using Two-Eyed Seeing (Bartlett et al., 2012), could meet intersecting goals of caring for Nuhenéné, supporting Indigenous ways of life, helping ecosystems adapt to a changing climate, mitigating climate change, and fostering local economic development (Powell et al., 2024). NbSC[1] are actions to protect, sustainably manage, and restore ecosystems, which address climate change effectively and adaptively, while simultaneously providing human well-being, biodiversity, and other benefits (Cohen-Shacham et al., 2016). Using land management to address climate change has great potential: through mitigation alone, natural climate solutions could provide over one-third of the cost-effective climate mitigation needed between 2017 and 2030 to stabilize warming below 2°C (Griscom et al., 2017). Examples of NbSC include mangrove restoration, regenerative farming, prairie restoration, protecting peatlands, wetland restoration, reforestation, and afforestation (Townsend & Craig, 2020).

Many NbSC projects have been highly Eurocentric at the expense of Indigenous and local peoples (Aboukakrine et al., 2025; McFetridge & Collins, 2021; Townsend & Craig, 2020; Trottier, 2024). In many projects, lands and waters are viewed as empty and open for development, nature is commodified in spreadsheets and offsets, human well-being is understood as separate from that of nature, and climate change is considered a biophysical problem that can be fixed using technology, finance, and economic modelling (Hanaček et al., 2024; Nature-Based Climate Solutions Summit, 2020). In response to these projects that reinforce colonial world views and impinge on Indigenous rights and ways of life (Dietz, 2024), Indigenous and marginalized groups have labelled such projects green colonialism (Lang et al., 2024) and/or carbon colonialism (Townsend et al., 2020). Gunn-Britt Retter, a Sámi advocate from Norway, writes, "We were first colonized by people from outside our lands, then colonized by climate change itself, driven by people from outside our lands, and are now being colonized a third time by responses to climate change"—in her case, wind turbines on reindeer herding lands (2021). The Canadian North, specifically, has become a sacrifice zone for forestry, mining, and now green energy and climate projects to support the carbon-intensive lifestyles of those who caused the climate crisis (Hanaček et al., 2024).

In this article, we bring Indigenous Knowledge and perspectives into conversation with the Western science concept of NbSC. Instead of evaluating NbSC solely on measurements like carbon storage, biodiversity protection, and net income, we position our analysis around needs, values, and priorities articulated by local Indigenous groups. In this case study, we take First Nations leadership, land stewardship in line with Dene values, and history of colonization as foundational requirements, and we evaluate nature-based solutions for climate based on their ability to contribute to First Nations relationships with land, conservation of barren-ground caribou, local economic opportunity, and fostering common goals amongst community members. These foundational requirements derive from Reed's (2022) three lessons for implementing nature-based solutions from the perspectives of Indigenous Peoples: centre colonization as an interpretive lens, engage with Indigenous Knowledge systems, and uphold the rights and responsibilities of Indigenous Peoples. Two-Eyed Seeing is key to both the foundational requirements and evaluative concepts, as we look to the strengths of both Indigenous and Western knowledges to support Indigenous northerners

as they seek to improve their quality of life and resilience. Mi'kmaw Elder Albert Marshall defines Two-Eyed Seeing as "learning to see from one eye with the *strengths* of Indigenous knowledges and ways of knowing, and from the other eye with the *strengths* of Western knowledges and ways of knowing, and to using both these eyes together, for the benefit of all" (Bartlett et al., 2012, p. 8). The strengths of Indigenous Knowledge systems include taking a holistic approach, prioritizing well-being and relationships over profit, being rooted in relationship, and supporting Indigenous self-determination; these are essential if NbSC are to benefit Indigenous Peoples (Aboukakrine et al., 2025; Manahan, 2024; Nature-Based Climate Solutions Summit, 2020; Reed, 2022). Two-Eyed Seeing helps NbSC break free from their current dependence on Western knowledge and knowledge systems and better serve Indigenous communities (Reed, 2022).

By incorporating Indigenous Knowledge and leadership, NbSC have successfully benefited Indigenous communities in Australia, New Zealand, and parts of Canada, but many Canadian First Nations have met with resistance to their NbSC (Townsend & Craig, 2020); despite growing recognition of Indigenous rights, the federal government and many provinces remain unwilling to recognize Indigenous jurisdiction and understandings of land, thereby blocking Indigenous-led NbSC (Reed, 2022). Canada's current political climate is compounding these challenges, leaning towards less environmental oversight, greater focus on profit, and reduced support for climate initiatives.

The Athabasca Denesųłiné First Nations are deeply committed to expanding economic opportunities within their territories, and their journey is already well underway. These three Nations, along with four small northern municipalities, are majority owners of Athabasca Basin Development, a successful Indigenous-owned investment company established in 2002. Athabasca Basin Development holds interests in over a dozen companies across multiple sectors, with a focus on the uranium mining supply chain. As majority owners, the Athabasca Denesųłiné already hold significant economic and governance roles in regional economic development, particularly in the mining sector. Their experience with Athabasca Basin Development reflects a model of Indigenous-led economic development that retains control, redistributes wealth within communities, and aligns with local governance structures (Wasacase-Merasty et al., 2024). Each First Nation also has a development corporation, and the communities are represented by Ya'thi Néné Lands and Resources, an Indigenous-led and owned non-profit organization that builds agreements with mining and exploration companies to protect the interests of the land and people.

At the same time as desiring economic opportunities, community members have expressed a deep emotional, cultural, and spiritual attachment to their Traditional Territory, Nuhenéné, that they are unwilling to sacrifice. Community members have voiced concern about climate impacts to the land, water, animals, and seasonal cycles that are disrupting long-held land-based relationships and subsistence activities (Kayseas & Baldwin, 2025). While economic development remains a community priority, it must not come at the cost of environmental degradation or cultural disconnection. Community members have emphasized the importance of stewardship and expressed values consistent with what has been termed a conservation economy. This alignment between Indigenous principles and conservation economies has been recognized across Canada as a pathway to both climate resilience and economic justice (Coast Funds, 2022; Planche et al., 2021).

In this context, Indigenous-led NbSC could uphold First Nations responsibilities to place, mitigate climate change, steward ecosystems that support northern Indigenous ways of life, support economic development, increase biodiversity, revitalize culture, empower youth, and promote reconciliation (Powell et al., 2024). In this article, we explore the economic development possibilities of and local perceptions towards six potential NbSC in Nuhenéné, the Traditional Territory of the Black Lake, Fond du Lac, and Hatchet Lake Denesųłiné First Nations in Northern Saskatchewan, the Northwest Territories, and Nunavut. We share these NbSC not to "save" northerners or prescribe actions, but to present information so that community members are aware of options for sustaining their lands and waters while also pursuing economic development within their communities.

Author Positionality

The authors share their positionalities with the understanding that who they are and who they are becoming have implications for how this research is designed and carried out (Hurley & Jackson, 2020; S. Wilson, 2008).

Katharine Baldwin: I am a white, disabled settler with a Master's in Geography from the University of British Columbia and dual bachelor's degrees in Anthropology and Social-Ecological Sustainability from the University of Minnesota. I grew up on Kaskaskia, Miami, and Shawnee lands in Central Ohio and now live on the traditional, ancestral, and unceded lands of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations in Vancouver, British Columbia. I was once an avid backpacker and environmental educator and now enjoy slowing down with backyard birding and phenology. My passion for land and interest in advocacy have shaped my career. I support Indigenous adaptation to climate change as a research assistant at the First Nations University of Canada. I respect Indigenous connection to land, resilience, tradition, and kinship. I believe that Indigenous leadership is the foundation for

the collective world view shift required to address climate change, and I approach cross-cultural research as a privilege and continual learning process.

Bob Kayseas: My positionality is grounded in my identity as an Anishinaabe (Saulteaux) scholar from Noochikinoonzaywaning, Fishing Lake First Nation, shaped by lived experience in community, family histories of residential school impacts, and the intergenerational responsibilities I now carry as a grandfather raising my grandchildren. Professionally, I serve as a professor in the School of Business and Public Administration at the First Nations University of Canada, where my teaching, research, and curriculum development focus on Indigenous entrepreneurship, strategy, nation-building, and economic sovereignty. My applied work as Chair of Fishing Lake First Nation Ventures and as a strategic planning and governance advisor to First Nations organizations situates me at the intersection of theory and practice, where I engage directly in institutional development, trust governance, and community economic strategy. Across these roles, my perspective is informed by a commitment to relational accountability, the revitalization of Indigenous governance systems, and the advancement of sustainable, self-determined futures for our Nations.

Methodology

Our research is grounded in Indigenous research methodologies that prioritize community-engaged learning, relational accountability, community benefit, respect for Indigenous ways of knowing, and the principles of OCAP®—ownership, control, access, and possession of data—as articulated by the First Nations Information Governance Centre (Chilisa, 2012; First Nations Information Governance Centre, 2025; S. Wilson, 2008). Our research collaboration began in summer 2024 with reaching out to Ya'thi Néné Lands and Resources, an Indigenous-led and owned non-profit organization that protects the interests of the land and people on behalf of Athabasca Basin communities. After initial conversations with staff members and our proposal of a research project adhering to their guidelines, our project was approved by Ya'thi Néné Lands and Resources. The organization has since supported our work by announcing our visits to community leaders, communicating regularly via email and video chat, providing guidance and advice, coordinating visits, helping us meet community members, and reviewing our draft publications. The research was approved by the University of Regina Research Ethics Board (REB #896) after the collaboration was solidified. Ongoing colonialism has damaged trust with outsiders, and our work stems from a commitment to build trustworthy relationships, respect and honour Indigenous voices, and provide useful information for local communities.

Semi-structured interviews with community members were conducted during winter/spring 2025, when one member of our research team spent four days in Black Lake Denesųłiné First Nation. Other interviews were conducted when community members travelled to Prince Albert or Saskatoon for other meetings. Overall, we spoke with nine members of Black Lake, Fond du Lac, and Hatchet Lake Denesųłiné First Nations: Elder Billy Adam (former firefighter), Terri-Lynn Beavereye (Black Lake Ventures Executive Director), David Bigeye (educator and former councillor), Derek Cook (entrepreneur and former community land technician), Ricky Robillard (uranium mine community relations liaison and former Chief), Elder Freddie Throassie (uranium mine employee and former Chief), Ray MacDonald (entrepreneur and former councillor), Elder John Toutsaint (current and former councillor), and Elder Rosalie Tsannie-Burseth (educator, doctoral researcher, and former Chief). Most of these people are also land users. We also interviewed staff at organizations that support these First Nations, including Ya'thi Néné staff members Dana Kellett and Tina Giroux-Robillard. (We also spoke with representatives from Athabasca Basin Development and Prince Albert Grand Council, but these conversations were not used in the development of this article.) All participants gave informed consent and understood that their name would be connected to their responses and included in publications.

We first asked questions to determine community members' knowledge and observations of climate change. We then discussed businesses currently active in the northern communities. Finally, we asked whether there were any current businesses addressing climate change and what climate-related business ideas seemed most interesting to community members. For this final question, we provided a two-page visual aid with icons and text describing more than two dozen possible climate-related businesses, such as firefighting, greenhouses, and solar panels.

We transcribed interviews and, using qualitative data analysis, we identified key themes in the interviews. Our heavy use of quotations in the following text is intentional and serves to ensure Athabasca Denesųłiné voices are central to how findings are interpreted and presented. Drafts of this article were shared with Ya'thi Néné Lands and Resources for feedback prior to publication.

Potential Nature-Based Solutions for Climate

Wildfire Management

Wildfires have become increasingly common in Northern Saskatchewan. Across Canada, the annual area burned by wildfires is four times higher than in the 1970s (Rutgers, 2025), and models suggest that annual area burned will increase another two to five-and-a-half times by 2100 (De Groot et al., 2013). In 1995, wildfire impacts cost Canada $11 billion per year, and by 2016, single fires alone cost $10.9 billion (Alam et al., 2019; Schaenman et al., 1995). Climate change is the

driving force behind these increases, with drought, high temperatures, a longer fire season, more lightning strikes, and higher winds leading to megafires that threaten ecosystem resilience and release large amounts of carbon into the atmosphere (Buettner, 2018; Hanan et al., 2021; Scholten et al., 2024). Forests that were once climate-limited systems due to high moisture and humidity are becoming fuel-limited systems, and there is a lot of fuel to burn (Hanan et al., 2021; Krawchuk & Moritz, 2011). Instead of rare-large-intense fires, we are now seeing common-large-intense fires (De Groot et al., 2013; Scholten et al., 2024).

Indigenous people in Canada are 30% more likely to be evacuated due to wildfire and to suffer its impacts (Hoffman et al., 2022). Wildfire smoke makes air unsafe to breathe, evacuations and power failures can result in the closure of local businesses, and infrastructure may be damaged (Rutgers, 2025; Zahara, 2020). Food security is also deeply affected, as traditional harvesting areas burn (MBC News, 2018). For the Athabasca Denesųłiné, barren-ground caribou is a primary food source, and fires destroy caribou winter habitat, causing caribou to avoid burned habitats for decades (Kriese & Barnett, 2025; Thomas, 1998).

Wildfire is intimately tied with colonization of Indigenous Peoples in Canada and has been used by Euro-Canadian settlers as a means of control and appropriation for centuries (Zahara, 2020). Prior to colonization, archaeological evidence suggests that Indigenous Peoples living in what is now Northern Saskatchewan relied on limited, small-scale burns to control and manage traplines and fuel loads around villages (Gulig, 2002) and for communication (Settee, 2020). These cultural burns may have increased biodiversity, improved food security by promoting berry and moose habitat, reduced pests, built community capacity, and decreased the risk of severe wildfire (Berkes & Davidson-Hunt, 2006; Christianson et al., 2022; Hoffman et al., 2022; Kriese & Barnett, 2025). Fewer fires burned after the introduction of smallpox in the eighteenth century, likely from population declines in Indigenous communities, and thereafter cultural burning was criminalized by colonial governments. During the Great Depression, Saskatchewan encouraged settlers to move northwest into forested parts of Saskatchewan, and the government promised fire suppression to make the forest a safer place to live. Although settlers were enticed by the promise of fire suppression, some settlers set fires to clear land for agriculture and mineral prospecting. Instead of avoiding dry periods or high winds as First Nations cultural burners did, prospectors used these weather conditions to burn as much land as possible; when undergrowth grew back the next season, another fire was lit to remove it. These frequent, large fires killed animals and displaced migratory and resident species. First Nations people experienced hunger as a result. Barren-ground caribou especially avoided burned and regenerating areas, and in the 1930s, Saskatchewan experienced the first of several "caribou crises" (Gulig, 2002; Zahara, 2020). After the Second World War, fire suppression increased again, and beginning in the late 1950s, the province recruited and conscripted Indigenous firefighters. Fire management continues to be an important source of employment for Indigenous northerners, whose families have now been paid firefighters for three to four generations (Zahara, 2020).

Use of wildfire to control First Nations is not confined to the past; the Saskatchewan government continues to use fire to control First Nations today. In 2004, Saskatchewan's Ministry of Environment, the provincial department that oversaw forestry and wildfire until 2019,[2] implemented a new, values-based fire management policy. Under this policy, wildfires are allowed to burn until they endanger something "of value" to the province, such as human life, communities, infrastructure, commercial timber, remote structures, or natural resources (Saskatchewan Public Safety Agency, n.d.). Prioritized values do not include cultural sites, traplines, key areas for food security, or other items important to First Nations people. Northerners call this policy "Let-it-Burn" (Dallyn, 2012). The Northern Trappers Alliance, representing Northern Saskatchewan trappers, reports that the policy has "decimated wildlife and destroyed cabins [and] has had a serious impact on [trappers'] ability to make a living and thrive in a culturally sustainable way in their own home territory" (Northern Trappers Alliance, 2014). Other community members have likened the policy to the massacring of buffalo in the 1800s (Zahara, 2020). Northern First Nations routinely call for more fire suppression instead of less, and this call stems from a deep knowledge of and relationship with the land and generations of firefighting expertise (Zahara, 2020). With the decision to only prioritize provincial values, managed wildfire shifts from potentially destructive or rejuvenating force to a colonizing one (Neale et al., 2024). The Northwest Territories' fire management plan does consider social and ecological values, such as burial grounds, protected areas, and wildlife habitat; the plan is critiqued by local Indigenous communities, however, for excluding Indigenous Peoples from decision making, allowing sacred areas to burn, and not prioritizing water quality (Baker, 2025; Northwest Territories, n.d.).

Lack of sufficient provincial fire response and increasing fire risk due to climate change suggest that stepping up fire management could offer significant benefits beyond carbon storage. Increased wildfire management would offer a combination of year-round jobs related to education and mitigation, as well as physically demanding seasonal jobs fighting fires. Additionally, preventative forest management, such as removal of dead, fallen wood near communities and culturally important sites could offer nearly unlimited seasonal employment. The Northern Inter-Tribal Health Authority coordinates fire responses for Northern Saskatchewan Indigenous communities using Indigenous values, and Prince Albert Grand Council is an Indigenous organization that provides various fire

safety and management programs in the North, including fuel management projects, firefighter training courses, cultural burning in the Saskatchewan River Delta, a community fire safety program, emergency preparedness training, search and rescue, and more. Each of these programs could be supported financially and with additional staff. Perhaps, in this new fuel-limited fire regime, cultural burning during cool, wet seasons, which has been practised by other Indigenous Peoples across the Arctic and Subarctic, could mitigate catastrophic wildfires for the Athabasca Denesųłiné (Degteva & Vourc'h, 2025; Kriese & Barnett, 2025). As climate shifts, fire response must shift, too.

Reforestation

More than half of Canada's carbon sequestration via natural climate solutions could come from reforestation (i.e., restoration of forest cover, urban forests, riparian tree planting, silvopasture, and tree intercropping) (Drever et al., 2021). Reforestation projects plant trees in areas where trees were recently killed or removed, such as by logging, wildfire, disease, or industrial activity. Reforestation speeds up regeneration and controls which species reestablish. Currently, in the Northern Saskatchewan boreal forest, reforestation takes place during mine reclamation and after some wildfires; trees may have trouble establishing on hard-packed, post-industrial soil, and extreme wildfires challenge natural regeneration and facilitate ecosystem transitions by destroying seeds and root systems of pre-existing trees and killing young forests before they can reproduce (Arctic Council, 2024; Macdonald et al., 2015). Until recently, most northern boreal forests in Canada experienced strong post-fire regeneration; however, the past few years of extreme forest fires suggest this may be changing. Pine is outcompeting spruce, and broadleaf trees, like birch and aspen, may replace conifers. In some areas, trees may not grow back at all, and the land may experience larger ecosystem transitions. These changes have implications for the people who use the land (Arctic Council, 2024; Carty, 2023).

A variety of organizations and funders have partnered with local groups to plant trees in Northern Saskatchewan. For example, Environment and Climate Change Canada funded a post-wildfire reforestation project led by Clearwater River Dene Nation in Northern Saskatchewan (McLernon, 2023); the apparel company Tentree has supported tree planting across Canada, including in Lac La Ronge Provincial Park (CBC, 2016); the Blue Green Planet Project helped Shoal Lake Cree Nation reforest after a wildfire (Blue Green Planet Project, 2023); and Saskatchewan's Ministry of Environment has been planting trees to restore human-caused disturbances in woodland caribou habitat, such as along old roads, trails, and seismic lines (Saskatchewan, n.d.).

Reforestation is typically well supported by communities as a means of mitigating wildfire and mining impacts, protecting food security and livelihood, and reinstating ecosystem services. The need for reforestation will grow as the climate continues to change. Reforestation projects, along with afforestation and assisted migration projects, offer opportunities for employment in tree cultivation, planting, and transportation. Tree planting is seasonal, physically active work with good wages. This employment could be ideal for young adults who are off school in summer. Tree nurseries could grow culturally important plants and sell to research projects and communities around the country. Financial inputs could have a snowball effect, such that planted areas could provide sites from which non-timber forest products could be gathered and then sold, such as berries or medicines.

Afforestation

Afforestation is a meaningful NbSC when used in the right place, at the right time. Afforestation refers to planting trees on land where trees have not grown for at least 50 years (Schirmer & Bull, 2014). Afforestation projects most often take place on agricultural land, but can also take place on grasslands, degraded areas, and alpine and high-latitude environments (Ojuok, 2020; Trottier, 2024). As with reforestation projects, the new forests store carbon, diversify the landscape, and contribute to local livelihoods.

Although afforestation is supported by the United Nations Framework Convention on Climate Change (UNFCCC) and the UN Strategic Plan for Forests 2017–2030, high-latitude afforestation for climate benefit is controversial (UN Clean Development Mechanism, 2025; UN Forum on Forests, 2017). Afforestation was not considered a natural climate solution for Canada in Drever et al. (2021). Of afforestation projects that have taken place in cold locations where trees do not naturally grow, all known projects occurred in mountainous environments (i.e., high-elevation), rather than in the Far North (i.e., high-latitude) (Gibbon et al., 2010; Grätz et al., 2024). For example, in the Austrian Alps, afforestation projects date back to the early 1900s to prevent avalanches, and as of 2017, the Austrian Alps region has over 3,000 small, high-elevation afforestation sites covering 9,000 hectares (Grätz et al., 2024). Feasibility studies of carbon storage along high-latitude, non-mountain treelines date back to the early 2010s. Scientific interest was sparked by the projection that increased temperatures, access to additional soil nutrients, increased atmospheric carbon dioxide, and shorter winters could lead above-ground biomass (and therefore above-ground carbon storage) in boreal forests to increase 13% by 2100 and allow the treeline to move north (Larjavaara et al., 2021; Pappas et al., 2023). While these outcomes could increase carbon storage in above-ground biomass,

some scientists worry that high-latitude afforestation could have overall negative impacts on climate: potential increases in carbon storage in trees could be offset by speeding up permafrost melt, losses in soil carbon, decreased albedo (i.e., reflectivity of the Earth's surface), and increased wildfire (Dsouza et al., 2025; Hansson et al., 2021; Kristensen et al., 2024; Lemprière et al., 2013). To avoid these negative impacts, high-latitude afforestation must be completed in highly context-dependent manners and with follow-up studies to ensure net positive climate effects.

High-latitude afforestation projects in Northern Canada also require context-specific considerations due to potential interference with barren-ground caribou, historic lack of engagement with Indigenous communities, and respect for Indigenous sovereignty (Kayseas & Baldwin, 2025). As trees grow more thickly along the treeline and into the tundra due to climate change, barren-ground caribou travel through different areas (Dokis-Jansen et al., 2021). One study describes this change:

> Interviews also identified another pattern of change attributed to climate or global warming, specific to the treeline and caribou movement patterns along the treeline. Pete Enzoe describes the northeasterly shift in the use of key crossing sites from the East Arm of Great Slave Lake (Pike's Portage) to K'ásba Deze at the north end of Ɂedacho Kué: ' … And then the trees growing, too, way back when I was growing up, the trees were far apart, and now it's growing thicker. Yeah, the climate is changing.'
> (Dokis-Jansen et al., 2021, p. 300)

Planting additional trees could cause barren-ground caribou to move further away from the people who rely on them for food. If afforestation is considered, it must be done selectively in areas that are not used by caribou and that provide maximum climate benefits.

Assisted Migration

Assisted migration can facilitate climate adaptation among trees that are planted via reforestation or afforestation (Pelai et al., 2021). Within a tree species' range, trees genetically adapt to local conditions. For example, a black spruce in southern Saskatchewan may be more drought and heat tolerant than a black spruce in northern Saskatchewan. Scientists can use this to their advantage by moving the tree adapted to warm, dry conditions to a cooler, wetter place that is expected to become warmer and drier over the next twenty-plus years. One method of assisted migration, known as resistance, aims to maintain current species composition of a forest over time by planting trees more resilient to future climate conditions. Another method of assisted migration aims to improve forest resilience by increasing layers in a forest and increasing species diversity. The third method of assisted migration helps to transition a forest; in this case, trees are planted beyond the current range of the species. This is beneficial if the climate is projected to change very quickly or human or natural barriers limit natural migration (Prasad et al., 2024; Simply Science, 2024).

Assisted migration could be beneficial across Northern Saskatchewan. Assisted migration has high public acceptance; within-range migration is supported by more than half the population and nearly 100% of foresters according to a study from British Columbia (Pelai et al., 2021). The primary risks include introducing invasive, non-native species including insects, displacement of native species, reduced genetic diversity, ethical concerns, and regulatory challenges (Pelai et al., 2021; Twardek et al., 2023). Very little research explores the views of Indigenous Peoples on assisted migration (Pelai et al., 2021; Rayne et al., 2020). Humans have a long history of moving plants for food, medicine, ceremony, and more (Silcock, 2018). Assisted migration today could be particularly beneficial for Indigenous communities, as species of interest could be targeted to ensure their resilience to climate change (Rayne et al., 2020).

Assisted migration also presents emerging opportunities for economic development in northern Indigenous communities. Implementing assisted migration projects requires localized climate modelling, species selection, nursery production, tree planting, and long-term monitoring—all of which could support job creation and skill development (Moreira et al., 2024). For example, Indigenous-owned nurseries could cultivate climate-resilient species, including culturally significant plants, which could then be sold to restoration projects across Canada. Seasonal and youth employment in seed collection, propagation, and planting would align well with existing land-based skills. Additionally, integrating Indigenous Knowledge systems into assisted migration practices could position communities as national leaders in climate adaptation forestry, creating potential for partnerships with universities, governments, and conservation organizations. If well designed and locally led, assisted-migration projects could not only increase ecological resilience but also provide a foundation for conservation economies that respect Indigenous self-determination while generating meaningful livelihoods (Coast Funds, 2022).

Indigenous-Led Area-Based Conservation

Indigenous-led area-based conservation (ILABC) projects are places where colonial practices of protection and conservation are redefined to centre Indigenous ways of knowing. As of 2023, more than 50 Indigenous communities have received federal funding to establish ILABC projects (Mansuy et al., 2023). Indigenous Guardians, local Indigenous stewards, often act as "park rangers" within ILABC, monitoring ecological health, maintaining cultural sites, and protecting sensitive areas and species. Across Canada, more than 240 Guardians programs have received funding, employing almost 1,500 Guardians (Environment and Climate Change Canada, 2025). Canada is motivated to support ILABC because ILABC offers one of the most effective ways to conserve biodiversity, meet the goal of protecting 30% of lands and water by 2030, and honour commitments to reconciliation (Mansuy et al., 2023).

ILABC helps Indigenous communities connect to place and culture, revitalize language, heal, provide environmental stewardship, support reconciliation, and develop economically (Indigenous Circle of Experts, 2018). ILABC can form a foundation for local Indigenous economies by diversifying revenue sources and retaining Indigenous community members who may otherwise move to urban centres for employment (Indigenous Circle of Experts, 2018; Mansuy et al., 2023). Revenue sources associated with ILABC include ecotourism, transportation, lodging and food, research, Indigenous Guardians, fisheries and traditional foods, carbon credits, education, and more. Guardians can act as tour guides, site hosts, field researchers, surveyors, enforcement officers, restoration workers, collaborators, emergency responders, and in other roles, providing the human resources necessary for land stewardship. Funding for Guardians can stem from industry and resource user fees and agreements, partner organizations, government funds, and community and private donors (Nature United, 2026). For example, some of the funding for Ya'thi Néné Lands and Resources' current Guardians program comes from exploration and collaboration agreements with mining companies operating in the Athabasca Basin. Guardians programs can be profitable beyond direct income too: for every one dollar invested in Guardian programs, $2.50 to $20 of intangible social, economic, cultural, and environmental value is created (Coast Funds, 2019; Social Ventures Australia, 2016). For example, financial investments into the Guardian Watchmen of the Great Bear Rainforest in British Columbia offer a one to ten return on investment when growth in intangible community values—like taking care of community, governance authority, community well-being, cultural well-being, economic opportunities, community capacity, and financial well-being—are converted to financial value (Coast Funds, 2019).

The Province of Saskatchewan supports increasing protected areas to 12% by 2030 under the condition that proposed protected areas promote economic development. In Northern Saskatchewan, Indigenous-led area-based conservation would therefore be most well-received by the government if they do not interfere with resource exploration and extraction. At the same time, mining and exploration companies desire certainty, social licence from communities, and access to existing and potential future mineral holdings, so mining companies may offer support for ILABC to strengthen relationships with communities (Henderson, 2021). Ya'thi Néné Lands and Resources is developing four ILABC projects, called Etthén Néné Stewardship Areas or Barren-Ground Caribou Lands Stewardship Areas, in Northern Saskatchewan. Etthén Néné Stewardship Areas are high-use areas where caribou migrate and members harvest. These areas are rich in cultural history, stories, and teachings and serve as living classrooms for local First Nations (Ya'thi Néné Lands and Resources, 2025b). To support these lands as the climate changes, the Etthén Néné Stewardship Areas in Nuhenéné should have climate management plans. The plans should contain provisions to protect climate refugia (places where the local climate is expected to remain more stable) and climate corridors (associated transition zones) so that conserved areas remain relevant, high-impact locations even as species distributions alter with climate change (Martinez, 2025; N. Wilson, 2018).

Supporting Barren-Ground Caribou

Barren-ground caribou are vital for the physical, cultural, social, and spiritual well-being of the Athabasca Denesųłiné. Barren-ground caribou are also a keystone species for ecosystem function and impact carbon storage and nutrient cycling in plant communities via grazing. Large herbivores, including caribou, have net climate benefit on tundra landscapes; as 1) grazing targets shrubs, which increases albedo and decreases permafrost melt; 2) animals compact snow when walking and digging for food, which allows cold air to penetrate deeper into the ground; and 3) waste fertilizes the ground and speeds plant growth, storing carbon in both above- and below-ground vegetation (Windirsch et al., 2022). Barren-ground caribou are recognized as threatened in the Northwest Territories and face challenges due to climate change, diseases and parasites, disturbance, predators, wildfires, and cumulative effects (NWT Species at Risk, 2026).

The Beverly and Qamanirjuaq Caribou Management Board co-manages the two barren-ground caribou herds that winter in Nuhenéné. In 2023, the Management Board released a management plan detailing measures "to ensure the long-term conservation of the … herds for Indigenous peoples who wish to maintain a lifestyle that includes the use of caribou, as well as for all Canadians

and people of other nations" (Beverly & Qamanirjuaq Caribou Management Board [BQCMB], 2023, p. 8). The management plan lists a limited number of climate impacts on caribou but recognizes that more information is needed about each herd's seasonal range use patterns and habitat use, activities that damage caribou habitat, how much time is required for recovery of disturbed areas, ways to avoid or reduce negative effects on habitats, and impacts of climate change on caribou habitat and well-being. Current recommendations include restricting development and industrial disturbance in certain areas, wildfire management to protect forested winter range, and stronger requirements for how industrial projects are planned, approved, monitored, and enforced. A priority is assessing caribou habitat and maintaining corridors of unburned forest to connect areas of productive habitat (BQCMB, 2023).

In addition to the recommendations from the Beverly and Qamanirjuaq Caribou Management Board, our research led us to several projects supporting barren-ground caribou. First, in South Slave Lake, Northwest Territories, lichen is being transplanted after wildfire and industrial use to accelerate the restoration of functioning winter range for barren-ground caribou (NWT Species at Risk, 2023). Since greening of the tundra and northward movement of the treeline are likely impacting caribou movements (Dokis-Jansen et al., 2021), forest encroachment prevention might also be considered. Third, the Inuvialuit Regional Corporation owns 6,000 reindeer that provide cultural training, food security, and employment (Brown, 2024). This would do little to support migratory barren-ground caribou but could serve as an economic development project for communities and provide hands-on learning about cultural traditions, especially if the barren-ground caribou population shrinks below safe harvest levels. This would, however, change the foundation of the Dene relationship with caribou from opportunistic hunting of a migratory species to herding and husbandry (Löf & Naomi, 2011). Finally, a breeding and conservation program by the West Moberly First Nation and Saulteaux First Nation is conserving the Klinse-Za woodland caribou in British Columbia. Working with the province and community groups, the First Nations increased the size of the herd from 38 individuals in 2013 to 113 in 2022 using predator reduction, maternal penning, and long-term habitat protection. The project has created jobs in research and conservation and is increasing cultural connection to caribou: youth collect lichen, community members engage in conservation discussions, a First Nations non-profit has been created, and the First Nations hope to soon harvest one to two individuals for ceremonial use (Arseneault, 2022; Lamb et al., 2022). Although woodland caribou are a different subspecies from barren-ground caribou and face different challenges, the Klinse-Za woodland caribou project suggests that conservation projects for barren-ground caribou could bring jobs, cultural revitalization, youth engagement, and ecological benefits to Nuhenéné as well.

Athabasca Denesųłiné Perspectives

In conversations with Athabasca Denesųłiné community members, we discussed potential nature-based solutions for climate for Nuhenéné and how local Indigenous Knowledge and values bring a Two-Eyed Seeing perspective that could alter how NbSC are considered and evaluated. Community members expressed the desire to continue to live off the lands and waters and care for Nuhenéné in the way that they have for millennia. People were most interested in NbSC that respond to climate impacts currently affecting communities. Managing wildfire and supporting caribou were popular solutions, and Indigenous-led area-based conservation peaked interest due to ongoing discussion around establishing ILABC in the Athabasca Basin.

Support for NbSC projects was conditional, however, and many interviews began with community members expressing generalized resistance to "land management." Community members questioned whether NbSC were green colonial projects that went against the best interests of the First Nations. "Land management" and "climate solutions" were seen to be the government's way of controlling Athabasca Dene Traditional Territory and extracting additional resources from the land. Taking no action was viewed as better than allowing outsiders to manage the land in ways that might potentially be extractive or harmful to caribou and Dene ways of life. Concerns about sovereignty were most apparent in discussions about NbSC that addressed emerging, projected, and minimally known climate impacts.

Acknowledging green colonialism helped us shift conversations towards Indigenous stewardship and Two-Eyed Seeing and allowed more nuanced perspectives on NbSC to emerge. Some of the same people who said they did not want to see land management projects later clarified that they supported land stewardship for climate change, "especially when it's gonna be bringing in more caribou to the people" (MacDonald, 2024). Another community member, Ricky Robillard (2024), said that he supports land-based projects that aim "to save our communities, to save our assets." Community members' comments align with the statement on Ya'thi Néné Lands and Resource's website, as described in Henderson (2021), stating:

> The Athabasca Denesųłiné First Nations and Athabasca Basin Communities desire greater control and management of their traditional territories and the chance to benefit from any future economic opportunities … it is fair to say that the greater the degree of local control achieved, the more likely the Communities will be to favour an agreement. The Communities are also in favour of economic development that is sustainable, protects traditional lands and waters, and benefits local people. They are generally opposed to development that damages the environment and principally benefits outsiders.

To address concerns about colonialism and sovereignty, we name three requirements that must be met before an NbSC is considered: leadership by Indigenous Peoples, stewardship of the land in line with Dene values, and recognition of the legacy of colonialism. We also used community members' responses to create criteria to define which NbSC are most suitable for Nuhenéné; the most appropriate NbSC support connection to land, conserve barren-ground caribou, increase economic well-being (both short-term jobs and the long-term creation of a conservation economy), and foster common goals amongst community members.

Wildfire Management

The Athabasca Denesųłiné shared how their communities are heavily impacted by wildfire, and community members strongly support wildfire management projects, including more fire suppression to protect Dene assets.[3] During wildfires, homes and lives are at risk, evacuations are stressful, and traplines and cabins are destroyed. The impacts on Elders are important, as Ray MacDonald (2024) explained: "It's a lot of stress, a lot of strain on the people, especially when there's a forest fire and they have to be relocated. There's some Elders that are not capable of moving around. And we're risking their lives when we let these fires burn." After wildfires, barren-ground caribou avoid burned areas, and community members must travel further to harvest caribou. Ricky Robillard (2024) described how harvesters struggle after losing access to caribou: "They've lost their means of survival, revenue … It's taken away a lot of their opportunities in terms of economic sustainability." Community members are aware that fire brings new growth, such as additional blueberry bushes, but they do not see this as a reason to let vast swaths of forest burn.

Prince Albert Grand Council leads fire management activities and trainings in the communities, but when large fires burn, the First Nations still rely on the government for firefighting. David Bigeye (2025) explained that "If there's a forest fire starts, you call in [to the province], they won't put it out. They'll just say let it burn and then it stretch out [i.e., spreads]. The whole Canada is just brown now." Community members wish they could address the fires. "Do we have any resources to fight it?" posed Freddie Throassie (2025), "No, we don't. Nothing whatsoever … We can do a lot of things if only we could have the right people in there and get the fundings, get the project going."

The province's wildfire management decisions have fostered a sense of mistrust among the First Nations. "People don't realize that this is a climate change, they blaming the government right now for all this, this burning in the area," explained Freddie Throassie (2025). One community member, harking back to how Euro-Canadian settlers, supported by the government, once burned forests to enable mining and exploration, believes the government may be setting fires again to enable mining (Toutsaint, 2025). Another community member suggested that the government has allowed the forests to burn so that now the government can come in, plant trees, and expand industry in the North (Bigeye, 2025).

Community members also wish that wildfire management engaged Indigenous Knowledge. One person noted that the province is not incorporating Indigenous firefighting knowledge into fire management and is relying on technology that does not seem to help. Billy Adam (2024) explained, "Like the Elders would say, best time to fight fire is at night. There's no sun, no wind, it just slowed down." When Adam fought fires, firefighters used hand tools to successfully extinguish fires. Nowadays, there are hose lines and big planes, which have "lots of air [i.e., wind] and then they spread the flames." Adam reminisced, "[If] They were fighting fire like way before, way back in the '60s, you know, then it would have been different." Additional research into modes of firefighting suggests that increased fire intensity may explain the shift from hand tools to planes. Hand tools are effective on fires up to 500 kW/m, hose lines are useful up to 2000 kW/m, and air tankers are used on more intense fires. Current average fire intensity in Canadian boreal forests is approximately 10,000 kW/m and may exceed the air tanker control limit by the end of the century (De Groot et al., 2013). Nonetheless, fires do not burn uniformly, and there may be locations or times of day in which hand tools could be effective. Prince Albert Grand Council's forthcoming Wildfire Resilience Initiative study may offer useful insight into how Indigenous firefighting knowledge can inform fire management in this age of intense, climate-driven wildfire and how this knowledge can be implemented.

When Indigenous Knowledge and values are integrated, wildfire management becomes a top NbSC to pursue, whereas Western science-based provincial wildfire management chronically underfunds this solution. Wildfire management supports people's connection to land by keeping harvesting areas populated with plants, animals, and medicines, protects caribou habitat, provides jobs for community members, protects land that could be used for non-timber forest products or

tourism, and has strong support and consensus amongst the community. As with all solutions, wildfire management is only acceptable if it is done with Athabasca Denesųłiné leadership, is in line with Dene stewardship values, and recognizes the history of colonialism.

Reforestation

Community members see few opportunities for reforestation in the North. Forests around communities are dense and not logged, and forests have been regenerating after wildfire. Reforestation is in line with Dene values, however, for reclaiming mining and exploration sites. Mining and exploration companies clear paths through the forest and create hard-packed platforms for their drilling operations. When the company leaves, sometimes trees are replanted, which community members like to see.

> I think it's a good idea because … They do a lot of land cutting … With the tree replanting after the fact … They've done that on a couple of mine sites that have shut down. There's reclamation, and they've toured local members on that site where vegetation is regrowing and local members like to see that. So I think it would be very well received by membership if the mine companies did something like that to give back to the community, to put that land back to almost at its original state. (Robillard, 2024)

As Ricky Robillard explained, reforestation would be welcomed as a part of mine reclamation, assuming it was carried out it a good way.

Another case in which reforestation might be considered is in burnt areas. Some community members were open to planting trees to speed up regeneration after a fire, but others noted that natural regeneration was occurring and planting trees would not speed up growth by more than a few years. Tree regeneration after wildfire is projected to change with the climate, and further research should examine which species are growing back, in what proportions, how this compares to existing forests, and how changes may impact land users (Arctic Council, 2024; Carty, 2023). If tree planting is planned, assisted migration of more-adapted members of a tree species should be considered.

Overall, reforestation could bring jobs to the community that involve planting on the land and growing plants in nurseries, but it would likely have little impact on barren-ground caribou conservation. Community members are not in consensus that this is the best NbSC to pursue.

Afforestation

Community members questioned whether afforestation is in line with Dene values, let alone whether afforestation would support caribou conservation or have community support. With our foundational requirements not met, we include discussion of afforestation with caution. Community members expressed concern for the muskox, grizzly bear, polar bear, and all of Mother Nature if afforestation occurred. David Bigeye (2025) worried, "And all these wildlife live in there and they're born and used to it. And when we start planting trees there, we're growing vegetation, trees and all that, right. And they're going to change their behaviour." Community members also wondered whether increased vegetation along the treeline would affect barren-ground caribou migration and deter caribou from coming near communities. David Bigeye (2025) asked, "Why would we choose to plant in that area when the caribou migrate in that area?" Ray MacDonald (2024) expressed concern that, "If all this grows in, we might be losing [caribou] forever." There are accounts from the Northwest Territories where greening of the treeline deterred barren-ground caribou, and afforestation would likely exacerbate this problem (Dokis-Jansen et al., 2021).

Additional concerns about afforestation were related to unintended consequences of assisted migration and cultural appropriateness of trees planted. Ricky Robillard (2024) highlighted the need to pay attention to invasive species, be cautious about insects associated with imported vegetation, and receive input from community members on decisions. He said:

> There's like that Dutch Elm disease and all that, but we don't have these kind of trees up in the area here. Maybe different species of, you know, different types of trees may bring different species up here, or insects. But that's something that needs to be investigated more, what would be safe to grow up in our region. And at the same time, it should be consulted with our members, membership, you know, bringing in something that's like an import into the North. (Robillard, 2024)

Like many, Robillard has concerns about moving species into new areas via assisted migration. These concerns would apply to reforestation projects as well.

Afforestation risks disregarding Dene values and decreasing access to barren-ground caribou, an essential species for the Athabasca Denesųłiné. The carbon storage potential of this option must not distract from these real risks to threatened species and already marginalized people.

Indigenous-Led Area-Based Conservation

Community members are cautiously optimistic about ILABC, and the communities are already making moves towards ILABC. Ya'thi Néné Lands and Resources has been hosting meetings for community members to develop four ILABC projects, or Etthén Néné Stewardship Areas, in the Athabasca Basin. In addition to these proposed areas, community members ratified the North of 60 Final Agreement in June 2025, giving the Athabasca Denesųłiné First Nations treaty rights in the Northwest Territories and Nunavut;[4] the agreement includes core funding that could be used for community monitoring of the land, which could be managed via ILABC, albeit without the official designation. Community members identified benefits of ILABC to include protecting barren-ground caribou and First Nations high use areas from mining and exploration, economic development and diversification, and greater land sovereignty. In the past, on-the-land camps have been interrupted by unannounced helicopters and exploration activities, and ILABC could protect from these unexpected encounters (T. Giroux-Robillard, personal communication, April 1, 2025). ILABC could also bring tourism, which is seen by many community members as a worthwhile pursuit that could bring communities additional jobs and income, although some worry about tourists wanting to purchase land in the area or otherwise undermining Indigenous economies and ways of life. ILABC supports scientific goals of carbon storage and biodiversity conservation through land stewardship, while also supporting Denesųłiné needs for connection to land, caribou conservation, economic opportunity, and likely community acceptance.

Supporting Barren-Ground Caribou

Barren-ground caribou are the foundation of Dene life, and community members prioritize well-being of and access to caribou. People already see the impacts of wildfire and warmer temperatures on barren-ground caribou, and they are worried.

> A lot of [our culture] has got to do with hunting caribou and all that. If there's a big climate change, the caribou and that is going to be further and further and further and it'll be even harder to get. And the lifestyles will have to change with it too. And slowly we'll be losing our identity as Dene people if the climate changes drastically. (MacDonald, 2024)

Already, some years, families are not able to harvest enough or any meat (Cook, 2025). The Athabasca Denesųłiné NeNe Land Corporation created an Athabasca Denesųłiné Barren-ground Caribou Relationship Plan[5] in hopes of protecting caribou (BQCMB, 2024). The plan is not yet public, and not yet known to what extent it addresses climate change.

Community members are supportive of land stewardship that would benefit barren-ground caribou, such as ensuring community members follow traditional harvesting protocols, protecting areas important for caribou from industrial development, and increasing fire management. We did not ask specifically about reindeer herding as a climate adaptation, but Terri-Lynn Beavereye (2025) shared that some community members are interested in raising other animals like chickens, turkeys, and pigs. Given the reverence people have for caribou, confining and domesticating caribou may be seen as disrespectful; importing reindeer from Nordic nations may be more appropriate. Building relationships with Nordic reindeer herders may be beneficial in other ways as well. Rosalie Tsannie-Burseth (2024) mentioned visiting reindeer herders in Norway and trying "to connect them to the [Prince Albert Grand Council] and back home, for them to come and talk to our community and talk about how they can work with caribou to protect it." Nothing came of this, as far as she knows, but Tsannie-Burseth's experience shows openness to integrating herders' knowledge and techniques into caribou management.

Barren-ground caribou conservation is both an NbSC and a measure of Dene support for NbSC. Caribou conservation is in line with Dene land stewardship values, and conservation supports connection to land, economic well-being, and community cohesion. Without Two-Eyed Seeing, caribou conservation might be undervalued, as access to caribou is a higher priority for many Indigenous people in Northern Canada than to the average Canadian.

Community Capacity and Funding

Community members are optimistic that NbSC could benefit their communities and are interested in engaging in work and businesses opportunities. Community members' abilities to engage Two-Eyed seeing ensures maximum climate benefit without disregarding community needs, values, and priorities. Many people already operate businesses or have plans to start ventures that could align with NbSC-related activities, such as cultural tourism, ecological monitoring, food security initiatives, and renewable energy. For instance, Indigenous-led nurseries growing culturally significant and climate-resilient tree species could supply reforestation and assisted migration projects. Similarly, local contracting companies could support wildfire mitigation and fuel reduction efforts, while youth might find employment through Guardian programs, research partnerships, or data monitoring initiatives.

Youth engagement is especially valued, and Rosalie Tsannie-Burseth (2024) reported that youth responded eagerly to the prospect of working for land-based projects associated with the North of 60 Agreement:

> The youth, it's unbelievable. They like going out on the land … And when I told them about this North of 60 project, you know, one day you're going to go on the land, you're going to manage it, you're going to patrol our land. You could just see it in their face, right? They're all excited about it because it's monitoring our own backyard.

Given youth's enthusiasm for working with land-based projects, similarly Indigenous-led NbSC projects would likely garner interest and participation. With proper support, these projects can help create a robust, self-sustaining conservation economy that diversifies revenue streams and decreases dependence on extractive industries.

A foundation for any NbSC project is leadership by and collaboration between local organizations and individuals. Groups that currently organize land-based activities in Nuhenéné include Prince Albert Grand Council; Ya'thi Néné Lands and Resources; the Athabasca Denesųłiné NeNe Land Corporation (who represent the First Nations in the North of 60 Final Agreement negotiations; their operations may be taken over by Nįh hoghedi Koé, the North of 60 Treaty Office); the Beverly and Qamanirjuaq Caribou Management Board; Black Lake Ventures; Hatchet Lake Development; Fond du Lac Development Corporation; and the band offices and schools of Black Lake, Fond du Lac, and Hatchet Lake Denesųłiné First Nations. Ya'thi Néné Lands and Resources currently manages Indigenous Guardians and land use in Nuhenéné. Cameco and Orano, the two biggest mining companies in Northern Saskatchewan, could also be engaged as funding partners or supporters of NbSC, particularly where reclamation or stewardship intersects with their operational areas. (Ya'thi Néné Lands and Resources' mining and exploration agreements with Cameco and Orano, amongst others, gives the First Nations a stronger and more beneficial relationship with industry than many other Indigenous communities in Canada. The agreements include local environmental oversight, local hiring quotas, use of local businesses' services, training opportunities, and financial compensation.)

The Government of Canada has funding available for NbSC, and market-based funding could be pursued. In 2020, Canada announced its Natural Climate Solutions Fund,[6] a $1.4 billion, ten-year fund that included the 2 Billion Trees project, the Nature Smart Climate Solutions Fund, and the Agricultural Climate Solutions Program (Canada, 2024). Within the Natural Climate Solutions Fund, up to $76.9 million is set aside for Indigenous-led projects (Environment and Climate Change Canada, 2024). However, government funding changes at the whims of political leadership; the 2 Billion Trees project has been cancelled and current federal and provincial priorities have reoriented away from environmental efforts and towards defence and economic development. Accessing funding could help communities initiate NbSC pilot projects with employment, training, and infrastructure components. Many Indigenous communities in Canada are already protecting and restoring ecosystems, and more explicit alignment with natural climate solutions may allow Indigenous communities to access additional funding sources (Powell et al., 2024). However, funding can come with strings attached that can limit Indigenous use of the funds and therefore Indigenous self-determination.

NbSC can also be funded through market-based mechanisms such as carbon and biodiversity offset trading. Offset trading has been critiqued for being a technological, financial, and economic modelling solution to a perceived biophysical problem, rather than the social problem that climate change is; offset trading may not align with Indigenous world views as well as other solutions. Nonetheless, the income from reputable offset trading schemes can fund important work in Indigenous communities that benefits the climate, connection to the land, Indigenous culture, local economies, and more. Offset trading will require substantial administrative and political work before becoming possible for land-based projects on Crown land in Saskatchewan. An agreement like British Columbia's Atmospheric Benefit Sharing Agreement must be developed by the province to clarify First Nations rights before offset trading would be possible.[7] Biodiversity offsets might be more appropriate than carbon offsets for Nuhenéné, as biodiversity conservation, especially related to caribou, is a higher priority for community members than landscape carbon sequestration. Biodiversity offsets could enable the monetization of Indigenous-led habitat protection, caribou stewardship, and culturally important species conservation. Ensuring community support and leadership, accurate monitoring with control plots, and accounting for leakage of impacts into other locations, additionality, and permanence will help offsets be high quality and attractive to investors (Pan et al., 2023). In the absence of full market readiness, communities could also establish direct partnerships with philanthropic or private-sector organizations interested in investing in Indigenous-led climate solutions.

Discussion

Indigenous Peoples have long stewarded lands and waters in Northern Canada. With the rapid rate of climate change, Indigenous well-being, self-determination, and future economic participation is at risk. Meaningful engagement in climate-related stewardship initiatives, such as NbSC, that have intersecting benefits for Indigenous Peoples could mitigate climate risk and support adaptation. A Two-Eyed Seeing approach to NbSC brings together Western science and priorities of conservation and climate storage with Indigenous world views that prioritize relationality, holistic well-being, and sovereignty. This enables solutions that benefit both human and natural communities without sacrificing certain marginalized communities for the "good of the whole."

Building from Reed's conclusions, using colonization as an interpretive lens, engaging with Indigenous Knowledge systems, and respecting the rights and responsibilities of the First Nations (Reed, 2022), we developed a similar set of foundations that must be established before NbSC can be implemented: local Indigenous leadership, alignment with Dene land stewardship values, and recognition of the history of colonialism. These foundations developed as we listened to community members describe their wariness of green colonialism and show enthusiasm towards projects led by community members that intersected with multiple community goals. Language such as "land management" and "climate solutions" was often associated with colonial projects, while terms like "land stewardship" and "land-relationship planning" better resonated with participants (see Nature-Based Climate Solutions Summit, 2020).

A common thread across conversations was the importance of barren-ground caribou and the need to reduce impacts of climate change and potential NbSC on caribou. This finding likely applies to most Indigenous communities living on the North American taiga and tundra, since other communities also rely on barren-ground caribou for sustenance. We established barren-ground caribou conservation as a criterion by which to measure the appropriateness of NbSC for Nuhenéné, along with whether a NbSC supports connection to land, increases economic opportunity, and fosters consensus amongst community members.

Our analysis suggests that the most appropriate nature-based solutions for climate for Athabasca Denesųłiné territory are wildfire management, Indigenous-led area-based conservation (ILABC), and supporting barren-ground caribou. Wildfire management is desired by Athabasca Denesųłiné community members and would have positive benefits for carbon sequestration, biodiversity, barren-ground caribou, and Indigenous land use. Prince Albert Grand Council already provides many wildfire-related services to the communities. ILABC in the Athabasca Basin is underway by Ya'thi Néné Lands and Resources, and their process is worth watching and supporting as ILABC can foster growth in all sectors of the local economy and protect caribou. These approaches also offer the greatest immediate potential for local job creation, infrastructure investment, and youth training programs. Reforestation, particularly in post-mining contexts, and assisted migration of trees also hold promise for local enterprise development, such as planting, nursery production, and seed harvesting. Finally, current research suggests that afforestation has questionable climate benefit and high risks for barren-ground caribou. Other research funded under the same grant as this article may lead to better understandings of specific ecological niches or habitats that could be appropriate for afforestation. Given the current uncertainties, we suggest that afforestation be approached with caution and only pursued further once additional research clarifies its ecological viability and cultural acceptability in this region. Athabasca Denesųłiné communities have the interest, knowledge, and organizational capacity to develop and lead NbSC if appropriate funding is made available.

This research is limited by a small sample size of eleven participants, the majority of whom are from Black Lake Denesųłiné First Nation. The findings should be interpreted with caution as they may not be representative of the Athabasca Denesųłiné nor of all Indigenous Peoples in Northern Canada.

Conclusion

In Northern Canada and beyond, NbSC must be evaluated not only for their environmental outcomes but for their capacity to empower communities. NbSC must support Indigenous connection to land and barren-ground caribou for present and future generations. They must increase both short- and long-term economic opportunity, such as generating local employment and supporting the development of conservation economies through varied enterprises ranging from forestry, fire management, ecological monitoring, research, tourism, and cultural revitalization to food security. Finally, NbSC must generate consensus and support amongst community members rather than conflict and disagreement. NbSC are strategic pathways for community well-being and empowerment. Community needs, values, and priorities must not be treated as an add-on to climate solutions—they must be central, community-defined, and respected. Nature-based solutions for climate are meritless if not aligned with Indigenous rights, values, and long-term visions for the land.

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Notes

1. We purposefully use the term Nature-based Solutions for Climate (NbSC) to encompass both climate mitigation and adaptation. Similar terms, such as natural climate solutions and nature-based climate solutions (NbCS), only include the mitigation component of NbSC (Buma et al., 2024; Ellis et al., 2024). Additionally, we do not use the term, "nature-based solutions," more generally, as this refers to actions that use ecosystems to address any societal challenge, not just climate change (Cohen-Shacham et al., 2016).
2. In 2019, the wildfire management branch moved from the Ministry of Environment to the Saskatchewan Public Safety Agency.
3. While involvement of the provincial government is often perceived negatively, the "Let-it-Burn" policy was described as "the only thing that the government should more focus on" (Bigeye, 2025).
4. The North of 60 Agreement provides land rights above the 60th parallel, in the Northwest Territories and Nunavut, to the Athabasca Denesųłiné First Nations. The First Nations have lived, travelled, and harvested on this land for millenia, yet original agreements (Treaty 8 and Treaty 10) provided no rights to this land (Athabasca Denesųłiné NeNe Land Corporation, 2024; CIRNAC, 2024).
5. The name of the Athabasca Denesųłiné Barren-ground Caribou Relationship Plan is a prime example of Two-Eyed Seeing. A management plan is a Western concept but renaming the document as a relationship plan forefronts Athabasca Denesųłiné world view and values.
6. The Government of Canada uses "Nature-based Solutions" and "Natural Climate Solutions" interchangeably.
7. Poplar River First Nation has been negotiating a carbon finance benefit sharing agreement with Manitoba for more than 15 years (Townsend & Craig, 2020; Wilt, 2020). The project has been delayed due to lack of support from the province (Wilt, 2020).

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Research Article

Melting Boundaries: Navigating Competing Interests for Deep-Sea Mining in the Arctic

Veronica Leonard*

Abstract: As Arctic ice recedes, previously inaccessible seabed resources are becoming increasingly viable for extraction, drawing global attention to deep-sea mining (DSM) in the region. This article examines the evolving legal landscape of DSM in the Arctic, which is fragmented and shaped by competing national interests, unresolved territorial claims, and differing commitments to international law. As the Arctic coastal states weigh the economic potential of DSM against environmental and geopolitical concerns, the region remains a contested space where law, policy, and strategic interests continue to evolve. This article begins with an overview of the international regulatory framework, including the *United Nations Convention on the Law of the Sea* (UNCLOS), the International Seabed Authority, and key regional agreements such as the Arctic Council's guidelines. It then provides an in-depth analysis of the DSM policies of the five Arctic coastal state—Canada, Denmark (Greenland), Norway, Russia, and the United States—assessing how each state's approach is shaped by its political priorities, legal commitments, and strategic interests. A comparative discussion explores how these states navigate their obligations under UNCLOS, their extended continental shelf claims, and their broader geopolitical strategies. Additionally, the article considers the growing interest of non-Arctic states, particularly China, in Arctic deep-sea mining, highlighting the broader international implications of resource development in the region.

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Article de Recherche

Dissolution des frontières : Gestion des intérêts concurrents pour l'exploitation minière des fonds marins arctiques

Veronica Leonard*

Résumé : À mesure que la glace arctique recule, des ressources autrefois inaccessibles deviennent de plus en plus exploitables, attirant l'attention mondiale sur l'exploitation minière des grands fonds marins dans la région. Cet article examine le paysage juridique en évolution de cette exploitation, fragmenté et façonné par des intérêts nationaux concurrents, des revendications territoriales non résolues et des engagements différenciés envers le droit international. Alors que les États côtiers arctiques évaluent le potentiel économique de l'exploitation des fonds marins arctiques face aux préoccupations environnementales et géopolitiques, la région demeure un espace contesté où le droit, les politiques et les intérêts stratégiques continuent d'évoluer. L'article débute par un aperçu du cadre réglementaire international, incluant la Convention des Nations Unies sur le droit de la mer (CNUDM), l'Autorité internationale des fonds marins (AIFM) et les accords régionaux clés tels que les directives du Conseil de l'Arctique. Il propose ensuite une analyse approfondie des politiques d'exploitation des grands fonds marins des cinq États côtiers arctiques — Canada, Danemark (Groenland), Norvège, Russie, et États-Unis — évaluant comment l'approche de chacun est façonnée par ses priorités politiques, engagements légaux et intérêts stratégiques. Une discussion comparative explore comment ces États naviguent leurs obligations sous la CNUDM, leurs revendications de plateau continental étendu (PCE) et leurs stratégies politiques plus larges. Enfin, l'article aborde l'intérêt croissant des États non arctiques, particulièrement la Chine, pour l'exploitation des grands fonds marins, mettant en lumière les implications internationales plus larges du développement des ressources dans la région.

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Part I. Introduction

The world is shifting from fossil fuels to carbon neutral energy sources like hydroelectric, solar, and wind. According to Natural Resources Canada, wind and solar energy are the fastest growing sources of electricity in the country.[1] Vehicles are moving from gas powered to electric; in 2023, one in four new cars sold globally was electric.[2] These green technologies, however, require vast quantities of critical minerals like lithium, cobalt, manganese, and copper. Producing a single electric vehicle requires over 100 kilograms of graphite and copper alone.[3] With global demand for critical minerals projected to triple by 2030 and quadruple by 2040, securing these resources has become a global priority.[4]

The Arctic holds abundant deposits of critical minerals, including rare earth elements, nickel, copper, and cobalt. Some estimate that almost 90% of the world's nickel and cobalt, and 60% of the world's copper, are in the Arctic.[5] While significant reserves exist on land, climate change is also opening new opportunities offshore. As the Arctic Ocean's polar ice cap rapidly melts, previously inaccessible areas of the seabed are becoming available for exploration and deep-sea mining (DSM), which is the extraction of valuable minerals found in polymetallic nodules, ferromanganese crusts, and polymetallic massive sulphides on the seafloor, thousands of metres below the ocean's surface.[6] Notably, polymetallic nodules are potato-sized mineral deposits on the seafloor that are rich in essential metals like manganese, nickel, cobalt, copper, titanium, and rare earth elements.[7]

The Arctic's increasing accessibility has prompted the Arctic coastal states—Canada, Denmark, Norway, Russia, and the United States—to coordinate efforts in asserting jurisdiction over strategic areas of the Arctic Ocean to strengthen their global critical mineral position through increased access to DSM. This shared interest in resource management has heightened the importance of clearly defined territorial claims and reinforced the need for continued international cooperation in the region. This article examines the distinct approaches of the five Arctic coastal states to DSM by comparing their legal frameworks and geopolitical strategies, shedding light on how each nation is positioning itself in this rapidly evolving landscape. First, the international legal framework of deep-sea mining is discussed in detail.

Part II. International Legal Landscape

United Nations Convention on the Law of the Sea

The *United Nations Convention on the Law of the Sea* (UNCLOS) is the international framework governing maritime activities, including those in the Arctic Ocean.[8] UNCLOS divides the world's oceans into different maritime zones, each granting coastal states rights and responsibilities. Roughly 80% of the Arctic Ocean, and over 99% of its seabed, lie within areas under the jurisdiction or pending claims of at least one Arctic coastal state.[9] It is therefore necessary to understand the rights associated with each maritime zone before examining how Arctic states have sought to extend their jurisdiction over additional seabed areas, and their individual approaches to regulating deep-sea mining within and beyond national boundaries.

The maritime zones defined in UNCLOS include the territorial sea, the exclusive economic zone, and the continental shelf. The territorial sea extends up to 12 nautical miles from a coastal state's baseline, where the state exercises full sovereignty, subject to certain navigation rights for other countries.[10] Beyond this, the exclusive economic zone extends up to 200 nautical miles, granting coastal states exclusive rights to the seabed and the water above, although international navigation and overflight rights remain intact.[11]

The legal entitlements of the continental shelf extend 200 nautical miles from a state's baseline, granting the state sovereign rights to exploit seabed resources.[12] Under Article 76 of UNCLOS, states can claim an extended continental shelf beyond 200 nautical miles, provided they present scientific and geological evidence that the seabed is a prolongation of their landmass.[13] Extended continental shelf claims can extend up to 350 nautical miles (or even further if the seabed feature is a natural prolongation).[14]

States must submit extended continental shelf claims to the Commission on the Limits of the Continental Shelf (CLCS), which evaluates the claim's scientific and technical merits.[15] While the CLCS provides recommendations on the outer limits of the continental shelf, it does not resolve disputes between states about overlapping claims.[16] Examples of these disputes in the Arctic include the overlapping claims to the Lomonosov Ridge and Mendeleev Ridge, which are seafloor areas rich in critical minerals.[17] There has also been debate as to whether these areas qualify as submarine ridges or submarine elevations.[18] The extended continental shelf limit for submarine ridges, capped at 350 nautical miles, does not apply to submarine elevations (such as plateaux andrises), which are considered natural extensions of the continental shelf.[19]

The International Seabed Authority

Beyond the continental shelf, UNCLOS designates the deep seabed in areas beyond national jurisdiction—"the Area"—as part of the "common heritage of mankind."[20] This means that no single country can claim or exploit it unilaterally. Instead, activities in the Area are regulated by the International Seabed Authority (ISA), an autonomous organization established under UNCLOS with its headquarters in Jamaica.[21] The ISA is responsible for managing and regulating mining activities in the Area, ensuring that resource extraction is sustainable, and is done for the benefit of humanity as a whole.[22] The ISA manages the exploration and potential exploitation of mineral resources in the Area.[23]

However, the ISA has yet to finalize comprehensive regulations for deep-sea mining, leading to uncertainty about how DSM activities will be governed. In 2021, the Republic of Nauru, acting on behalf of the Nauru registered company NORI, which is a wholly-owned subsidiary of The Metals Company (TMC) headquartered in Canada, triggered the "two-year rule," which gives the ISA two years to establish DSM regulations before mining applications would be processed without internationally agreed-upon standards.[24] This deadline has now passed, suggesting that countries and their sponsored entities (like TMC) could start applying for DSM licences without internationally agreed-upon standards.[25]

While the ISA governs deep-sea mining in the Area, most of the Arctic Ocean's potential DSM activity could occur within coastal states' continental shelves or extended continental shelves, where the ISA's role diminishes. Nonetheless, disputes over extended continental shelf boundaries and the increasing interest in DSM bring the ISA into Arctic geopolitics.

In addition to UNCLOS, the Arctic Ocean is governed by a complex array of multilateral agreements and regional laws. Some of these, particularly those with the most uncertain application regarding DSM, are explored below.

The Arctic Council

The Arctic Council is an intergovernmental forum promoting collaboration on sustainable development, environmental protection, and Indigenous rights in the Arctic.[26] It consists of eight states: the five Arctic coastal states plus Sweden, Finland, and Iceland. It also includes Indigenous Permanent Participants with full consultation rights.[27] The Arctic Council affirms the states' "commitment to the protection of the Arctic environment, including the … conservation and sustainable use of natural resources."[28] The Council facilitates collaboration on Arctic-specific issues, including research and environmental monitoring, focusing on non-binding, consensus-based agreements.[29]

While the Arctic Council has been effective in fostering dialogue and managing soft law agreements, it lacks regulatory authority over issues such as military activities or resource extraction. Additionally, while it has provided guidance for onshore Arctic mining through initiatives such as the ongoing Mainstreaming of Biodiversity in Arctic Mining project, it has not addressed offshore mining.[30] The Protection of the Arctic Marine Environment Working Group has expanded its research topics to include offshore and coastal mining and is developing an initiative to identify best practices for DSM waste disposal.[31] However, the Arctic Council offers non-binding guidelines and recommendations. As Arctic coastal states compete for extended continental shelves and explore potential DSM activities, the lack of regulatory oversight within the Council leaves these developments governed by a patchwork of national policies and international law that is often not specific to the Arctic.

Finally, the Council's efficacy is limited by the cooperation of all states. For example, Russia's invasion of Ukraine has disrupted the Arctic Council, with the remaining seven states pausing collaboration with Russia, in protest of Russia's actions in protest of Russia's actions.[32] This pause has stalled critical initiatives on environmental protection, sustainable development, and scientific research in the Arctic, creating uncertainty about the Council's future effectiveness and cohesion.

Ilulissat Declaration

The Ilulissat Declaration (the Declaration), signed in 2008 by the five Arctic coastal states, reaffirmed their commitment to the existing "comprehensive international legal framework" to govern the Arctic, and asserted that no new framework was necessary.[33] It emphasized the shared responsibility of these states to manage the Arctic Ocean sustainably, including resource exploitation like deep-sea mining, and reinforced their commitment to the orderly settlement of territorial claims. It also highlighted the importance of sharing scientific information, particularly regarding the continental shelf.[34]

However, the Declaration was also controversial. Only the five littoral (coastal) states were signatories, excluding non-coastal Arctic states and Indigenous Peoples. The Inuit Circumpolar Council highlighted that the Declaration neglected existing international frameworks designed to safeguard Indigenous rights and did not sufficiently engage Inuit rights holders.[35] Iceland cautioned that stratification between the Arctic states did not acknowledge the commonality of non-littoral Arctic states.[36] Consequently, the Declaration reinforced the primacy of the Arctic coastal states in determining maritime boundaries and resource rights. Its release coincided with growing interest in Arctic resources and increased accessibility due to climate change, leading some to question its intent.[37]

The Declaration makes no explicit reference to deep-sea mining. If interpreted as adherence to UNCLOS, it theoretically has no impact on DSM in the Arctic. However, the United States has not ratified UNCLOS, largely due to its objections to UNCLOS's framework for DSM. Uncertainty persists regarding the extent to which the United States considers those provisions binding in Arctic waters. This ambiguity has become more pronounced following the April 2025 presidential executive order directing federal agencies to "expedite the process for reviewing and issuing seabed mineral exploration licenses and commercial recovery permits in areas beyond national jurisdiction" under domestic law.[38] The U.S. consideration of an application from TMC, The Metals Company, under this framework suggests a move toward a unilateral licensing regime that could bypass the International Seabed Authority, raising questions about U.S. alignment with international norms and cooperative governance in the region.[39]

While reaffirming existing frameworks, the Declaration effectively prioritizes Arctic coastal states. Excluding non-coastal, and non-Arctic, states and Indigenous voices raises concerns about the willingness of Arctic coastal states to engage in meaningful international collaboration.

Agreement on Enhancing International Arctic Scientific Cooperation

The *Agreement on Enhancing International Arctic Scientific Cooperation*, signed at the 2017 Arctic Council ministerial meeting in Fairbanks, aims to facilitate scientific research in the Arctic by improving access to research areas, infrastructure, and data among the Arctic states.[40] While the agreement does not mention DSM or resource extraction explicitly, Article 6 encourages states to allow access to "identified geographic areas," which includes states' continental shelves and imaging of the Area (beyond national jurisdiction), for scientific purposes.[41] Article 6(2) emphasizes cooperation in processing marine scientific research applications.[42] This supports granting exploration licences for DSM in the Arctic, a necessary precursor to exploitation, to assess ecological impacts and feasibility. Increased scientific access could contribute to baseline data for potential governance of the Area under the eventual ISA framework.

Espoo Convention

The *Convention on Environmental Impact Assessment in a Transboundary Context*, colloquially named the Espoo Convention, or Espoo, obliges parties to assess the environmental impact of certain activities that might have cross-border effects, and to notify and consult affected neighbouring states before approving such projects.[43] Mining is among the regulated activities, and this presumably includes deep-sea mining.[44] The Espoo Convention aims to prevent environmental harm

and foster international cooperation in decision making. While all eight Arctic states have signed, Iceland, Russia, and the United States have not ratified it.[45]

DSM in the Arctic or international waters would have transboundary environmental effects, such as sediment plumes, disruption of migratory species, and deep-sea ecosystem damage.[46] Under Espoo, such activities would require: (1) rigorous environmental assessments before any mining begins; and (2) notification and consultation with neighbouring states, which could include Arctic Council members or other affected states.[47] Proposed DSM projects by countries party to Espoo would also need to comply with the pre-project assessment requirements set out in the Strategic Environmental Assessment Protocol developed under Espoo.[48]

The OSPAR Convention

The OSPAR Convention, formally the *Convention for the Protection of the Marine Environment of the North-East Atlantic*, aims to safeguard marine ecosystems through measures to prevent pollution and protect biodiversity.[49] Adopted in 1992, it applies only to the Arctic waters of Norway, Iceland, and Denmark.[50] It sets high environmental standards for pollution from dumping, but it is uncertain whether DSM waste disposal falls under its definition of dumping or any exceptions in its Annex II.[51] Additionally, its influence on deep-sea mining in international waters or areas beyond its geographical scope is limited to voluntary adoption of its principles as best practices.

Central Arctic Ocean Fisheries Agreement

Several environmental agreements pertain to deep-sea mining in the Arctic Ocean, with varying relevance. The *Central Arctic Ocean Fisheries Agreement* (CAOFA) is particularly significant. The CAOFA, which came into force June 2021, aims to prevent unregulated fishing in the Central Arctic Ocean.[52] Signed by ten parties, including all five Arctic coastal states plus China, Iceland, and others, the CAOFA establishes a sixteen-year moratorium on commercial fishing in the region to facilitate scientific research on the region's biodiversity and assess the potential for sustainable fisheries management.[53] The CAOFA illustrates a constructive response from the five Arctic states to backlash from the Ilulissat Declaration, this time including Indigenous voices and inviting non-Arctic participation.[54]

The CAOFA could serve as useful precedent for a binding DSM agreement between the Arctic (and even non-Arctic) states. It provides a model for adopting precautionary moratoria in under-researched resource sectors such as the emerging DSM sector. Additionally, the CAOFA can be used as precedent for a sectoral, legally binding DSM treaty for the Arctic Ocean among coastal and non-coastal states. It further demonstrates how non-binding declarations, like the precursing Ilulissat Declaration in this case, can evolve into binding multilateral instruments.[55]

Finally, the CAOFA's focus on ecosystem protection can be tied to concerns about DSM's environmental impacts. Deep-sea mining would contribute to the cumulative effects that threaten fish ecosystem resilience.[56] Disruption from deep-sea mining could undermine the long-term fishing potential the CAOFA seeks to preserve.

Biodiversity Beyond National Jurisdiction Agreement

Adopted in 2023, the *Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction* (BBNJA) is a landmark treaty under the United Nations framework aimed at conserving and sustainably using marine biodiversity in areas beyond national jurisdiction such as the high seas and the Area.[57] The sixtieth ratification was obtained on September 19, 2025, and came into force on January 17, 2026.[58]

While it will not change states' rights or obligations within their jurisdictions, including on their extended continental shelves, the BBNJA creates uncertainty about its application to the waters above a country's extended continental shelves, which remain part of the high seas.[59] For example, parts of Norway's proposed DSM sites, like the Banana Hole, lie on its alleged extended continental shelf,[60] raising questions about whether deep-sea mining activities impacting fish stocks or ecosystems in the overlying water column (water above sediments) could contravene the BBNJA, or other agreements like Espoo or the CAOFA. This uncertainty highlights potential conflicts between deep-sea mining operations and emerging biodiversity protections in shared marine environments.

The BBNJA's application should not "undermine" existing international legal regimes, indicating that it is likely subordinate to the International Seabed Authority, who retain primary authority over activities on the seabed beyond national jurisdiction.[61]

Part III. The Approaches of Arctic States to Deep-Sea Mining

Having explored the international legal landscape, this section examines each Arctic coastal state's deep-sea mining policies and objectives. The five Arctic coastal states—Canada, Denmark, Norway, Russia, and the United States—each approach DSM through the unique context of their political landscape, international commitments, and domestic frameworks.

The discussion explores each state's stance on deep-sea mining both within their jurisdiction and in areas beyond national jurisdiction, and includes their strategic objectives and legal structures governing these activities. The relationship of states with UNCLOS, other international or regional law, and their extended continental shelf claims will also be considered. This analysis provides a comprehensive understanding of how deep-sea mining aligns with the geopolitical, legal, and environmental objectives of the Arctic coastal states.

Canada

Canada's presence in the Arctic has increasingly been defined by proactive leadership in pragmatic diplomacy, regional governance, and cooperation with allies.[62] Deep-sea mining has not been a priority for Canada, which has instead focused its Arctic attentions on claiming the Northwest Passage as internal waters to control its usage.[63] Delineating its Arctic Ocean boundaries is one of Canada's highest priorities.[64]

There is a stark lack of legislation in Canada governing offshore mining. Generally, provinces have constitutional jurisdiction over natural resources on provincial Crown land.[65] The three northern territories (the Yukon, Northwest Territories, and Nunavut), however, do not have constitutional jurisdiction; their powers come from delegated authority under federal statutes.[66] The territories do have control over land-based mining in the Arctic.[67] However, when it comes to offshore mining, the federal government holds primary responsibility.[68] The *Oceans Act* confirms federal jurisdiction over the territorial sea, the exclusive economic zone, and the continental shelf.[69] While the *Petroleum Resources Act* governs oil and gas interests and gives the federal government jurisdiction over offshore interests in the Arctic, Canada lacks federal laws for issuing offshore mining rights, creating a regulatory vacuum in this emerging sector.[70] Canada will not authorize DSM in its waters until such a regulatory regime is established.[71]

Canada's robust framework for Indigenous consultation presents further challenges for Arctic DSM.[72] The constitutional duty to consult requires the Crown to engage with Indigenous groups whenever projects may impact claimed or recognized Aboriginal rights or titles.[73] Many potential DSM sites within Canada's Arctic exclusive economic zone overlap with regions traditionally used by Indigenous communities for hunting, fishing, and other cultural practices, impacting their Indigenous and treaty rights, including marine rights. This potential impact triggers the duty to consult and necessitates addressing potential disruptions while ensuring equitable benefits for Indigenous rights holders. The leading case on Indigenous consultation for offshore resource development projects, particularly in the Arctic, is Clyde River.[74] That case involved approval for offshore seismic testing in the Arctic.[75] The Supreme Court of Canada held that the National Energy Board failed to properly consult Inuit communities and quashed the project authorization.[76] Additionally, several Federal Court cases confirm the Crown's obligation to consult when there are potential implications of project development on Indigenous marine rights.[77] This legal complexity and uncertainty does not favour Canada in pursuing Arctic DSM, especially compared to the position of some of its Arctic neighbours.

Canada ratified UNCLOS in 2003 and submitted its extended continental shelf claim in 2019, with its addendum submitted in 2022.[78] In its submission, Canada claims the Lomonosov Ridge, Alpha Ridge, and Mendeleev Rise, with the intervening Podvodnikov Basin and Makarov Basin. Canada bases its claim on the argument that the submarine elevations in this region "trend roughly parallel to the Canadian Arctic Archipelago margin."[79] This claim has yet to be fully processed by the Commission on the Limits of the Continental Shelf. Canada is also among the countries advocating for a moratorium on deep-sea mining due to environmental and sustainability concerns.[80]

The Canadian government currently supports moratoriums on both deep-sea mining in international waters and on offshore oil and gas developments in its Arctic waters.[81] However, while Canada's official stance favours a moratorium on deep-sea mining, The Metals Company (TMC, the DSM pioneer headquartered in Canada), is aggressively pursuing permits to begin mining. Despite its Canadian origins, TMC operates outside Canadian jurisdiction through subsidiaries and strategic partnerships with other countries, most notably Nauru, which first triggered the "two-year rule"[82] (as mentioned above).

TMC is attempting to circumvent international regulations by submitting its application for mining in the Area to the United States, instead of to the International Seabed Authority.[83] Should TMC violate international maritime law in bypassing the ISA's authority, Canada could face legal repercussions under Article 139 of UNCLOS, which holds states responsible for ensuring entities under their jurisdiction comply with international obligations.[84]

Aside from this apparent contradiction, Canada has taken a notably proactive approach to Arctic diplomacy, prioritizing peaceful boundary resolution and legal clarity in contested waters. In 2022, Canada and Denmark (via Greenland) resolved a longstanding Arctic dispute, agreeing on a modernized maritime boundary,

stretching from the Lincoln Sea to the Labrador Sea and dividing the Arctic island Tartupaluk (Hans Island).[85] Canada is engaged in similar negotiations to delineate Arctic maritime boundaries with the United States.[86]

Without a "rigorous regulatory structure," Canada will not authorize deep-sea mining within its waters.[87] DSM in the Canadian Arctic remains unlikely in the foreseeable future given environmental concerns, political considerations, regulatory gaps, and the overlap of potential mining sites with Indigenous territories. However, uncertainty persists regarding how Canada will respond to Canadian-based companies commencing DSM in the Arctic's areas beyond national jurisdiction. This disjunction between Canada's stated opposition to deep-sea mining and the actions of private Canadian entities exposes a degree of policy incoherence, one that complicates Canada's image as a state committed to principled, rules-based ocean governance.

Denmark

Denmark's approach to deep-sea mining in the Arctic is shaped by its unique relationship with Greenland, a semi-autonomous mostly-Arctic territory with extensive natural resources. Greenland has been granted considerable autonomy over its natural resources. In 2009, Greenland took full control over its mineral resources through the *Self-Government Act*.[88] While Denmark retains responsibility for representing Greenland in international forums, like the ISA, Greenland largely determines its own policies on resource management. Denmark's broader stance aligns with the Nordic Council, which advocates for sustainable development and environmental protection in the Arctic.

The *Greenland Parliament Act on Mineral Activities* (GPAMA) came into force in 2024, replacing the *Mineral Resources Act* as the governing framework for mineral exploration and exploitation.[89] The GPAMA not only dictates the regulatory framework for terrestrial mining but applies to the exploration and exploitation of seabed resources in Greenland's exclusive economic zone and continental shelf.[90] The GPAMA establishes state ownership of minerals, licensing regimes for the different stages of mineral extraction (from prospecting to exploitation), and environmental and social responsibility.[91] The licence holder is liable for environmental damage and is required to conduct an environmental impact assessment.[92] Unique from other Arctic States' mining requirements is Greenland's requirement for proponents to submit a social impact assessment.[93]

Denmark has expressed disapproval of deep-sea mining, adding its name in 2024 to the list of countries supporting a global DSM moratorium.[94] This aligns with the Nordic Council's resolution, passed the same year, advocating for a halt on DSM activities.[95] Greenland's stance on DSM is less explicit but can be inferred to follow its Act on mineral activities, which emphasizes sustainability and responsibility in resource development.

In 2009, Denmark (on behalf of Greenland) submitted a preliminary submission to the Commission on the Limits of the Continental Shelf regarding Greenland's extended continental shelf in the Arctic.[96] The CLCS provided recommendations to Denmark in 2014, recognizing all submitted areas as part of the continental shelf (including the contentious Lomonosov Ridge and Alpha Ridge), but without resolving overlapping claims.[97]

While Denmark's stance on deep-sea mining focuses on prevention through its support for a moratorium, Greenland retains the legal authority to pursue DSM activities within its exclusive economic zone and continental shelf under the *Greenland Parliament Act on Mineral Activities*. However, Greenland is unlikely to pursue DSM anytime soon. The requirements for comprehensive environmental impact assessments and social impact assessments, coupled with geopolitical complexities and overlapping extended continental shelf claims, suggests that any DSM initiatives will face significant regulatory and political hurdles.

Norway

Norway's approach to deep-sea mining in the Arctic is rapidly evolving. In January 2024, the Norwegian government agreed to open 281,000 square kilometres of its continental shelf for DSM exploration and exploitation, becoming the first Arctic state to accept applications for DSM licences on their continental shelf.[98]

This decision generated both domestic and international political scrutiny. Environmental groups and the Norwegian Socialist Left Party were quick to voice their objections.[99] In February 2024, the European Parliament voted in favour of *Resolution B9-0095/2024*, voicing the European Union's concerns about Norway's DSM pursuit.[100] The resolution highlighted environmental concerns and Norway's existing legal obligations. As a signatory to the Espoo Convention and the Strategic Environmental Assessment Protocol, Norway is obligated to avoid significant transboundary impacts.[101] Additionally, as seen above, Norway must protect the marine environment under OSPAR, the *Convention for the Protection of the Marine Environment of the North-East Atlantic*.[102] In response to mounting pressure, largely from the Socialist Left Party, Norway paused its first DSM licensing round until the September 2025 parliamentary election.[103]

On October 15, 2025, the Norwegian government presented its proposal for the state budget and national budget for 2026.[104] The proposed budget continued to prioritize and fund research and development activities for seabed mineral extraction, expecting to award these contracts and commence these activities in

Spring 2026.[105] However, subsequent versions omit these priorities.[106] To date, Norway has halted any exploration or extraction activities related to DSM on its continental shelf until 2029.[107]

The Norwegian *Seabed Minerals Act* (SMA) establishes the legal framework for deep-sea mining on Norway's continental shelf. It specifies that all seabed minerals within the continental shelf are state-owned, and any exploration or exploitation requires government authorization.[108] The Act also establishes a licensing process, requiring applicants to meet specific criteria before they can begin exploration or exploitation, and it requires applicant companies to submit environmental impact assessments to identify and mitigate risks to Arctic ecosystems before any DSM exploitation starts.[109] Additionally, the *Seabed Minerals Act* mandates that licensees implement measures to ensure compliance with DSM regulations under the Act and under broader environmental and resource management laws.[110]

Notably, the area in and around Svalbard is governed by the legal regime set out in the *Svalbard Treaty*.[111] Signed in 1920, it grants Norway sovereignty over the Svalbard archipelago but imposes conditions for international cooperation and resource access.[112] The treaty provides equal rights to all signatories (currently 43 countries, including the five Arctic coastal states) to engage in economic activities, including mining, on the islands and their territorial seas.[113] Although all signatories would have access to deep-sea mining within the islands' territorial seas (subject to Norway's mining regulations), the areas beyond this are part of Norway's exclusive economic zone and under its exclusive jurisdiction.[114]

Norway submitted its extended continental shelf claims to the Commission on the Limits of the Continental Shelf in 2006 and received the CLCS's recommendations in 2009.[115] Norway's submission included three areas: the Loop Hole in the Barents Sea, the Western Nansen Basin in the Arctic Ocean, and the Banana Hole in the Greenland and Norwegian seas.[116] The CLCS recognized these areas as qualifying as part of Norway's continental shelf. However, the Loop Hole and the Western Nansen Basin are subject to overlapping claims with Russia and Denmark, respectively, and the CLCS has advised Norway to delineate the boundaries with their neighbours.[117] The CLCS accepted the Banana Hole as an extension of Norway's continental shelf pursuant to Article 76 of UNCLOS.[118]

If Norway resumes deep-sea mining on its continental shelf, several legal and international challenges will arise. For example, within its continental shelf and extended continental shelf, pollution in the water column could violate Norway's OSPAR Convention obligations if DSM activities affect fish stocks, migration patterns, or biodiversity.[119] Norway's future DSM decisions will depend on balancing economic ambitions with environmental responsibilities and international obligations.

Russia

Russia is a dominant player in Arctic geopolitics, controlling approximately half of the Arctic Ocean coastline.[120] The Kremlin, the executive branch of the Russian government, adopts a state-driven approach to resource development, prioritizing control and economic power.[121] Russia's strong Arctic military presence highlights its desire to control the Arctic Ocean and its mineral resources: such as using the Navy to collect scientific data for extended continental shelf submissions.[122] However, the ongoing occupation of Ukraine has strained international cooperation in the region, potentially complicating negotiations between other Arctic states and Russia over the delineation of overlapping continental shelf claims.[123]

Russia's domestic framework for mining is focused on state control of mineral resources. All mineral resources are owned by the state, with the Kremlin managing subsoil (i.e., subsurface) use through a combination of administrative regulations and civil law.[124] The Law of the Russian Federation "On Subsoil" (Subsoil Law) is the primary legislation governing the exploration and extraction of mineral resources in Russia, both on land and offshore. According to the Subsoil Law, any subsoils on the Russian seabed are automatically plots of federal significance, conferring specific state rights and responsibilities.[125] Third-party rights to explore and extract minerals on the continental shelf are granted through federally issued licences.[126] Russia's mining laws, however, have been criticized for their incomplete codification, resulting in legal uncertainty, inconsistency, and fragmentation complicating regulation enforcement.[127]

The Kremlin's stance on deep-sea mining aligns with its broader objectives of maximizing resource control and asserting geopolitical dominance in the Arctic. While Russia has not yet operationalized DSM in the Arctic, it is sponsoring several DSM exploration projects in other regions through the International Seabed Authority.[128] Russia's actions in Ukraine have led to strained relationships with Western nations, and it is cultivating partnerships with non-Western countries, particularly China, to advance its Arctic resource development initiatives.[129] However, Russia's emphasis on resource independence means a critical minerals alliance with China is unlikely, as it fears becoming too dependent on Chinese critical minerals.[130]

Russia was the first Arctic coastal state to submit an extended continental shelf claim to the Commission on the Limits of the Continental Shelf in 2001.[131] In their response, the CLCS recommended delineating the outer limits of the Barents Sea with Norway and the Bering Sea with the United States, and requested additional data for the Central Arctic Ocean claim.[132] Russia revised its claim in 2015, providing supplementary addenda in 2021, expanding it to cover approximately 1.9 million square kilometres—roughly 70% of the Arctic Ocean

seabed.[133] Russia claimed key geological features like the Lomonosov Ridge, Mendeleev Ridge, Gakkel Ridge, and Alpha Ridge. However, the classification of these features as submarine elevations or submarine ridges remains contentious, creating uncertainty about the viability of any state's claim to them.[134]

In 2023, the CLCS accepted these extended continental shelf claims for part of the southeast Eurasia Basin in the Central Arctic Ocean, including a significant portion of Gakkel Ridge.[135] The CLCS also accepted Podvodnikov Basin as part of Russia's continental shelf.[136]

Russia's extensive extended continental shelf submissions have faced significant opposition from Canada and Denmark, largely because of overlapping claims. The determination of final boundaries cannot proceed until Denmark's and Canada's submissions are approved and diplomatic negotiations addressing overlapping claims have been concluded. These unresolved claims add to the geopolitical complexity of Arctic governance and resource management.

Russia has yet to formally engage in deep-sea mining activities but is positioning itself to capitalize on its extended continental shelf claims. As tensions with Western nations persist, Russia is likely to leverage partnerships with non-Western allies to advance potential DSM ambitions in the Arctic. However, ongoing disputes over extended continental shelf claims present challenges for Russia's future deep-sea mining.

The United States

The United States faces unique legal and geopolitical challenges as the only Arctic coastal state not to have ratified UNCLOS. The United States has signed the Agreement relating to the Implementation of Part XI of UNCLOS (1994 Agreement), which specifically pertains to the area beyond national jurisdiction.[137] While the U.S. has applied the 1994 Agreement, it has not ratified either instrument, and refuses to recognize the 1994 Agreement as binding customary international law.[138] Due to its non-ratification, the United States may only participate in discussions surrounding deep-sea mining as an observer rather than a full member of the International Seabed Authority.[139]

Domestically, the *Deep Seabed Hard Mineral Resources Act* (DSHMRA) of 1980 governs American involvement in deep-sea mining outside its national jurisdiction.[140] This Act predates UNCLOS, and grants the United States authority to conduct deep-sea mining in the Area.[141] The U.S. has issued four DSM exploration licences under this Act (although none since UNCLOS came into force in 1984).[142] None of these licences pertain to the Arctic Ocean.[143] In April 2025, the U.S. President signed Executive Order 14285 directing the National Oceanic and Atmospheric Administration (NOAA), in consultation with the secretaries of state and the interior, to expedite the process for reviewing and issuing licences and permits under DSHMRA.[144] TMC, The Metals Company, has already applied for a commercial recovery permit under NOAA's new consolidated application and review process.[145] Whether the United States will engage DSHMRA to grant this exploitation permit in the Area, sidestepping UNCLOS and the International Seabed Authority, remains uncertain.

On the U.S.'s continental and extended continental shelves, the *Outer Continental Shelf Lands Act* governs DSM, granting the federal government authority to manage minerals and grant leases for their exploration and exploitation.[146] Presently, American activities in the Arctic remain limited to scientific research and exploration on Alaska's continental shelf. Agencies like NOAA and the United States Geological Survey have assessed the region's resource potential, but no significant steps toward DSM exploitation have been taken.[147]

Additionally, Alaska is home to many Indigenous communities whose Traditional Territories may overlap with potential deep-sea mining sites. Consultation is required with these communities under the 1969 *National Environmental Policy Act* (NEPA).[148] This Act established the Council on Environmental Quality, which oversees and implements consultation requirements,[149] and requires the governing agency to invite "likely affected" Indigenous communities to participate before and during project assessment.[150] For deep-sea mining in the Arctic, NEPA's framework underscores the need for federal agencies to engage meaningfully with Indigenous rights holders, adding another layer of complexity to project approvals in the Arctic region.

Exploration activities have less environmental impact than exploitation and therefore enjoy more lenient NEPA obligations. To date, no DSM exploration activities appear to have undergone comprehensive NEPA reviews or Indigenous consultations. This is likely because Arctic deep seabed exploration is still in its early stages and mainly conducted by federal agencies.[151] However, if exploration licences are offered to private proponents, they will likely need to undergo the full spectrum of environmental and consultation procedures.[152]

In 2023, the United States announced its extended continental shelf claim but has not yet filed it with the CLCS.[153] To assert its claim, the U.S. must either ratify UNCLOS or attempt to submit the claim as a non-party, citing customary international law.[154] Since the CLCS must consider submissions by coastal states, even those not party to UNCLOS, the U.S. non-ratification is unlikely to pose a significant barrier—provided they ever submit their claim.[155] The greater challenge is geopolitical: other states are likely to reject the claim, especially if the United States refuses to substantiate it through the proper regulatory body.[156]

Despite its domestic and international legal hurdles, the United States remains active in Arctic affairs, reflecting its strategic interests in the region. While it has not pursued deep-sea mining in the Arctic, the U.S. has strengthened its presence through scientific research and military investments aimed at countering Russian and, increasingly, Chinese activities.[157] The U.S. has shifted focus to building agreements for data and technology-sharing among its "Arctic Allies."[158] Internationally, the United States actively participates in the Arctic Council, but its non-ratification of UNCLOS limits its influence on the future of deep-sea mining, especially since the International Seabed Authority holds primary authority in this field.

Domestically, fragmented domestic regulations, strict NEPA consultation requirements, and the infancy of Arctic exploration constrains progress. Balancing resource development with legal and environmental obligations, alongside geopolitical tensions, makes large-scale Arctic DSM projects in the territorial waters of the United States improbable in the near future. However, Executive Order 14285 signals a marked policy shift toward accelerating offshore critical mineral development in areas beyond national jurisdiction.

Although no Arctic exploitation submissions have been made to date, this executive direction raises concerns about potential unilateral reliance on domestic legislation like DSHMRA, the *Deep Seabed Hard Mineral Resources Act*, rather than proceeding through international cooperation. The International Seabed Authority has expressed concern regarding actions that could undermine the multilateral seabed regime established under UNCLOS.[159] Should the United States commence DSM exploitation in the Arctic's area beyond national jurisdiction, fellow Arctic states face two significant issues. First, the state's non-ratification of UNCLOS complicates treaty-based enforcement mechanisms, leaving the international community with limited avenues besides diplomatic or legal contestation. The second issue is more unique to the Arctic Ocean: deep-sea mining in the Area would require unilateral delineation of an extended continental shelf and the authorization of seabed activities in areas beyond national jurisdiction that are overlapping with competing Arctic claims.

The trajectory of United States deep-sea mining in the Arctic will turn not only on domestic political will, but on the extent to which international legal and diplomatic voices exert any influence.

Non-Arctic States

In addition to the Arctic coastal states, the interest in deep-sea mining in the Arctic is further complicated by the involvement of several non-Arctic states, some eager to capitalize on the region's resources and others seeking to halt or slow its progress.

Several non-Arctic states, notably China, have expressed interest in Arctic deep-sea mining. China has declared itself a "near-Arctic state" and is investing in infrastructure and scientific research under its Polar Silk Road initiative.[160] Beyond its Arctic scientific research efforts, China is involved in several onshore mining projects in Greenland and Canada and has partnered with Russia to develop critical Arctic infrastructure, including ports and shipping routes.[161] These investments in, and partnerships with, Arctic states highlight China's strategic approach to securing a foothold in Arctic resource development.

Similarly, South Korea, Japan, and Singapore have also shown interest in Arctic DSM, driven by their dependence on imported resources.[162] These countries have invested in Arctic research and infrastructure, seeking partnerships to navigate the region's challenging regulatory landscape.[163] The growing interest from non-Arctic states has intensified geopolitical competition, complicating cooperation. While some experts argue that Arctic nations should embrace foreign partnerships to maximize economic opportunities, others warn that such alliances could undermine their geopolitical advantages and sovereignty.[164]

On the other hand, significant opposition to DSM in the Arctic has emerged from states and international organizations. The European Union voiced its concern by openly opposing Norway's Arctic DSM propositions.[165] Forty countries have signed the position statement calling for a moratorium on DSM, citing the potential for irreversible environmental damage and the disruption of fragile ecosystems.[166] Prominent international organizations like the Clean Arctic Alliance have also expressed their concerns.[167] This Alliance argues the risks of DSM are often amplified in the Arctic context, where the impacts of climate change are already pronounced, and the risks of mining operations are heightened due to the region's remoteness and extreme weather conditions.[168]

Part IV. The Relationship between Non-Arctic and Arctic States—Benefit-Sharing and Legal Obligations

Arctic nations' exclusive access to seabed resources within their jurisdiction may challenge the equitable benefit-sharing ethos laid out in UNCLOS.[169] However, if non-Arctic states were to engage in deep-sea mining within the Arctic, it could disproportionately impact Arctic coastal nations, many of whom are opposed to DSM that could lead to ecosystem degradation, including the collapse of fish stocks.[170] This directly threatens Indigenous communities who rely on subsistence fishing and hunting. Pollution from DSM operations, such as sediment plumes and chemical discharges, is likely to reach the coasts of Arctic states first, exacerbating the local environmental impact.[171]

Moreover, Arctic coastal states face complex legal obligations in the event of DSM-related emergencies. For example, vessels conducting DSM activities may encounter operational challenges, such as equipment failures or ice-related incidents. Under UNCLOS, there may be some duty of Arctic states to assist non-Arctic states' vessels experiencing issues in their waters, requiring emergency assistance or remediation efforts, especially if the Arctic coastal state is the only state with the capabilities to render assistance.[172] However, these legal obligations are blurry, especially since assistance is particularly challenging in the Arctic's harsh conditions. Severe cold, storms, and remote locations can impede timely response, safe navigation, and effective rescue or remediation efforts. How far do legal obligations extend when feasibility is constrained by physical realities? These considerations highlight the need for internationally agreed-upon DSM regulations.

The CAOFA (*Central Arctic Ocean Fisheries Agreement)*, serves as a compelling example of how Arctic and non-Arctic states can collaborate to enact meaningful and precautionary legislation.[173] Recognizing the importance of broader international cooperation, the agreement was later expanded in 2018 to include non-Arctic stakeholders: China, Japan, South Korea, Iceland, and the European Union.[174] This agreement is notable because, despite the lack of current commercial fishing in these waters, it reflects a proactive and cooperative approach to resource management and environmental protection.

Deep-sea mining, like fishing, has implications that extend beyond Arctic borders. A similar framework could be applied to DSM regulation, opening collaboration with non-Arctic states to proactively regulate DSM in the Arctic. Ensuring compliance with environmental regulations and managing the geopolitical tensions between Arctic and non-Arctic stakeholders would require Arctic nations to coordinate closely, leveraging their coast guards and regulatory agencies to monitor and enforce DSM activities. Similar to the fishing moratorium, responsibility of ensuring compliance would likely fall on Arctic nations, which could be a prohibitive factor.

Part V. Conclusion

Newfound access to the Arctic is reshaping international relations, national sovereignty, Indigenous recognition, and environmental policies, creating a tangle of political, legal, and ethical challenges. Overlapping territorial claims, divided acceptance of international law such as UNCLOS, and varying domestic priorities leave the Arctic's legal seascape as contested as its geographic one. Coastal nations face the difficult task of balancing international obligations with national interests, including environmental protection, Indigenous consultation, and resource sovereignty.

While some states are advancing scientific research and policy frameworks, others advocate for moratoriums on DSM activities. Coupled with the increasing interest and involvement of non-Arctic states, the region's growing importance in global geopolitics is evident. Balancing resource development with environmental protection and geopolitical stability requires innovative international collaboration and robust regulatory frameworks to ensure the Arctic remains a shared space: not a battleground for competing interests.

As climate change transforms the Arctic, the Arctic coastal states will be key to shaping the governance of deep-sea mining within the region. While they stand to benefit from resource extraction, these states also bear the responsibility for DSM's environmental and social impacts. The Arctic remains a region of both cooperation and contention, where the rules for the future are still being written.

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Research Article

Multi-Level Governance for Renewable Energy Development in Nunavut: The Role of Community Consultation and Inuit Knowledge

Anna Soer*

Abstract: This study pertains to the governance of renewable energy development in Nunavut. Despite the strong environmental and security risks posed by diesel use and dependency, the development of renewable energy in the territory is slow. As domestic, regional, and international actors are moving toward decarbonizing energy infrastructure, the energy transition of Nunavut is facing structural obstacles ranging from the costs associated with modernizing and decarbonizing the energy grid, to human capacity constraints. In what ways are community consultation practices and Inuit Knowledge embedded in renewable energy decision making in Nunavut, and how effective are they under Nunavut, Canadian, and international frameworks? As global attention is veering towards the Arctic, with strong emphasis on mining potential, the global energy transition becomes an opportunity for Inuit rights holders to develop local economies and livelihood opportunities, as well as invest in their own energy security needs. Since the signing of the Nunavut Lands and Resources Devolution Agreement in 2024, the cascading security threats of diesel dependency have become intertwined with needs to develop industries supporting the territory's energy transition. As such, through a qualitative content analysis of grey literature and seventeen interviews with key stakeholders and rights holders in Nunavut, this study offers insight into the governance of renewable energy infrastructure development in Nunavut.

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ᑕᐃᔭᐅᓂᖓ: ᓄᓇᓕᒻᒥᐅᑦ ᑐᓴᕆᐊᕐᕕᐅᓂᖏᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ: ᓄᑖᕈᖅᑎᑕᐅᓯᑦ ᐆᒻᒪᖅᑯᑎᓕᐅᖅᐸᓪᓕᐊᓂᖅ ᓄᓇᕗᒻᒥ ᑭᖑᓂᐊᒍᑦ ᓇᖏᓂᖅᓯᓕᕐᓂᖏᓐᓂᒃ

ᐋᓇ ᓱᐅᕐ, ᓯᓚᑦᑐᖅᓴᕐᕕᔪᐊᕐᒥ ᑯᑎᓂᖅᐹᖓᓂᒃ ᐃᓕᓐᓂᐊᖅᑐᖅ ᐱᔭᕇᕈᓐᓇᖅᓯᓚᖅᑐᓂ, ᐋᑐᕚᒥ ᓯᓚᑦᑐᖅᓴᕐᕕᔪᐊᖓᓂ

ᐅᓂᒃᑳᑉ ᓇᐃᓈᖅᓯᒪᓂᖏᑦ
ᑖᓐᓇ ᖃᐅᔨᓴᖅ ᑐᕌᖓᓂᓕᒃ ᐊᐅᓚᑕᐅᓂᖏᑦ ᓄᑖᕈᖅᑎᑕᐅᓯᑦ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑕᐅᔪᑦ ᓄᓇᕗᑦ, ᑲᓇᑕᒥ. ᓴᙱᔪᒃᑯᑦ ᐊᕙᑎᒧᑦ ᐃᓄᓐᓄᑦᑐ ᐅᑐᕋᐊᓇᖅᑐᒨᖅᑎᑦᑎᔪᓐᓇᖅᑎᓪᓗᒋᑦ ᐅᖅᓱᐊᓗᒻᒥᒃ ᐊᑐᖅᓯᑎᑦ ᑕᑎᕆᔭᐅᓪᓗᓂᓗ, ᓄᑖᕈᖅᑎᑕᐅᓯᓂᑦ ᓄᓇᒥᙵᖅᑐᓂᒃ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑎᓂᒃ ᐱᕙᓪᓕᐊᒍᑎᕆᔭᐅᓂᖓ ᓱᒃᑲᐃᑦᑐᒻᒪᕆᐊᓘᕗᖅ. ᑲᓇᑕᒥ, ᐊᕕᑦᑐᖅᓯᒪᔪᒥ, ᐊᒻᒪᓗ ᓄᓇᓕᖅᔪᐊᑦ ᐱᓕᕆᔪᑦ ᐱᕙᓪᓕᐊᒍᑎᖃᖅᐸᓪᓕᐊᓕᕋᓗᐊᖅᑎᓪᓗᒋᑦ ᐃᓯᐊᕿᙵᕆᑦᑐᒥᒃ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑎᓂᒃ ᐱᖁᑎᖏᐊᓕᐅᖅᐸᓪᓕᐊᓕᖅᑎᓪᓗᒋᑦ, ᐱᖅᓯᐅᑎᓪᓗᒍ ᐱᕙᓪᓕᐊᓂᖅᑲᖅᑐᑎᑦ ᓄᑖᕈᖅᑎᑕᐅᓯᑦ ᓄᓇᒦᙵᖅᑐᑦ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑎᖏᑦ, ᐆᒻᒪᖅᑯᑎᓕᐅᕐᓂᖓ ᓄᓇᕗᒻᒥ ᐱᖁᑎᖃᐊᖏᑦ ᐊᐳᕈᑎᖃᐅᖅᑐᑦ ᐊᑭᑐᓗᐊᕐᓂᖏᖕᓄᑦ ᐅᓪᓗᒥᓕᓴᓂᒃ ᐋᖅᑭᒃᓯᐃᓚᓯᐊᕐᓗᓂ ᓴᓇᓗᓂ ᐊᒻᒪᓗ ᐃᓯᐊᕿᕐᓗᙱᑦᑐᓂᒃ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑎᑖᕋᓯᐊᖅᑐᑎᑦ, ᐃᓄᐃᓪᓗ ᓴᓇᔪᓐᓇᙱᓗᐊᖅᑐᑦ ᑕᒪᒃᑯᓂᖓ ᓴᓇᔭᐅᔪᓐᓇᐃᓪᓕᐅᖅᑲᓗᐊᖅᑎᑦᑎᒪᑕ. ᓄᓇᓕᓐᓂ ᑐᓴᕆᐊᕐᕕᖃᕐᓂᖅ ᐃᓕᖅᑯᓯᕆᔭᐅᕙᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᖃᐅᔨᒪᓂᖏᑦ ᑭᓲᕙᑦ ᓄᑖᕈᖅᑎᑕᐅᓯᑦ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑕᐅᓲᑦ ᐃᓯᒪᓕᐅᕈᑎᑦᓯᐅᕗᖅᑐᑎᑦ ᓄᓇᕗᒻᒥ, ᐊᒻᒪᓗ ᖃᓄᖅ ᐊᐅᓚᓂᖃᑎᐊᖅᐸᑦ ᓄᓇᕗᒻᒥ, ᑲᓇᑕᒥ, ᐊᒻᒪᓗ ᓄᓇᓕᖕᔪᐊᖑᔪᒥᒃ?
ᓄᓇᖕᔪᐊᒥ ᐅᔾᔨᖅᓯᐊᕆᔭᐅᓕᖅᐸᓪᓕᐊᓕᖅᑎᓪᓗᒍ ᐅᑭᐅᖅᑕᖅᑐᖅ, ᓴᙱᔪᒥᒃ ᐅᔭᕋᓂᐊᕐᕕᐅᔪᓐᓇᕐᓂᖓ ᐱᓗᐊᕐᓗᒍ, ᓄᓇᖕᔪᐊᒥᐅᓄᑦ ᑕᒪᓐᓇ ᑲᒪᒋᔭᐅᕙᓪᓕᐊᓂᖓ ᐱᕕᖅᑲᕐᑎᒋᔭᐅᕗᖅ ᐃᓄᐃᑦ ᐱᔪᓐᓇᐅᑎᒥᒃ ᑎᒍᒥᐊᖅᑎᐅᔪᓂᑦ ᐋᖅᑭᒃᓯᐅᑎᑦ ᓄᓇᓕᓐᓂ ᐱᕙᓪᓕᐊᔪᓕᕆᓇᔪᓐᓇᓕᕐᓂᖏᓐᓂᒃ ᐊᒻᒪᓗ ᐃᖅᑲᓇᐃᔭᖅᑲᕐᕕᐅᓗᓂ ᑮᓇᐅᔭᓕᐅᕈᑎᒋᔭᖅᓴᓂᒃ ᐊᒻᒪᓗᑦᑕᐅᖅ ᓇᒻᒥᓂᖅ ᑲᒪᒋᔭᖅᑲᕐᓗᑎᑦ ᓴᐳᒻᒥᐅᓯᖅᓯᒪᔭᕆᐊᖅᑲᖅᓂᕐᒧᑦ ᑭᙶᒪᒋᔭᕆᓐᓂᒃ. ᑕᐃᒪᐃᓪᓕᖅᐸᑦ, ᐅᖅᓱᐊᓗᒃᓴᒥᒃ ᐆᒻᒪᖅᑯᑎᓕᐅᕐᓂᖅ ᐱᔨᑦᑎᖅᑕᐅᕙᓪᓕᐊᕆᓐᓇᓇᐊᖅᑲᕐᓂᕗᒻᒪᑦ ᐱᑐᖅᑲᐅᓗᐊᓕᖅᓯᓂᖅᓂᒃ ᐊᒻᒪᓗ ᐅᖅᓱᐊᓗᒻᒥᒃ ᑯᕕᔪᖅᑲᖅᑕᓕᖅᑐᓂ ᐊᒻᒪᓗᑦᑕᐅᖅ ᐆᒻᒪᖅᑯᑏᑦ ᖃᒥᑦᑎᐊᓗᐃᖅᑲᖅᑕᖅᑐᑎᑦ ᐅᓗᓇᐊᖅᑐᒨᖅᑎᑦᑎᓪᓕᓇᑦᑐᖅ ᐆᒻᒪᖅᑯᑎᓂᒃ ᐊᒻᒪᓗ ᐊᕙᑎᒥᒃ (ᑕᐃᒪᐃᑦᑎᓪᓗᒍ ᐱᖅᑲᓯᐅᑎᒋᕗᑦ ᓂᖅᑭᑦᓯᕆᑦ) ᐅᓗᓇᐊᖅᑐᒨᖅᑕᐃᓕᒪᓂᖏᑦ. ᑲᔪᓯᓚᐅᖅᓯᒪᓪᓕᒪᓂᑦ ᓄᓇᕗᒻᒥ ᓄᓇᓕᓐᓂᖅᑯᑦ ᓄᓇᒥᙵᖅᑐᑦᑐ ᓇᒻᒥᓂᖅᓯᐊᓇᔭᐅᓂᖏᓐᓄᑦ ᐊᖏᕈᑎ 2024-ᖑᑎᓪᓗᒍ, ᐅᓗᓇᐊᖅᑐᒨᖅᐸᓪᓕᐊᓂᖏᑦ ᐅᖅᓱᐊᓗᒃᓴᒥᒃ ᑕᑎᖅᑲᓗᐊᖅᓂᖓ ᑖᒃᑯᓄᙵᖅᑲᖅᑕᖅᓯᒪᓕᓇᕗᖅ ᐋᖅᑭᒃᓯᐃᔭᓇᐊᖅᑲᕈᑕᐅᓕᖅᑐᓂ ᓴᓇᕕᓕᓇᓂᖅᒥᒃ ᐃᑲᔪᖅᑐᐃᓂᖅᑲᕈᓐᓇᖅᑐᒥᒃ ᓄᓇᕗᒻᒥ ᐆᒻᒪᖅᑯᑎᓕᐅᕐᓂᖅᓯᐅᑦ ᐊᓯᖏᓐᓂᖓᖅ ᐊᑐᖅᑲᖅᓱᑎᑦ.
ᑕᐃᒪᐃᓐᓂᖓᓄᑦ, ᐱᐅᔪᓂᒃ ᖃᐅᔨᓴᖅᓱᑎᑦ ᐃᓗᓕᖏᓐᓂᒃ ᐊᑐᐊᓚᐅᔪᑦ ᑎᑎᖅᑲᓂᒃ, ᐱᕙᓪᓕᐊᔪᓕᕆᓂᕐᒧᑦ ᑎᑎᖃᖅᓯᒪᔭᖏᑦ, ᐊᒻᒪᓗ 17–ᖑᔪᑦ ᐊᐱᖅᓱᖅᑕᐅᓚᔭᖅᓱᑎᑦ ᐊᑦᑐᖅᑕᐅᓂᖅᑲᓛᖑᔪᓂᒃ– ᐊᒻᒪᓗ ᓄᓇᕗᒻᒥ ᑎᒍᒥᐊᖅᑎᐅᔪᓂᒃ, ᑕᒪᓐᓇ ᖃᐅᔨᓴᖅ ᓇᓗᓇᐃᔭᐃᓂᖅᑲᖅᓯᐊᖅᑐᖅ ᐊᐅᓚᑕᐅᓂᖏᓐᓂᒃ ᓄᑖᕈᖅᑎᑕᐅᓯᑦ ᐆᒻᒪᖅᑯᑎᓕᐅᕈᑎᖏᓐᓄᑦ ᐱᖁᑎᖃᐊᓕᐅᖅᑕᐅᕙᓪᓕᐊᕆᐊᖅᑲᖅᓂᖏᓐᓂᒃ ᓄᓇᕗᒻᒥ ᑕᐅᑐᙵᓂᖏᑦ ᐃᓅᓯᖅᑲᖅᐊᖅᑎᑦᑎᓇᓯᐊᖅᑐᑦ ᐱᓇᓱᐊᖅᑐᑦ ᐊᐅᓚᑦᑎᓗᑎᑦ ᐊᑭᓕᖅᑕᐅᙱᓪᓗᑎᑦ, ᓯᕗᓂᐊᒍᑦ ᐊᒻᒪᓗ ᑐᑭᓯᐅᒪᔭᐊᖅᓗᑎᑦ ᐊᖏᖅᓯᒪᓂᒃᑯᑦ ᑐᙵᕕᖅᓱᑎᑦ, ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ (ᐃᓄᐃᑦ ᖃᐅᔨᒪᓂᖏᑦ) ᓯᕗᓕᒃᑲᖅᑖᖑᓗᑎᑦ ᐆᒻᒪᖅᑯᑎᓕᕆᓂᖅᑯᑦ ᐊᐅᓚᔪᓂᒃ ᑕᒪᒃᑮᓐᓂᒃ ᓄᓇᕗᒻᒥ, ᐊᒻᒪᓗ ᐊᖏᖅᓂᖓᒥᒃ ᓄᓇᒥᙵᖅᑐᑦ ᐅᔭᕋᓐᓂᐊᖅᑕᐅᓂᖏᑦ ᐊᒻᒪᓗ ᐊᕙᑎᓕᕆᓂᖅᑯᑦ ᐊᐅᓚᔾᔨᓂᖓᑎᒍᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ.

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Article de Recherche

Gouvernance multi-niveaux pour le développement des énergies renouvelables au Nunavut: Le rôle de la consultation publique et des savoirs inuits

Anna Soer*

Résumé : Cette étude porte sur la gouvernance du développement des énergies renouvelables au Nunavut, au Canada. Malgré les risques environnementaux et sécuritaires graves liés à l'utilisation et à la dépendance au gazole, la transition vers les énergies renouvelables dans le territoire progresse lentement. Alors que les acteurs internationaux, régionaux et nationaux s'orientent vers la décarbonation des infrastructures énergétiques, la transition énergétique du Nunavut se heurte à des obstacles majeurs : coûts élevés de modernisation et de décarbonation des réseaux électriques, ainsi que des contraintes de capacité. Dans quelle mesure les pratiques de consultation communautaire et le savoir inuit (Inuit Qaujimajatuqangit) sont-ils intégrés dans la prise de décision concernant les énergies renouvelables au Nunavut, et quel est leur degré d'efficacité au sein des réseaux nunavummiut, canadiens et internationaux ? Alors que l'attention internationale se porte sur l'Arctique, notamment sur son potentiel minier, la transition énergétique mondiale offre aux Inuits titulaires de droits territoriaux une occasion unique de développer les opportunités économiques locales et les moyens de subsistance, tout en répondant à leurs propres besoins en sécurité énergétique. Depuis la ratification de l'Entente sur le transfert des responsabilités liées aux terres et aux ressources du Nunavut en 2024, les menaces sécuritaires découlant de la dépendance au gazole s'entrelacent avec les besoins de développement d'industries soutenant la transition énergétique du territoire. À travers une analyse qualitative du contenu de documents politiques, d'articles médiatiques et de dix-sept entrevues menées auprès des principales parties prenantes et personnes titulaires de droits, cette étude examine la gouvernance du développement des infrastructures d'énergies renouvelables au Nunavut.

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Introduction

As global attention is veering towards the Arctic, with strong emphasis on mining potential, the global energy transition becomes an opportunity for Inuit rights holders to develop local economies and livelihood opportunities as well as invest in their own energy security needs. Indeed, diesel generators are increasingly obsolete, and frequent oil spills as well as blackouts strongly threaten the energy and environmental security (thereby also food security) of Nunavut. Since the signing of the Nunavut Lands and Resources Devolution Agreement in 2024 (which devolved Crown lands and resources to the Government of Nunavut), the cascading security threats of diesel dependency have become intertwined with the need to develop industries capable of supporting the territory's energy transition. As regional, national, and international actors move to decarbonize energy infrastructure, including the development of renewable energy for their grids, the energy transition in Nunavut is facing structural obstacles that range from costs associated with modernizing and decarbonizing the grid, to human capacity constraints.

This study pertains to the governance of renewable energy development in Nunavut. In what ways are community consultation practices and Inuit Knowledge embedded in renewable energy decision making in Nunavut? How effective are they under Nunavut, Canadian, and international frameworks? The study aims to better understand the operationalization of (i) Canadian frameworks for community consultation, Inuit Knowledge, and energy development; (ii) Nunavut-based frameworks supporting Inuit-led and Inuit-owned development; and (iii) international legal and policy frameworks related to the rights of Indigenous Peoples and sustainable development. The goal of the article is not to offer a roadmap on how to include Inuit Knowledge, but to reflect on the instrumentalization of Inuit Knowledge by organizations that highlight Inuit Knowledge as a key value and way of doing.

This research involved thematic content analysis of interviews with seventeen Nunavut stakeholders and right holders, and of relevant grey literature. The results show differences in (i) federal language versus territorial language; (ii) the stated policy of centring Inuit Knowledge versus its implementation; and (iii) the theory of community consultation based on the duty to consult and the free, prior and informed consent frameworks versus its implementation in federal and territorial policy on resource and energy development. These tensions between the federal, the territorial, and intra-territorial, showcase how pockets of Inuit self-determination in energy security and development become tools of resistance against colonial imposition.

Literature Review

Cherniak et al. (2015) examine the development of renewable energy solutions in northern and Arctic Canada and, through analysis of several projects, they suggest that the success of new technology deployment is tied to community consultation. The authors recommend further research (Cherniak et al., 2015, p. 129, 146; see also Simon, 2009; Arctic Council , 2021), specifically on community consultation that was missing for the 2016 federal moratorium on offshore oil and gas licensing in Arctic waters, and the European Union seal-product import ban (Peter et al., 2002). Literature is emerging on the topic of community involvement and the renewable energy industry in Nunavut; however, a strong focus remains on analyzing the industry in terms of energy security and climate change mitigation (Cambou & Poelzer, 2021; Hansen & Moe, 2022; Höysniemi, 2022; McDonald & Pearce, 2013; Trembath et al., 2022).

While extensive literature reviews and research on pan-Indigenous leadership in renewable energy development exist (Datta et al., 2024; Hoicka et al., 2021; Société Makivik, 2021; The Wah-ila-toos Indigenous Council, 2024), since renewable energy development in Nunavut is relatively new, there is little such analysis for the Arctic. However, McDonald and Pearce (2013) highlight Nunavut communities' support for the development of several renewable energy technologies in their communities (while opposing hydroelectricity), and the authors suggest stronger community consultation policies to bridge perceived gaps in the public's knowledge about these technologies. Now, twelve years after the publication of this research, community consultation policies implemented by Inuit-owned private enterprises, such as the Nunavut Nukkiksautiit Corporation (NNC), are in agreement with not only McDonald and Pearce's findings, but also with territorial and federal law and policies on community involvement. However, a lack of conceptual clarity emerges when defining community involvement: what it is, what it entails, and how it is operationalized.

The term "consultation" describes activities where a local population's input is sought or required before a development project is approved to move forward. However, in the case of NNC the consultation process instead involves an "engagement" process, where NNC not only seeks insights from the community on a proposed project or issue, but gives decision-making powers to the community for the project's approval (Nunavut Nukkiksautiit Corporation, 2022).

The concept of consultation has received criticism for not offering fundamental change, but rather only a seat at the back of the table—this is in contrast with engagement processes that include co-design and co-production, which are embedded in the larger processes of reconciliation as well as the

devolution of decision-making powers and redefining the narrative on Indigenous self-determination and development (Arnstein, 1969; Baker & Westman, 2018; Lajoie-O'Malley et al., 2023; Moore et al., 2017; Slay & Penny, 2014). Indigenous self-determination is here understood within the framework of Nunavut's devolution agreement with the federal government, as well in the anchoring of Inuit values and knowledge in energy development. Community consultation, in the context of energy development, becomes a tool for the realization of self-determination, redefining power relations in decision-making processes.

Defining sustainability in an Arctic context requires foregrounding an Inuit vision of how sustainability is articulated within this context. Echoing Banerjee's critique of sustainable development as a reinvention of colonialism (2002, 2003), and Frandy's (2021) and Normann's (2021) critiques of its application within a Sámi context, the concept of "sustainability" carries with it a colonial legacy. Within an ethics of relationality in reassigning Inuit self-determination to the forefront of territorial energy development, existing academic and grey literature suggest there is a further need to establish conceptual clarity on not only community involvement but also on the effective incorporation of Inuit Qaujimajatuqangit (IQ) (Inuit values, knowledge, behaviour, perceptions, and expectations) into renewable energy development processes (Nunavut Culture and Heritage, n.d.; Nunavut Impact Review Board, n.d.). On a similar note, more attention is needed to the nuances and applicability of the energy transition in Nunavut as well as to how communities have the capacity and opportunity to determine the shape of this energy transition—if it is even applicable at all. It is in this space that the dynamics of energy transition and diversification, combined with community engagement processes and the centring of Inuit Qaujimajatuqangit, appear to be a critical knowledge gap in current Arctic energy research.

Indeed, while great emphasis is put on the energy transition—the green transition—as a fundamental piece of climate change mitigation action as well as environmental and health safeguarding in the Canadian Arctic, the green transition has received scathing critiques with Sámi leaders criticizing the imposition of renewable energy infrastructure on their lands as "green colonialism" (Fjellheim, 2022; Frandy, 2021; Normann, 2021).

In Canada, the energy transition has been federally incentivized, as previously highlighted. An energy transition in Nunavut, however, remains critically combined with concerns of reliability and affordability (Nunavut, 2025; Pepa, 2016; Pinto & Gates, 2022). As such, in response to those concerns of reliability and affordability, a more nuanced approach of energy diversification—instead of transition—is being advocated as a realistic path forward for the territory (Barnes, 2023; Byrne, 2018; Cambou & Poelzer, 2021; Soer, 2024).

Economically, oil and gas production in Nunavut is not seen as a promising industry, despite the territory holding estimates of 18 billion barrels of oil and 181 trillion cubic feet of natural gas, due to prohibitively high costs of infrastructural development—both in terms of human capacity and physical infrastructure including the lack of accessibility since there are no roads in Nunavut (Canada Energy Regulator, 2024; Nunavut Economic Development and Transportation, 2017; Pinto & Gates, 2022; Soer, 2024).

The mining industry—including for the critical minerals necessary for renewable energy infrastructure—is confronted with similar issues of human capacity and accessibility constraints, putting a damper on the mining potential of the territory (Ritsema, 2014). Nunavut has four operational mines producing gold and iron, and three critical mineral exploration projects in the Kitikmeot and Kivalliq regions looking to develop the mining of zinc, copper, silver, lead, gold, nickel, palladium, platinum, and cobalt (CIRNAC et al., 2024; NWT & Nunavut Chamber of Mines, 2021). The Nunavut land use plan will determine the realization of critical minerals mining.

Environmental concerns have been paramount for local communities. As such, according to the 2021 Draft Nunavut Land Use Plan and the 2023 Recommended Nunavut Land Use Plan, 19% of land is under limited use (up from the 15% of the 2016 draft land use plan), meaning that there are year-round limitations and prohibitions on one or more types of land use; 12% is under conditional use with seasonal prohibitions on particular activities; and mixed use comprises 65% of the land, which means no prohibited uses or conformity requirements (Nunavut Planning Commission, 2021, 2023; Tranter, 2023; Venn, 2021). This draft plan would therefore mean that 22% of Nunavut would not be open to mining or other resource development. For the long-term development of renewable energy, this further pushes back the development potential of homegrown industries in the energy sector (Antunes, 2023; NWT & Nunavut Chamber of Mines, 2021). While the mining sector has received a lot of opposition and criticism regarding its detrimental environmental impacts and at times violent social impacts (Kunuk, 2019; Pauktuutit et al., 2014), Nunavut Member of Parliament Lori Idlout's comment for the *Nunatsiaq News* regarding the Land Use Plan draft exemplifies the growing tensions in the territory between environmental protection and economic viability: "I'm leaning towards becoming anti-mining, but I know how important critical minerals are for the functioning of our societies" (Antunes, 2023).

The development of renewable energy in the Arctic is thereby at the crux of the interplay between domestic and global forces (including international actors from foreign states to the private sector), which are placing Nunavut into this enmeshment of interests. Yet, while the mining industry—critical for the energy

sector for both fossil fuels and renewables—is heavily criticized in Nunavut by Nunavummiut, renewable energy solutions are increasing in popularity among the same general population. This duality anchors Nunavut again in the larger critique of green growth, as seen above, where the vast majority of mineral production will not be for domestic use, yet the territory will bear the brunt of its environmental and human impacts.

The literature on renewable energy development in Nunavut and elsewhere in the Arctic focuses largely on energy security and the green transition. However, the interconnection with the mining sector, and the reality of continued fossil fuel use for the foreseeable future pointing towards energy diversification, take a back seat and seem to operate in separate realms of research. It is within this complex insular literature on resource development that the triad of energy transition and diversification, community involvement processes, and the application of Inuit Qaujimajatuqangit is here explored. In what ways are community consultation practices and Inuit Qaujimajatuqangit embedded in renewable energy decision making in Nunavut, and how effective are they under Nunavut, Canadian, and international frameworks?

Research Design and Methods

This study involved content analysis of interviews with seventeen stakeholders and rights holders, as well as content analysis of grey literature. Thematic content analysis (Neuendorf, 2018; Vaismoradi et al., 2016) dives into key themes that are extracted from interviews and the literature to form the foundation of the analysis: In what ways are community consultation practices and Inuit Knowledge embedded in renewable-energy decision making in Nunavut, and how effective are they under Nunavut, Canadian, and international frameworks? The literature was chosen based on relevancy. The government policy documents and legislation were chosen based on their applicability and relevancy for the context of energy development in Nunavut. The interviews were conducted in Iqaluit and virtually during the spring of 2024, and ranged bewteen unstructured and semi-structured. Respondents included employees and representatives from circumpolar development organizations Inuit organizations, Inuit territorial and local governments, and federal government and northern agencies; scholars on Arctic affairs; and local residents. The individuals were chosen based on their professional capacity or, in the case of local residents, based on consumer interest in renewable energy development in their community. The diverse pool of respondents enabled a comprehensive view on energy development in the territory. While the interviews were mostly conducted in Iqaluit, the professionals responded to the interests of the whole territory and were not limited to their jurisdiction or to Iqaluit. An exception was a local government representative who brought in the municipal perspective. The questionnaires were adapted based on the individuals, as well as their responses to the conversation. This allowed adding modifying questions to better reflect the ongoing conversation.

For community members, the core questions were formulated as such: What do you think about renewable energy in general? What do you think about renewables for your community? And do you feel that you are heard or that you have a say in the energy policy of the town? These three questions were formulated to leave plenty of space for the respondent to take the conversation in multiple directions. These questions aimed to juxtapose local residents' perceptions of renewable energy with how they imagine their own community's energy future as well as how they relate to local decision makers regarding energy development. These questions aimed to highlight either continuity or discrepancy in respondents' perceptions of renewables both in a hypothetical larger context and in the specific context of their community. The questions also aimed to spark conversation on governance proximity between local residents and local/territorial and federal decision makers.

For individuals interviewed in their professional capacity, the questionnaires were adapted to the individual's position. However, key themes remained: application of both the law and of development policies whether territorial, federal, or international; inclusion or foregrounding of Inuit Knowledge and community consultation; relations between the public sector and the private sector; capacity constraints including engagement fatigue and staffing issues; as well as other social inclusion markers, such as gender, in energy development. These questions aimed to provide insight by highlighting multi-level governance within the territory and in relation with the federal government using domestic and international frameworks; in relations between sectors and the local population; and in the dynamics of inclusion in community consultation. This methodology allowed for direct insights into the perspectives of decision makers and rights holders through a multi-scale approach. Choosing both interview methodology and content analysis of relevant policy documents enabled confronting policy with the lived realities of decision makers and rights holders. The methodology also enabled insights into the lived realities, especially on the meaningful incorporation of Inuit Knowledge.

The thematic analysis of the interviews and literature was conducted manually by extracting recurrent vocabulary or recurrent remarks within their context. It is logical that a question on engagement fatigue, for instance, would spark an answer containing the term engagement fatigue many times throughout the conversation. This does not mean that engagement fatigue is a determinant factor in shaping

operationalization of energy development policies. This thematic analysis hence used a qualitative approach that both contextualized the content and provided informative insights into respondents' perceptions and understandings of renewable energy development in Nunavut.

The results of this analysis are shown using word clouds (see Figure 1 and Figure 2). The choice of word clouds responds to two imperatives. The first is that the visualization of word clouds enables a clearer understanding of key words as an ensemble. In short, word clouds enable a context, a landscape, to emerge out of textual analysis, that a simple table would not necessarily allow. In this regard, the word cloud supports the content analysis by offering a clear contextual visualization of the data. Second, the simplicity of a word cloud enables a clearer communication of research findings. Indeed, this study was conducted with respect for communicating results in a plain language format to the community members who participated in the research. Word clouds enable, in a clear and succinct way, the communication of research findings in a fun and interactive way (DePaolo & Wilkinson, 2014; Henderson & Segal, 2013).

Results

Thematic Content Analysis of Interviews

The interviews indicated a prevalence of interlinkages between people and their community, work, and development, as well as climate change in the Arctic and knowledge production (see word cloud of most prevalent terms in Figure 1). "Climate change" appeared 38 times, "community" 98 times (its plural appeared 65 times), and "work" and "development" 72 and 64 times respectively. "Knowledge" appeared 73 times and "people" 131 times. "Inuit" appeared 97 times. Given that the topic of the study was community engagement and the inclusion of Inuit Knowledge in renewable energy development, the results for community, energy, Inuit, and knowledge are not surprising. The Qulliq Energy Corporation (QEC) appeared 51 times, as a main actor responsible for energy development in the territory, as it is responsible for the grid. The Government of Nunavut (GN) appeared 24 times.

Respondents correlated the topic of renewable energy development with wider conversations on climate change and energy diversification. Energy diversification was, however, preferred over energy transition. As one respondent working for an Inuit organization remarked, "Don't force anybody to stop driving a fuel car. […] I support anybody who wants solar and windmill, but for all the community to rely on solar, wind, tidal … don't force anybody into that." However, another respondent from the federal government highlighted the need for better public education on energy diversification and renewable energy technologies: "There is no literacy on windmills and solar, the opportunities for misunderstandings are high. These are very new concepts. […] How do we transition? What are the tools in our toolbox and meet the needs of the community?"

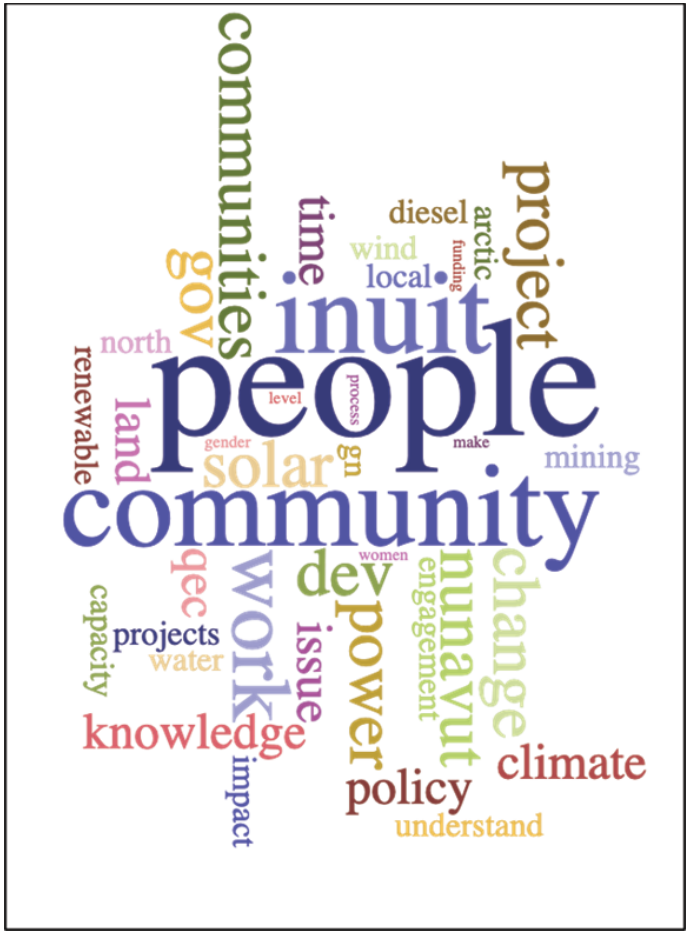

Figure 1. Word cloud representing the 40 most prevalent words in a content analysis of 17 interviews conducted in 2024 with Nunavut stakeholders and rights holders discussing renewable energy. Source: Author.

On policy and intergovernmental relations, one respondent working for an Inuit organization described the flow of information and policy making as a "top-down funnel of information" where "Southerners" come into the Nunavut energy landscape lacking insider knowledge and look to include Inuit Knowledge after the fact: "Don't add in IQ [Inuit Qaujimajatuqangit], use IQ" (Inuit organization respondent).

On energy transition, decaying infrastructure was mentioned repeatedly. One respondent from the federal government recognized the challenges the energy corporation QEC faces in the maintenance of old generators, as they "can't keep technicians." One community member reminded about the dependency on generators: "We can't totally go to renewables, because the sun sets and wind stops. We still need generators but we can be more economical in how much diesel we use." A respondent from the energy sector responded by acknowledging the risks posed by an aging infrastructure: "We are continually preoccupied keeping the lights on. There are 25 communities with aging diesel generators," which incentivizes the development of "ways to lower carbon footprint." Relations with the federal government were here once again highlighted: "Everyone wants to get away from diesel. But newer generation diesel [generator] is much cleaner in terms of noise pollution and amount of energy per litre of fuels. We're trying to communicate that to federal partners." "Appropriate balance," as mentioned by this respondent, was a running theme where virtually all respondents were not yet considering full energy transition. While the cabin program, which subsidizes the installation of solar panels on hunting and fishing cabins on the land, is very popular and mentioned by many respondents who engage in hunting, a full transition away from fossil fuels was not considered by the respondents: "You can't just switch a generator out. You need electricity at all times" (federal government respondent). As such, key barriers to local and territorial adoption were framed according to structural capacity constraints: the need for qualified labour and the need for reliable and affordable energy formed the key criticisms against widespread adoption of renewable energy solutions.

On community consultation and consultation dynamics, some respondents highlighted the lack of consultation by actors in Nunavut, as one federal government respondent mentioned: "QEC hasn't engaged well with communities. [They face] challenges with infrastructure, old generators […] QEC could do a lot better" (federal government respondent). Virtually all respondents highlighted the importance of "community needs and preferences" (Inuit organization respondent) where "regional Inuit organizations have that connection to their communities and responsibility for their communities" as opposed to the federal government, which is not often at the table "going deep in with the communities" (Inuit organization respondent). Local residents also remarked on the need for better consultation from the government: "The government does consultation once in a while but there's not enough consultation I don't think so. I haven't seen environmental impact assessments. It's going very slowly, I wish it was faster" (community member). Many respondents highlighted the apparent disconnect between southern Canadian and federal imperatives, and northern realities: "If I'm coming to the community with something that is southern, I get a southern response. When I do something that is northern, I get a northern response" (local government respondent).

Community consultation was often linked with the use and foregrounding of Inuit Knowledge, which, however, was confronted with a polarized reception, between instrumentalization and decolonization. Inuit Knowledge was described variously as a "buzzword" with "good intentions" (federal government respondent), as a "priority" (federal government respondent), as "more than simple statements" and "informing" institutional workings (Inuit organization respondent), or even as "red tape" where the more senior the position, the less it may or may not be incorporated (local government respondent). Inuit Knowledge was also described as a way to serve teamwork in combating engagement fatigue and capacity issues (local government respondent). The issue of passing knowledge from Elders to youth amidst climate change was mentioned, where the ancestral knowledge "being passed may no longer be applicable" (territorial government respondent).

The use of Inuit Knowledge, or Inuit Qaujimajatuqangit, also varies conceptually where respondents used the terms "local knowledge" and "traditional knowledge" interchangeably. While the incorporation of "traditional local knowledge" was seen as "tricky," a federal government respondent raised questions: "where does the boundary lie?" between traditional local knowledge and Indigenous Knowledge, especially in the context of circumpolar collaborations? Local knowledge was also used by community members to highlight the importance of local engagement in territorial development (local community respondent). Inuit Qaujimajatuqangit was seen as a tool for "local mapping of impacts" used for future development (Inuit organization respondent).

Specifically on community consultation, gender was mentioned 30 times by the respondents. The inclusion of gender on the topic of renewable energy development ranged from non-existent (the Inuit organization respondent and the local government respondent), to its inclusion at the administrative level, but not at the project level (the Inuit-owned energy sector respondent), to its inclusion at the discursive level but not at the project level (another Inuit-owned energy sector respondent). On gender, some respondents highlighted that current priorities lie more on the "better inclusion of Inuit perspective, IQ, and how do we adapt the way we work with culturally appropriate manners?" (territorial government respondent). This inclusion of Inuit perspectives related directly to

larger dynamics of high turnover (circumpolar development sector respondent, community member respondent) and engagement fatigue (Inuit organization respondent, local government respondent, territorial government respondent), which was also described as "over-engagement" (local government respondent). While engagement fatigue, as described either as a result of high turnover or over-engagement, is prominently recognized by most respondents, a local government respondent and a circumpolar development sector respondent challenged the notion of engagement fatigue, observing that "Anywhere in the world you have vacant positions. It doesn't matter if you have 100 or 20 staff, as long as you have the environmental situation where it is calm, happy, and [where you] like what you are doing and get work done (local government respondent)." The other respondent also challenged the notion as "fatigue is not giving agency to people. It's more an issue of capacity, or the turnover. It's going back to the issue of education" (circumpolar development sector respondent).

Overall, interview respondents gave critical insights into the state of the inclusion of Inuit Knowledge, into community consultation dynamics, and into the reception of renewable energy at the federal–territorial relations level, at the territorial level, and at the local municipal level by both professionals and community members. While responses ranged, there was some consensus on the possibilities of energy diversification as well as the importance of incorporating local Inuit Knowledge into regional development, despite the recognition that it is not necessarily meaningfully done.

Thematic Content Analysis of Grey Literature

The grey literature documents were chosen for their ability to show the vertical and horizontal governance dynamics between actors relevant to energy development in Nunavut—the federal government, the Nunavut territorial government, the energy sector, international frameworks and institutions, and Inuit rights organizations. This analysis of vertical and horizontal governance serves to uncover the dynamics behind the framing and operationalization of renewable energy development in Nunavut under local, federal, and international policy frameworks. The documents analyzed included the following:

- Nunavut Lands and Resources Devolution Agreement, co-signed by the Government of Nunavut, Nunavut Tunngavik Incorporated, and the Government of Canada (Canada et al., 2024);
- United Nations Declaration on the Rights of Indigenous Peoples Act Action Plan (UNDA), which sets out how Canada will implement the federal United Nations Declaration on the Rights of Indigenous Peoples Act (Justice Canada, 2023);
- United Nations 2030 Agenda for Sustainable Development (United Nations, 2015);
- Inuit Nunangat Policy (Inuit–Crown Partnership Committee, 2022)
- Canada's Arctic and Northern Policy Framework (CIRNAC, 2019)
- Pan-Territorial Growth Strategy of the Canadian Northern Economic Development Agency (CanNor, 2019);
- Wildlife Act, 2003;
- the Arctic Energy Fund (under the Canada–Nunavut Integrated Bilateral Agreement signed in 2018); and
- Kinship and Prosperity: Proven Solutions for a Clean Energy Landscape Report (Wah-ila-toos Indigenous Council, 2024).

The term "Indigenous" appeared 1,335 times across the legal and policy documents, "Arctic" appeared 719 times, "wildlife" appeared 583 times, "development" appeared 578 times, "peoples" 562 times, "sustainable" 337 times, "respect" 540 times, and "rights" 468 times. The term "public" appeared 263 times across all documents. See word cloud of most prevalent terms in Figure 2. Each document, however, through the central vocabulary utilized, emphasizes different themes. Across documents, there is some continuity in the emphasis on development. As several documents pertain to agreements made between the federal government and the territorial government, the notion of partnership is equally present. Similarly, documents relating to northern development such as the Inuit Nunangat Policy and the Arctic and Northern Policy Framework emphasize self-determination, treaty rights, and Indigenous rights. Territorial documents such as the Wildlife Act (2003) similarly lay down the importance of Inuit harvesting rights: "wildlife management should be an effective system that complements Inuit harvesting rights and priorities, recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of habitat, and recognizes the need for an effective role for Inuit in all aspects of wildlife management" (Wildlife Act, 2003, s. 1(2)(m)).

The centring of the Inuit way of life, world view, and knowledge is echoed across the corpus, albeit in different ways depending on jurisdiction and intent. While the Wildlife Act, the Bilateral Agreement, the UNDRIP Action Plan (UNDA), and the Lands and Resources Devolution Agreement are law—thereby utilizing legal terminology—the other documents (the Arctic and Northern Policy Framework, the Kinship and Prosperity recommendations, the Inuit Nunangat Policy, and CanNor's Pan-Territorial Growth Strategy) serve as indicators of policy intent and engage the responsibilities of parties involved in taking these recommendations and roadmaps to enaction either through programs or through law. The Wah-ila-toos Indigenous Council's Kinship and Prosperity recommendations report (KPR) is supported by the legal framework of UNDA, itself based on the United

Nations Declaration of the Rights of Indigenous Peoples (UNDRIP). UNDA thereby implements concepts recognized by UNDRIP, such as free, prior, and informed consent. This enactment aligns national frameworks with international guidelines pertaining to Indigenous consultation and engagement rights. The Pan-Territorial Growth Strategy, while not directly mentioning free, prior and informed consent or the duty to consult, does mention their funding mechanism through "coordinating federal participation in regulatory review processes and Crown consultation with Indigenous peoples for major resource and infrastructure projects in order to maximize the collective benefits" (CanNor, 2019, p. 7)

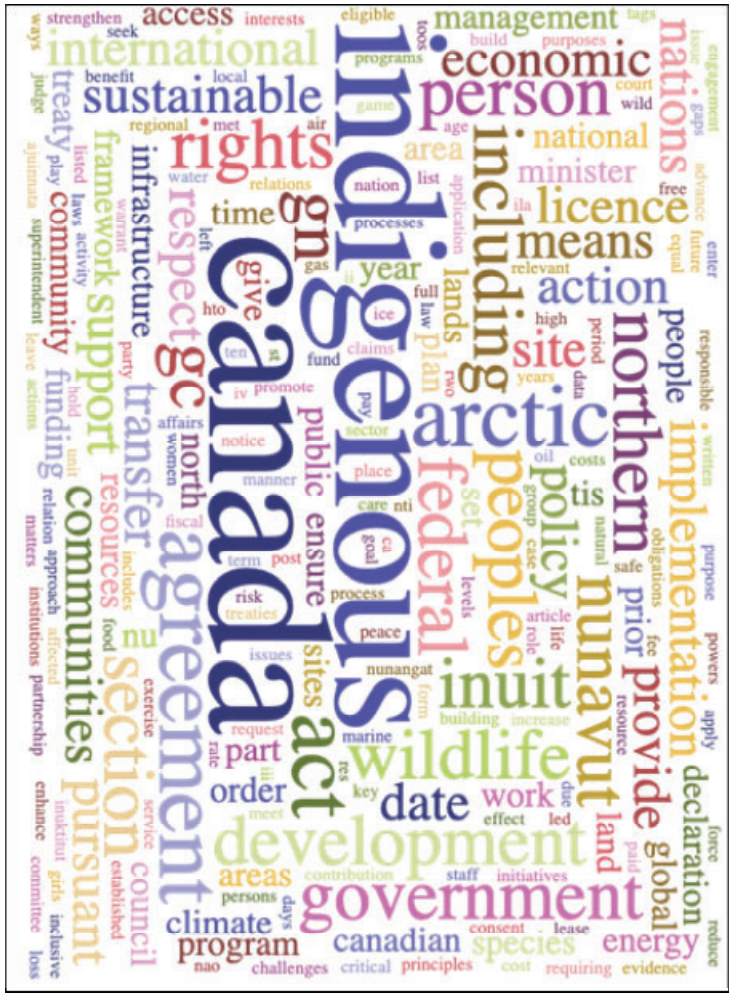

Figure 2. Word cloud illustrating most prevalent terms found through content analysis of all selected grey literature. Source: Author.

While the Wildlife Act and the Kinship and Prosperity Report (KPR) foreground Indigenous self-determination and Treaty rights, the Arctic and Northern Policy Framework repeatedly emphasizes the partnership with Indigenous Peoples and the priorities of Indigenous Peoples through a nationalizing discourse of "our Arctic": "Building on these new partnerships, the ANPF provides a long term foundation for transformative change, benefiting our Arctic, its Indigenous peoples, northern residents and all Canadians" (Canada, 2019, p. 8). Thereby, federal and territorial jurisdictional powers are clarified throughout the policies: while the sovereignty of the federal state is emphasized and reinforced, partnerships with Indigenous nations and communities are encouraged. Canada's Arctic and Northern Policy Framework (ANPF) and Nunavut's Wildlife Act, while serving very different purposes in different contexts, showcase the continuous balancing act of power dynamics between territorial self-determination and federal jurisdiction, where the verticalization of power—meaning the reinforcement of colonial power dynamics through policy—is challenged through horizontal legal channels in bilateral and territorial agreements. Documents written through Indigenous priorities and documents written through government administrative priorities thereby differ in their emphasis despite federal documents reiterating federal–Indigenous partnerships. Another difference in approach is the centring of Indigenous Knowledge—including language—in the Wildlife Act and the Kinship and Prosperity Report. As the KPR document emphasizes just transition through the free, prior and informed consent framework and through Indigenous leadership including Indigenous Knowledge, "which cannot, ever, be licenced or owned by the Government of Canada" (Wah-ila-toos Indigenous Council, 2024, p. 2), the Wildlife Act highlights Inuit Qaujimajatuqangit 13 times throughout the statute.

This foregrounding of Inuit Knowledge in the Lands and Resources Devolution Agreement is not present. Instead "Traditional Knowledge" is only mentioned once (Canada, Nunavut & NTI, 2024, p. 46); "Indigenous Knowledge" is also mentioned once (p. 59) where consultation with communities also appears, as well as once before (p. 41). Community consultation is only mentioned twice (p. 41, 59) in the document. The term gender only appears within a Canadian context in the Arctic and Northern Policy Framework (Canada, 2019, p. 39 in relation to sustainable development, pp. 47, 57, 60, 61, 65) and once in the KPR document (p. 3). The language difference between the Wildlife Act and the Lands and Resources Devolution Agreement showcase the epistemological disparities between an Act written by and for the Inuit and an Agreement written for the federal government. This was corroborated by an interview respondent from the local government: "[We] wanted to put in a place that Inuit Knowledge has to be in the [Wildlife] Act. Which of those knowledge can we include in the Act?

We [...] took the 8 guiding principles to work for other departments and took [the principles] into the government system. [It] was only supposed to be for the Wildlife Act but [they] took it for all."

With respect to energy, while the term does not appear in the Inuit Nunangat Policy, it does appear in the federal Arctic and Northern Policy Framework and Pan-Territorial Growth Strategy. Specifically, on energy diversification and transition, the two documents use the terms "green," "clean," "renewable," "alternative," and "bio-energy." The Arctic and Northern Policy Framework emphasizes non-fossil fuel energy while the strategy recognizes the economic weight and structural dependence on fossil fuel (p. 14). The two documents use the term "diversification" only in relation to economic diversification. While energy diversification or even transition is not explicitly mentioned, the development of "green," "clean," "renewable," or "alternative" energy sources is emphasized in both documents: "While the mining sector remains the cornerstone of territorial economies, new opportunities for growth are emerging across a diverse range of sectors including tourism, renewable energy, northern food sectors, commercial fisheries, and cultural and traditional sectors" (CanNor, 2019, p. 3); and "we will champion a number of circumpolar initiatives that support the development and deployment of green energy in Arctic and Northern communities, including initiatives related to exchanging knowledge and expertise on renewable and alternative energy technologies" (Canada, 2019, p. 69).

Notably, the ANPF calls to "Achieve energy security and sustainability in all communities and improve access to reliable, affordable and clean energy solutions" (p. 44). Such a call is consistent with international frameworks such as the United Nations 2030 Agenda for Sustainable Development (2015). Under the Agenda, partnerships and properity are centred through the need to foreground the interests of people so as "to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment" (UN, 2015, p. 2). Strong economic foundations (article 27); safety, resilience, and sustainability (article 7); or urban infrastructure development (article 15) form the core behind the Goal 7 of the Agenda for Sustainable Development. The Goal 7, "Ensure access to affordable, reliable, sustainable and modern energy for all" (p. 14), recalls closely the imperatives stated by Nunavut's power utility Qulliq Energy Corporation (QEC) and by the Government of Nunavut. Reliability and affordability specifically form central concerns. As such, there is a noticeable continuity in key themes between Canadian and international frameworks.

The domestic policy documents the Arctic and Northern Policy Framework and the Pan-Territorial Growth Strategy, written by the federal government, both envision the future of the Canadian Arctic and North, and both outline economic visions for the territories while maintaining jurisdictional boundaries—the Yukon and the Northwest Territories both have jurisdiction over their lands and resources at the time of publication of both documents. As such, while the specific terms of "energy diversification" or "energy transition" are not mentioned in the documents, non-fossil fuel energy is emphasized by language by the federal government. The CanNor Strategy document also mentions bio-energy as an alternative to diesel use in specific cases (p. 14). The Arctic Energy Fund (AEF) as stipulated under the Bilateral Agreement, however, explicitly calls for transition:

> A.4 Rural and Northern Communities Infrastructure
> a) Objective
> i. The rural and northern communities infrastructure stream will support Projects that improve the quality of life in rural and northern communities by responding to rural- and northern-specific needs.
> ii. This stream includes the Arctic Energy Fund, which will focus primarily on improving energy security through upgrading or replacing fossil fuel-based community energy systems and enhancing diesel transportation and supply in communities where connection to an electricity grid or relying solely on renewables as a source of energy is not a feasible solution. Finally, the Arctic Energy Fund will also support the transfer, in whole or in part, from fossil fuel-based systems to renewables.
> (Canada–Nunavut, 2018, p. 22)

Additionally, eligible AEF projects "must meet or exceed any applicable energy efficiency standards for buildings outlined in the Pan-Canadian Framework on Clean Growth and Climate Change" (p. 7). The document uses both "renewable" and "clean" to define qualifying energy types under the Fund (p. 17). The Lands and Resources Devolution Agreement addresses the development, conservation, and management of non-renewable natural resources (Canada, Nunavut & NTI, 2024, p. 26). On renewable energy development, QEC's Independent Power Producer Program enables "Integrating renewable energy systems in the territory's energy grid [and] helps decrease Nunavut's dependency on diesel fuel, enabling the corporation to reduce carbon emissions and promote energy self-reliance" (QEC, n.d.); it was previously not within the mandate of QEC to be able to integrate independently produced energy into its grids. While the Arctic and Northern Policy Framework mentions energy security once (p. 44), as does the Canada, Nunavut, and NTI Bilateral Agreement (p. 22), the Pan-Territorial Growth Strategy does not.

The thematic content analysis of the documents, juxtaposed with the thematic content analysis of the interviews, shows governance and policy trajectory dynamics between the territory and the federal government. While interview respondents emphasized the importance of community consultation and foregrounding of Inuit Knowledge—despite some difficulties therein—this emphasis does not appear in similar ways in the selected documents. The legal documents pertaining to energy development do not centre community consultation or Inuit Knowledge, but centre administrative processes pertaining to its management. Community consultation or Inuit Knowledge are only very rarely linked to the question of energy development. The policy documents also showcase a dissimilar discursive trend between federal documents and territorial documents—where federal documents highlight partnership and certain "buzzwords" like gender or renewable energy, and northern documents emphasize self-determination and Treaty rights, even when referring to energy. This analysis thereby demonstrates discursive realities constructing relations between the territorial government and the federal government as well as responding to international frameworks: one where priorities are struggling to find a common discourse, despite some alignment with international framing of energy as affordable, resilient, and sustainable.

Discussion

The thematic content analysis of the interview respondents and the selected grey literature both show a discrepancy between federal perceptions and priorities and territorial perceptions and priorities. The discrepancy between the Wildlife Act and the Lands and Resources Devolution Agreement illustrates the differences between the territorial government and the federal government, where Inuit Knowledge and community knowledge are foregrounded in starkly different ways. One aims at management for and by the Nunavummiut, while the other serves as guidelines in relation with the federal government. One is an Act, the other an Agreement. The interlinkages between community consultation and development, which were highlighted by the interview respondents, are not reflected in the documents with similar emphasis.

The disconnect, however, between the theory of foregrounding Inuit Knowledge—as acknowledged as essential by respondents and certain legal and policy documents—and its implementation, is apparent through the insights of the respondents. Describing Inuit Knowledge as "red tape," and the inability of several respondents to clearly articulate examples of the application of IQ within projects, demonstrates a gap between policy and practice. This gap demonstrates the tension between shaping a territory according to Inuit identity, values, customs, and knowledge, and being a territory with a federal—colonial—system. In this vein, the members of Nunavut Tunngavik Incorporated (NTI) passed a resolution in 2021 directing NTI to pursue Inuit self-government, criticizing the Government of Nunavut for absurdly defending "colonial policies, programs and services" through a "focus on the non-Inuit minority" (NTI, 2021). Former NTI President Aluki Kotierk defended the Nunavut Agreement and "the hope and dreams that was originally envisioned for Inuit and their future generations" (NTI, 2021), which entails a renewed conversation on self-government within a colonial paradigm.

Against a state-centric approach, the results point toward an ongoing power negotiation between federal imperatives and jurisdiction, and territorial self-determination and jurisdiction. In this, IQ and community consultation, to achieve social licence, act as performative. In order to achieve the public's acceptance of energy development trajectories, both for non-renewable and renewable energy, the apparent foregrounding of consent and IQ act as tools to craft an image akin to reconciliation between the federal government and the territorial government, as well as an image of democratic Inuit-focused efforts between the territorial government and the general population under the territory's Nunavut Act obligations.

Yet, it remains important to nuance the failure of effective operationalization of IQ and community consultation, as this would also, to repeat the words of one respondent critical of engagement fatigue, not be "giving agency to people." Dismissing community consultation and IQ just as tools under colonialism would strip these of any agency and their further potential for achieving self-determination. Neither would it correspond to the complex landscape of energy development in Nunavut where some companies, such as NNC, an Inuit-owned company, develop in-depth tools to support meaningful engagement. Neither would it show the ways that civil society is serving to protect Inuit interests in Nunavut through the work of organizations such as NTI, Inuit Tapiriit Kanatami (ITK), and Pauktuutit Inuit Women of Canada. In short, while Aluki Kotierk and the interview respondents highlight the co-optation of certain "buzzwords" and institutions meant to protect and serve Inuit communities, this does not flatten the complex landscape of energy development in the territory—it co-exists with pockets of agency. It could be argued that it is precisely this co-optation, the continuous danger of colonial erasure, that forces the existence of streams of resistance, of other ways of doing.

The operationalization of Canadian frameworks, including domestic legal frameworks, supporting Nunavut's self-determination, coupled with international policies, is thereby dual: while consultation and IQ are co-opted and meaningful implementation is lacking structurally, streams of agency in self-determination are finding ways to produce meaningful impact. The energy corporation's Independent

Power Producer Program, for instance, is the result of long-standing advocacy by Inuit-owned businesses such as Nunavut Nukkiksautiit Corporation to diversify the energy landscape of Nunavut while maintaining Inuit interests. In short, the renewable energy landscape of Nunavut, as seen through community consultation and IQ, is developing in tandem with both self-determination and continuous institutional colonial oppression. As such, this study provides research on renewable energy development in relation to community involvement processes and meaningful incorporation of Inuit Knowledge. It also highlights the lack of conceptual clarity of community involvement processes and therefore also shows the difficulties faced in meaningful implementation of Inuit Knowledge.

The Government of Nunavut and Inuit rights organizations Nunavut Tunngavik Inc. and Inuit Tapiriit Kanatami, have co-developed collaboration strategies to address security in general. Under the Nunavut Arctic Sovereignty and Security Strategy, released in September 2025 by the government and NTI, energy security is explicitly named as a key area for empowered decision making, especially in regard to critical mineral exploitation and the green energy transition (Nunavut & NTI, 2025, p. 3). Replacing diesel dependence is also highlighted by ITK as a key strategy with the federal government's Major Projects Office as announced in November 2025 (ITK, 2025).

The strategies espoused by the Government of Nunavut, NTI, and ITK align under the premise of securing energy as a tool for self-determination to ensure that, "In this time of growing geopolitical interest in the Arctic, we must ensure that sovereignty is not only asserted—but lived, secured, and shared in full partnership with those who call this land home" (Nunavut & NTI, 2025, p. 3). The emphasis on full partnership links strongly with the foregrounding of the duty to consult and the principle of free, prior and informed consent. Additionally, the Sovereignty and Security srategy addresses the importance of foregrounding IQ, and specifically "Avatittinnik Kamatsiarniq—our deep respect for the environment—and calls for action that protects both sovereignty and sustainability" (p. 4). It sees the inclusion of Inuit Knowledge as a "strategic advantage" (p. 20) and as part of a "fundamental shift" towards Inuit-led approaches and "partnership based on respect for Inuit rights, recognition of Inuit knowledge and leadership, and commitment to sustainable development that serves communities first while contributing to national goals" (p. 27).

The frameworks of the duty to consult and free, prior and informed consent, in conjunction with Inuit Qaujimajatuqangit, seek to guide energy-related decision-making processes between federal and territorial powers. However, their implementation remains asymmetrical between actors, where co-optation and the lack of meaningful incorporation thereby arise, resulting in engagement fatigue and overall discontent as reported by multiple respondents. It is within this navigation of power with the federal government that the Government of Nunavut similarly navigates priorities and interests within the territory. While Inuit organizations have criticized the Government of Nunavut as essentially reproducing colonial violence, the government's obligations remain explicit under the Nunavut Act to secure services for its constituents, despite facing ongoing structural challenges. In this sense, community consultation and IQ become tools used by Inuit civil society and the private sector, as well as by some departments within the Government of Nunavut, to engage the territorial government in fulfilling its obligations.

Conclusion

The ways that governments, civil society, community, and the private sector are implementing community consultation practices and Inuit Knowledge in renewable energy decision making in Nunavut, and their effectiveness, have been explored using thematic content analysis, to identify how interview respondents talk about, and how domestic and international policy and legal documents write about, these issues. Renewable energy development operates within a wider realm of resource development in Nunavut, which in turn is influenced by natural resource exploitation in the Arctic and self-determination dynamics under devolution.

Concerns of human and environmental sustainability domestically are echoed in international frameworks concerning the rights of Indigenous Peoples (UNDRIP, here analyzed under the Canadian UNDA), and sustainable development (the UN 2030 Agenda). Through conversations on sustainability, renewable energy development is anchored in larger restructuring efforts for how business is conducted and how relations with the federal government are framed in the Arctic. These larger restructuring efforts bring about conversations on community consultation, the place of Inuit Knowledge, and the operationalization of these policies calling for sustainable development.

The results of the thematic content analysis of both interviews and policy and legal documents have shown differences in (i) federal language versus territorial language, in (ii) the theory of centring Inuit Knowledge versus its implementation, and in (iii) the theory of community consultation, based in the duty to consult and the principle of free, prior and informed consent, versus its implementation in federal and territorial policies regarding resource and energy development. These tensions between the federal and the territorial—including discord within the territory—evolve within the context of colonial power dynamics between the actors. Energy self-determination becomes a tool of resistance against colonial imposition. The latest Arctic Security and Sovereignty Strategy published in 2025 by the Government of Nunavut and Nunavut Tunngavik Incorporated highlight the need for the foregrounding of local needs and Inuit leadership in

northern development, especially as applied to energy development, including the energy transition. As such, while momentum is building in favour of local self-determination, the discrepancy experienced on the ground as well as the discursive differences between federal interests and territorial interests need to be addressed to build meaningful relevance to enact truly sustainable change.

These findings add to the existing literature on community consultation in the Arctic and offer insight on the complex landscape of renewable energy development in Nunavut. The case of renewable energy development shows the complex ways the federal system—through devolution—influences the ways that development plays out locally. The devolution process influences the ways through which colonial imposition and Inuit agency compose with one another—between co-optation and self-determination.

Positionality: The author is originally from Brittany (France) and the Netherlands, and has lived in Canada since 2021.

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Commentary

The Arctic in Future Energy and Resource Security

Heather Exner-Pirot*

Abstract: The closure of oil production in Norman Wells marks the end of a historic chapter in Canadian Arctic resource development and underscores the economic realities shaping the region's future. While debates about Arctic oil and gas have often centred on climate policy and environmental opposition, the primary driver of development has always been global commodity prices and project economics. Arctic projects typically cost two to three times more than comparable developments in southern jurisdictions due to infrastructure gaps, high labour and transportation costs, and complex regulatory processes. Despite these challenges, the Arctic hosts world-class deposits of gold, diamonds, nickel, and iron ore, and currently supports several operating mines across the three territories. Large-scale Arctic oil and gas development is unlikely in the medium term, due to competition from other, cheaper sources. The near-term future of Arctic energy is therefore less about megaproject exports and more about strengthening local energy systems that can power communities and unlock the next generation of northern resource development.

*Natural Resources and Environment, Macdonald-Laurier Institute; Arctic Yearbook

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Commentaire

L'Arctique dans la sécurité énergétique et des ressources futures

Heather Exner-Pirot*

Résumé : La clôture de la production pétrolière à Norman Wells marque la fin d'un chapitre historique dans le développement des ressources arctiques canadiennes et souligne les réalités économiques qui façonneront l'avenir de la région. Alors que les débats sur le pétrole et le gaz arctiques portent souvent sur les politiques climatiques et l'opposition environnementale, le principal moteur du développement demeure le prix mondial des produits et la rentabilité des projets. Les projets arctiques coûtent généralement deux à trois fois plus cher que les projets sudistes de même échelle, en raison du manque d'infrastructures, des coûts élevés de la main-d'œuvre et du transport, ainsi que des procédures réglementaires complexes. Malgré ces défis, l'Arctique abrite des réserves exceptionnelles d'or, de diamants, de nickel et de minerai de fer, et soutient actuellement plusieurs mines en exploitation dans les trois territoires. Un développement pétrolier et gazier arctique d'envergure serait improbable à moyen terme en raison de la concurrence provenant de sources moins coûteuses. L'avenir énergétique arctique à court terme ne réside pas dans les exportations de mégaprojets, mais plutôt dans le renforcement des systèmes énergétiques locaux pour alimenter les communautés et libérer la prochaine génération de développement des ressources nordiques.

*Natural Resources and Environment, Macdonald-Laurier Institute; Arctic Yearbook

The end of an era is upon us. In fall 2026, Imperial Oil will shut down its production in Norman Wells, a small town in the Northwest Territories (NWT) where oil has been produced since 1920.

There is often an assumption that there are proponents lining up to extract minerals and oil and gas in the Canadian Arctic and that, if anything, their efforts must be slowed or stymied. Some of this perception surely arises from the last commodities boom, between 2006 and 2014, when oil hit a record US$147 per barrel. This prompted Shell to explore in the Alaskan Arctic offshore, and much conflict followed over whether or not the Arctic National Wildlife Refuge should be developed.

In Canada, exploration in the Beaufort Sea intensified, and the Inuvik Tuktoyaktuk Highway was approved in 2013 under the Harper government, primarily to facilitate natural gas development. Arctic oil and gas development became a wedge issue, and it was clear where progressives stood on the issue. In December 2016 then President Obama and Prime Minister Trudeau jointly announced moratoriums on new offshore oil and gas leasing in Arctic waters.

While that prevented further offshore oil and gas development in the Arctic, an activity that many conservationists found particularly galling since the impacts of fossil fuels are most blatant in the region, it wasn't climate policy that dealt the fatal blow. It was the price of oil and gas, which had fallen to levels that made new Arctic exploration and production uneconomical.

This served a lesson that we too often forget: the main driver for Arctic energy and resource development is not climate change or government policy; it is commodity prices. And for Arctic development to be attractive for proponents and investors, those prices must be very high.

That is because Arctic resource development costs in the neighbourhood of two to three times what equivalent deposits or reserves in southern jurisdictions would require to get to production and market. All things considered, investors will usually allocate their capital to the places that give them the highest returns in the shortest amount of time.

The Canadian Arctic cannot compete on labour costs, transportation, or energy infrastructure. It is far from consumer markets. Its regulation and governance, including overlapping local, Indigenous, territorial, and federal processes, is slow and complicated, and often risky.

Where the Canadian Arctic can compete is in the quality of its resources. The region is obviously vast and its resources are largely untapped. There are world-class deposits of copper, diamonds, gold, silver, iron, natural gas, and nickel. There are additional critical minerals required for defence supply chains, and some initial federal and American government funding has been allocated to the NICO cobalt-gold-bismuth-copper project in the Northwest Territories and the Mactung tungsten project in the Yukon near the NWT border. But turning that potential from elements and molecules in the ground to exportable commodities requires capital—lots of it.

We have spent the better part of a decade protecting the Arctic from resource development. Now, amidst a tariff war, a diamond commodity slump, aging infrastructure, and out-of-control public sector spending, many are starting to work on attracting it.

Looking at what we already produce is instructive for understanding how to develop a business case. Right now, the three territories collectively host eight mines: one silver mine in the Yukon (Keno Hill); three diamond mines in the Northwest Territories (Diavik, Ekati, and Gahcho Kué); and three gold mines (Meadowbank, Meliadine, and Goose) and an iron ore mine (Mary River) in Nunavut. In addition, Nunavik hosts two large mines (Raglan and Nunavik Nickel) and Nunatsiavut hosts one (Voisey's Bay), all nickel-copper-cobalt mines.

Gold and diamonds are attractive options for Arctic development because they don't require a lot of transportation infrastructure. The commodity has a low weight and high value ratio, and the product is literally flown out. Record prices mean gold is leading Arctic resource development right now, with one mine (Goose) opened in the West Kitikmeot in 2025, and Agnico planning for its third gold mine in Nunavut, Hope Bay. In addition, the Yukon is experiencing a modern gold rush, with a $400 million placer gold mining industry (small scale, alluvial), and planning underway for the Snowline deposit in the Selwyn Basin.

The opposite is true for diamonds, which are facing a historic slump. At their peak they comprised a quarter of the NWT's GDP, with much of the remainder coming from the public sector. Persistent poor prices mean Diavik closed March 2026, and the other two mines have shut down some production and are unlikely to make it to the end of the decade without a rebound in prices. This will cause a financial crisis for the NWT, and it is counting on the billions to be spent on remediation projects for the former Giant Mine and diamond mine closures, as well as federal major projects spending, to buy it time until new projects start to develop.

Baffinland's Mary River mine produces a high-grade iron ore that is in demand. After a decade of proposals and planning, it was finally approved for a multi-billion-dollar expansion. Baffinland will build a railway and deep-water port south to Steensby Inlet, rather than use the current haul truck road to Milne Inlet, a move that will allow it to quintuple production.

What Mary River, Raglan, Nunavik Nickel, and Voisey's Bay have in common is they are all world-class deposits within about 100 km of tidewater. Those kinds of deposits further inland are generally prohibitively expensive, as the cost of building and maintaining roads or railroads over hundreds of kilometres, often on muskeg or melting permafrost, and mitigating their impact on migratory species such as caribou, make them uneconomic.

And what of oil and gas development? The Canadian Arctic does have rich deposits, primarily in the Mackenzie Delta and Beaufort Sea in the NWT. Potential projects in the 1970s never received social approval, following the aptly named Mackenzie Valley Pipeline Inquiry, also known as the Berger Inquiry. And the boom in the 2000s met its demise when the shale revolution—the technological combination of hydraulic fracturing and horizontal drilling—unleashed copious amounts of new oil and gas production in the United States, and the oilsands were capitalized and started producing in Canada. Arctic oil and gas cannot compete with shale and oilsands production and, at least in the medium term, it is basins in Alberta and British Columbia that are likely to receive the vast majority of Canadian oil and gas investment.

Arctic oil and gas is complicated by the fact that it must be moved either by an extremely long and expensive pipeline south—an unlikely venture in modern Canada—or moved to a seasonal, ice-choked port. While there is renewed optimism that the Port of Churchill, Manitoba, for example, might be developed for exporting LNG or oil, the economics of seasonal ports make this unlikely. Consider Alaska, which has excellent resources in its North Slope Borough. Most of its production takes place very close to shoreline. But rather than deal with a seasonal port, it built the 1,300 km Trans-Alaska Pipeline System south to Valdez, near Anchorage, to benefit from year-round open water.

While minerals can be mined and stockpiled all year while they wait for the short shipping season to start, natural gas and oil must be stored in tanks. The costs of this preclude the use of seasonal ports, and that's before getting to the challenges of insuring oil tankers in the Arctic or commissioning sufficient ice-strengthened LNG carriers and tankers. Russia does it because it has enormous oil and natural gas deposits close to shore in its Arctic. But Russia ships its product west in the winter rather than going east through the Northern Sea Route, which is as yet unfeasible even with its world-leading nuclear icebreakers.

In the Canadian Arctic the opportunity is much likelier in supplying local energy needs. We have tended to focus on energy security in Canada through a lens of exporting large volumes of oil, natural gas, and uranium to trade partners in an era of heightened geopolitical tension. But residents of the Canadian Arctic face acute energy insecurity, burdened by dependence on importing diesel or building long transmission lines. Electricity prices are skyrocketing and energy availability is a major inhibitor to attracting new mines.

The future for Arctic oil and gas is therefore about projects like the Inuvialuit Energy Security Project, locally producing natural gas for Tuktoyaktuk, Aklavik, and Inuvik, rather than megaprojects that will show up in territorial GDP.

For some, this dearth of major Canadian Arctic oil and gas development may be welcomed. For others, it is a missed opportunity that will come at the expense of public services and jobs.

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Report

The Niniibawtamin Anishinaabe Aki Gathering: Critical Minerals and Nuclear Waste in Northern Ontario

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Abstract: In October 2025 the authors organized a workshop in Thunder Bay, Ontario. The Niniibawtamin Anishinaabe Aki Gathering (stand up for Anishinaabe land gathering) brought together First Nations leaders, community organizers, civil society groups, and scholars to discuss plans for nuclear waste disposal, critical mineral extraction, and associated infrastructure development in northern Ontario. Several cross-cutting themes emerged over the course of the event. Conversations mostly hinged upon prospective critical mineral extraction in the "Ring of Fire" development area and a proposed high-level radioactive waste repository in northern Ontario. Numerous delegates referenced federal and provincial "fast-tracking" legislation as a serious challenge to Indigenous rights. First Nations leaders spoke about the challenges they face in meaningfully participating in decisions because their institutional capacity is taxed with addressing social crises in their communities. Several legal challenges that create uncertainty regarding critical mineral extraction and nuclear waste disposal were discussed. Another common theme was the limitation of settler decision-making processes, including the use of colonial courts to advance Indigenous justice. Several delegates spoke about the value of coalition building and grassroots mobilization. In the context of debates about using critical mineral extraction and nuclear power generation to drive the transition away from fossil fuels, some delegates noted it is important to consider whose way of life will be sacrificed for the clean energy transition.

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Rapport

Le rassemblement Niniibawtamin Anishinaabe Aki : Minéraux critiques et déchets nucléaires dans le Nord de l'Ontario

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Elysia Petrone[¤] Laura Pitkanen[§] Jamie Kneen[**]

Résumé : En octobre 2025, les auteurs ont organisé un atelier à Thunder Bay, en Ontario. Le rassemblement Niniibawtamin Anishinaabe Aki (« Mobilisation pour le territoire Anishinaabe ») a réuni des chefs de Premières Nations, des organisateurs communautaires, des groupes de la société civile et des universitaires pour discuter des plans d'élimination des déchets nucléaires, d'extraction de minéraux critiques et de développement d'infrastructures énergétiques dans le Nord de l'Ontario. Plusieurs thématiques transversales ont émergé au cours de l'événement. Les échanges ont principalement porté sur l'extraction prospective de minéraux critiques dans la zone de développement du Ring of Fire et sur le projet de dépôt permanent de déchets radioactifs à haut niveau dans le Nord ontarien. Plusieurs délégués ont cité les lois fédérales et provinciales sur le « traitement accéléré » comme constituant un enjeu majeur pour les droits autochtones. Les leaders des Premières Nations ont évoqué les obstacles auxquels ils font face pour participer de manière significative aux processus décisionnels, leur capacité institutionnelle étant entièrement accaparée par la réponse aux crises sociales dans leurs communautés. Plusieurs enjeux liés à des législations créant de l'incertitude quant à l'extraction de minéraux critiques et au dépôt de déchets nucléaires ont également été discutés Un autre thème récurrent concernait la restriction des processus décisionnels des colons, incluant le recours aux tribunaux coloniaux pour promouvoir la justice autochtone. Plusieurs délégués ont souligné l'importance de bâtir des coalitions et de mobiliser les communautés de base. Enfin, dans le contexte des débats sur l'extraction de minéraux critiques et la production d'énergie nucléaire pour accélérer la transition loin des combustibles fossiles, certains ont noté qu'il est essentiel de se demander quelle partie verra son mode de vie sacrifié pour la transition vers les énergies vertes.

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The authors organized a workshop in Thunder Bay, Ontario, that took place on the Anishinaabe Traditional Territory of Animikii Wajiw, or Fort William First Nation, on October 17 and 18, 2025. The Niniibawtamin Anishinaabe Aki Gathering (stand up for Anishinaabe land gathering) brought together First Nations leaders, community organizers, civil society groups, and scholars to discuss state and private sector plans for nuclear waste disposal, critical mineral extraction, and associated infrastructure development. The overriding goal was to share information and establish partnerships related to waste disposal, extraction, and the movement of materials through lands and across waters of northern Ontario.

The organizers made a conscious effort to avoid a problematic, but not uncommon, dynamic at workshops where settler "experts" take up considerable space, with limited participation from Indigenous delegates. To temper this, they prioritized presentations from First Nations leaders. The event opened and closed with ceremony, participants feasted on traditional foods, and a sacred fire was lit throughout.

The first day of the workshop began with ceremony, followed by speeches from Indigenous leaders and community organizers. Chief Michele Solomon (Fort William First Nation) and Chief Jeffrey Copenace (Ojibways of Onigaming First Nation) spoke about their Nations' concerns over the potential transportation of nuclear waste through their territories, presenting a clear focus on the dynamics of historical resource claims, present day socio-economic realities, and the uncertainty of future conditions of safety and risk. Wayne Moonias (former Chief of Neskantaga First Nation) presented about his Nation's interventions into debates about mining in the "Ring of Fire" development area, which extends into their homelands. Michel Koostachin (Attawapiskat First Nation) provided a grassroots Indigenous perspective on extraction and land defence in northern Ontario. Rudy Turtle (former Chief of Grassy Narrows First Nation, Asubpeeschoseewagong Netum Anishinabek / Land Defence Alliance) discussed his organization and explained its coalition-building approach to land defence and stewardship.

Academics, representatives of non-governmental organizations (NGOs), and legal practitioners presented later in the day. Devin Holterman and Jocelyn Cheechoo (World Wildlife Fund Canada) discussed their organization's collaborative work with First Nations regarding mineral exploration in northern Ontario. Laura Pitkanen (Western Mining Action Network) spoke about the different supports her organization, as a frontline coalition network, can provide to mining-affected communities and the FAIME database (Find An Independent

Mining Expert). Jamie Kneen (Mining Watch Canada) presented about the new political challenges associated with escalating pressure for critical mineral extraction in the region, suggesting that the rhetorical shift to "critical" resource development still adheres to a business-as-usual approach.

A second afternoon panel saw Brennain Lloyd (Northwatch) discuss concerns and regional opposition to a proposed deep geological repository (DGR) for high-level nuclear waste[1] in northwestern Ontario. Laura Tanguay (Harvard University, Weatherhead Center for International Affairs) and Dara Wawatie-Chabot (Algonquin Youth Collective) spoke about Indigenous resistance to a proposed near-surface nuclear waste disposal facility near Ottawa. M.V. Ramana (University of British Columbia, School of Public Policy and Global Affairs) explained why nuclear power is neither a desirable nor feasible solution to the climate crisis (see also Ramana, 2024).

Rounding out the busy day in a third afternoon panel, Dayna Scott (York University, Osgoode Hall Law School) presented her research into extraction in the Ring of Fire, partnered with Neskantaga First Nation, emphasizing the need to consider whose lifeways are being sacrificed for the "green" energy transition (see also Scott, 2025). Larissa Speak (Lakehead University, Bora Laskin Faculty of Law) discussed the need to move beyond the divide and conquer politics of extraction and waste disposal by reviving Indigenous legal traditions, a topic echoed in multiple forms by many workshop participants. Nicholas Daube (Woodward and Co.) spoke about two Indigenous rights legal challenges over extraction in northern Ontario, emphasizing the tangled relations amongst questions of constitutionality, jurisdiction, and the potential long-term effects of development. Lianne Leddy (Wilfrid Laurier University, Department of History) presented her research into historic uranium mining in northern Ontario, emphasizing themes of dispossession and environmental injustice (see also Leddy, 2022).

The second day also began with ceremony at the sacred fire, followed by separate discussion groups for Indigenous and non-Indigenous participants. This was followed by an inclusive larger group discussion to identify next steps for asserting Indigenous stewardship in the face of escalating pressure for critical mineral extraction and nuclear expansion. The second day concluded with the film *The Moth,* by local filmmakers Michelle Derosier and Zoe Gordon, which depicts a future time when one woman survives in a bunker following a nuclear waste disaster.

The conversations were fruitful and wide-ranging. Several cross-cutting themes emerged over the course of the event. We present these here to anchor the debates at the foundation of the workshop and to promote further elaboration, debate, and cooperation.

Two Contentious Proposals

Conversations mostly hinged upon prospective critical mineral extraction in the Ring of Fire development area and a proposed high-level radioactive waste repository in northwestern Ontario. The Ring of Fire is a crescent-shaped geographical area in the James Bay lowlands of northern Ontario, considered to be one of Canada's most promising prospects for critical mineral extraction, with known deposits of chromite, nickel, copper, platinum group elements, and titanium. Extraction in the Ring of Fire is notably controversial. Some First Nations and individuals support the construction of access roads that could "open up" the area for development, believing that employment and other material benefits to communities will outweigh potential environmental and social harms. Others are opposed to the way in which development is proceeding in the region, professing skepticism about the pace and scale of development, hesitation at the aggressive nature of developmental discourse, and anxiety about uncertain effects and vague promises of future benefits.

The Nuclear Waste Management Organization (NWMO), a private not-for-profit that is federally-mandated to manage Canada's spent nuclear fuel, is proposing to construct a deep geological repository near Ignace, Ontario. If approved, the DGR would store all of Canada's spent nuclear fuel (i.e., high-level radioactive waste). The NWMO's proposed DGR is similarly controversial. While one First Nation supports the project moving forward to assessment and licensing processes, many other First Nations—including those downstream from the proposed DGR site and along potential transportation corridors—remain opposed. One First Nation with overlapping territorial claims is contesting the NWMO's approach to site selection in court.

Federal and Provincial Fast-Tracking Legislation

Numerous delegates referenced recent federal and provincial "fast-tracking" legislation as a serious challenge to Indigenous rights. The Government of Canada recently passed Bill C-5 (the *One Canadian Economy* Act and the *Building Canada Act*), which allows the federal government to designate specified "national interest projects" that will be subjected to truncated assessment and regulatory processes. The Government of Ontario passed Bill 5 (the *Protecting Ontario by Unleashing Our Economy Act*), which enables the government to exempt development from provincial laws and regulations designed to protect a range of interests, from community economic development to archaeological heritage, and from environmental assessment to endangered species. Nuclear and critical mineral projects were prioritized in the first list of "national interest" projects issued by the Government of Canada, with intense speculation on what might be added to

the priority list. Provincial government officials have indicated their intention to designate the Ring of Fire a "special economic zone." Both pieces of legislation accelerate the ability to authorize and implement development plans, and both produce negative impacts on community engagement, access to required context and information, and on the monitoring necessary to identify or reduce real or anticipated impacts. Both the federal and provincial legislation also have what was described as a "wild west clause"—the governments are now empowered to designate special economic zones or the so-called nation-building projects, exempting projects from many of the existing social, economic, and environmental protections that governments and industry have deemed to hinder resource development.

Delegates spoke about their opposition to this legislation. Many argued that implementation should and will be resisted. Some delegates argued that it is important to see opportunities in this morass, suggesting that receding federal and provincial governance and regulatory processes could ultimately make more space for Indigenous-led assessments. All agreed in the fundamental importance of protections and shared decision making.

States of Emergency

Several delegates spoke about the challenges First Nations face in meaningfully participating in decisions about extraction and waste disposal because their institutional capacity is taxed with addressing overlapping and mutually reinforcing social crises in their communities. With cascading tragedies and no time to grieve, community capacity to respond is limited. One delegate characterized the situation as being "starved into submission" because of the lack of resources available to address these crises.

For many participants, this state of emergency can be seen as a continuation of the lived historical memory of settler–Indigenous relations in Canada. Several offered reflections on historical claims to safety and the historical antecedents to resource use and extraction in the region. This historical memory presented two sides to community responses to resource and infrastructure proposals. Some suggested emphasizing the importance of past injustices in order to understand and contextualize current proposals (how to use the past to inform positive negotiations now). Others focused more clearly on the continuation of historical divide and conquer tactics as the Canadian state's mode of securing consent and dampening organized resistance.

Legal Challenges

Delegates discussed several legal challenges that create uncertainty regarding both critical mineral extraction and nuclear waste disposal in northern Ontario. A coalition of Treaty 9 First Nations have initiated litigation in the Ontario Superior Court of Justice that challenges the Crown's ability to make unilateral decisions about extraction on their territories. These First Nations argue that the provisions in the written version of Treaty 9, which allegedly "cede, release, surrender and yield up" land rights are invalid. As a result, they argue, Canada must enter into a relationship of co-governance with Treaty 9 First Nations before proceeding with development on their lands (Attawapiskat First Nation et al., 2023).

A second coalition of First Nations, including several from northern Ontario, are also challenging federal and provincial fast-tracking legislation in the Ontario Superior Court of Justice. They argue that the honour of the Crown was breached when the legislation was passed because it presents a "clear and present danger" to their rights to self-determination. Both pieces of legislation allow settler governments to push through major projects without considering the costs to First Nations. As a result, the legislation undermines reconciliation (Alderville First Nation et al., 2025).

Eagle Lake First Nation has applied to the Federal Court of Canada for a judicial review of the Nuclear Waste Management Organization's decision to site a deep geological repository on its territory. Eagle Lake argues that it was unfairly excluded from the NWMO's decision-making process and that it should be considered a "host community" with the right to provide or withhold its consent to the proposed repository. According to Eagle Lake, the proposed repository site is located in the heart of its Traditional Territory (Eagle Lake First Nation, 2024).

All three lawsuits are likely to be influenced by the outcome of legal action against a proposed near-surface disposal facility for low-level radioactive waste in eastern Ontario at Chalk River. Kebaowek First Nation brought forward the lawsuit, which alleges that its right to be consulted about the waste facility was breached because the Canadian Nuclear Safety Commission failed to consider the principle of free, prior, and informed consent (FPIC), which is enshrined in the *United Nations Declaration on the Rights of Indigenous Peoples* and its federal enabling legislation, the *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDRIP Act). In early 2025 the Federal Court of Canada issued a decision that found Kebaowek's right to be consulted had indeed been breached, concluding that the UNDRIP Act enhanced the duty to consult, effectively raising the bar for what is required from the Crown (*Kebaowek v. Canadian Nuclear Laboratories*, 2025). However, the decision is currently under appeal at the Federal Court of Appeal.

From FPIC to Indigenous Jurisdiction and Legal Traditions

Another common theme was the limitation to settler decision-making processes, including using the colonial courts to advance Indigenous justice. Even the principle of free, prior, and informed consent was identified as problematic. Projects like the Ring of Fire and the NWMO's proposed nuclear waste repository claim to operate with Indigenous consent. Yet both prospective developments include a divide and conquer dynamic where the perspectives of First Nations that support extraction or waste disposal are privileged over those who do not.

Delegates identified a pressing need to revive Indigenous legal and political traditions. This includes restoring frameworks for international relations (i.e., relationships between different Indigenous Nations). Such frameworks are better suited, they argued, to address contexts of overlapping territorial claims and shared responsibilities.

The Value of Coalition Building and Grassroots Mobilization

Several delegates spoke about the value of coalition building and grassroots mobilization. They spoke about powerful arrangements where First Nations signed agreements to support one another in land struggles, most notably the Land Defence Alliance—a group of First Nations that includes Grassy Narrows First Nation, Kitchenuhmaykoosib Inninuwug First Nation, Neskantaga First Nation, Muskrat Dam First Nation, Wapekeka First Nation, and Ojibways of Onigaming First Nation. Others argued that, to be successful, land defence struggles require leaders to leverage power by mobilizing grassroots citizens, citing the example of the "Here We Stand" land reoccupation in Treaty 9 territory in response to federal and provincial fast-tracking legislation. Still others emphasized the organizational potential and collaborative capacity of Indigenous youth.

Extraction, Waste Disposal, and the Climate Crisis

In the context of debates about using critical mineral extraction and nuclear power generation to drive the transition away from fossil fuels, some delegates noted that it is important to consider whose way of life will be sacrificed for the clean energy transition, arguing that First Nations lands were being treated like "sacrifice zones." The increased pressure to use First Nations lands for nuclear waste was characterized as "nuclear colonialism" by some participants. Some suggested that, at this point, energy transitions seem like a disingenuous pretense for extraction and waste disposal because they are not part of a coherent strategy to mitigate climate change. Others questioned whether nuclear energy is a viable solution to the climate crisis, given the long period of time it takes to build new reactors and the incredible urgency of energy transitions. Several participants also linked both critical mineral extraction and nuclear waste materials to the production of military capacity. Some delegates argued that we cannot discuss climate change mitigation without considering the unsustainable levels of energy and material consumption by the upper and middle classes in the Global North. If such consumption was curbed, energy transitions would not require such large volumes of critical minerals and electricity.

Looking Forward

Taken together, the presentations and discussions emphasized the deeply contentious nature of critical minerals extraction and nuclear waste disposal in northwestern Ontario. Escalating pressure for extraction and waste disposal—driven by narrowly-conceived energy transitions and geopolitical conflict—is colliding with an increasingly organized Indigenous resistance movement. It therefore remains unclear whether Canada's efforts to fast-track "nation-building" projects will succeed.

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Notes

1. While high-level radioactive waste refers to spent nuclear fuel, low-level radioactive waste consists of irradiated materials like protected clothing, tools, and cleaning rags.

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Report

Yukon First Nations Settlement Land Development: Implementation Primer

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Abstract: This article is intended as a primer for the development of First Nations Settlement Land in the Yukon. The article builds on a previous *Northern Review* article by this author exploring the possibilities for development on Yukon First Nations Settlement Land since the Yukon updated its Land Titles Act in 2016 (see https://doi.org/10.22584/nr57.2025.007). This unlocked the potential of Settlement Lands for the benefit of Yukon First Nations citizens and beneficiaries, encouraging economic development throughout the Yukon. Three hypothetical scenarios are described in this report, with illustrations (swim lane diagrams) setting out the roles, steps, and activities required for collaborative development among Yukon First Nations, municipal, and Yukon governments. The three development scenarios are a Yukon–Yukon First Nation housing co-development, Yukon Government staff housing, and an industrial park on settlement land in an unincorporated community. The potential fiscal effects (personal income tax and property tax) of Settlement Land development for each of the scenarios are also explored.

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Rapport

Le développement des terres octroyées par règlement aux Premières Nations du Yukon : Guide de mise en œuvre

Paul Kishchuk*

Résumé : Cet article est conçu comme un guide d'introduction au développement des terres de règlement des Premières Nations du Yukon. Il s'appuie sur un article antérieur paru dans le *Northern Review*, rédigé par le même auteur, qui explorait les possibilités de développement sur les terres de règlement des Premières Nations du Yukon depuis la mise à jour de la Land Titles Act en 2016 (voir https://doi.org/10.22584/nr57.2025.007). Cette réforme a permis de libérer le potentiel des terres de règlement au profit des citoyens et bénéficiaires des Premières Nations du Yukon, tout en stimulant le développement économique à l'échelle du territoire. Trois scénarios hypothétiques sont décrits dans ce rapport, illustrés par des diagrammes à couloirs précisant les rôles, les démarches et les activités requis pour un développement collaboratif entre les Premières Nations du Yukon, les gouvernements municipaux et le gouvernement du Yukon. Les trois scénarios de développement sont les suivants : codéveloppement de logements entre le Yukon et les Premières Nations du Yukon, logements pour le personnel du gouvernement du Yukon, et un parc industriel sur des terres octroyées par règlement dans une communauté non constituée en personne morale. Les effets potentiels des impôts (impôt sur le revenu personnel et impôt foncier) découlant du développement de ces terres sont également examinés pour chacun des scénarios.

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Introduction

This article is intended as an implementation primer for the development of First Nations Settlement Land in the Yukon. The article builds on a previous *Northern Review* article by this author, published in June 2025, which explored the possibilities for development on Yukon First Nations Settlement Land (see https://doi.org/10.22584/nr57.2025.007).[1]

The earlier article outlined how modernization of the Yukon's *Land Titles Act* in 2016 made it possible for subsidiary title—including leasehold interests on First Nations Settlement Land—to be entered on the Government of Yukon's land titles registry without extinguishing Indigenous rights and title. The entry of Settlement Land leasehold interests on the Yukon's land titles registry has granted lending institutions (i.e., banks) the authority to seize a leasehold land title in case of a mortgage default. Such "bankable title" has opened the door to unlocking the potential of Settlement Lands for the benefit of Yukon First Nations citizens and beneficiaries, and to encouraging economic development throughout the Yukon.

The article uses "swim lane diagrams"[2] to illustrate the roles, activities, and steps for public and private sector partners to collaborate on Settlement Land development projects. Three scenarios, as hypothetical examples, are presented. The potential fiscal effects and the implications for income tax and property tax for each of the scenarios are also explored.

Settlement Land Development Roles, Activities, and Fiscal Effects

Many public and private sector entities are involved in Settlement Land development projects in the Yukon. Public sector entities include municipal, territorial, and federal governments, as well as First Nations governments. Private sector entities include banks, engineering and construction companies, and First Nations development corporations. Lessees, both residential homeowners and businesses, represent the demand side of the Settlement Land leasehold market.

Table 1 outlines the potential roles and activities of the many entities that could be involved in Yukon Settlement Land development projects. Note that development agreements would be collaboratively developed documents that confirm the jurisdictional parameters and roles of the development partners. The table also serves as the detailed key for the swim lane diagrams that follow (see Figures 1, 2, and 3).

Table 1. Yukon Settlement Land Development Roles and Activities. Source: Author.

1. Yukon First Nations Governments	
A	Settlement Land owners
B	planning aligned with community values & municipal bylaws or territorial regulations
C	development agreements*
2. Yukon Government	
D	development agreements*
E	land titles registration (*Yukon Lands Act, 2015*)
F	planning assistance & project management
G	lands administration outside incorporated municipalities (planning, zoning subdivision)
H	financing for infrastructure construction
3. Municipal Governments	
I	development agreements*
J	planning & preliminary design (e.g., official community plan; road access & lot layout)
K	land administration (zoning bylaw, subdivision bylaw)
L	delivery of municipal services (e.g., water, wastewater, garbage, snow clearing)
4. Federal Government	
M	infrastructure funder
5. Private Sector Companies	
N	financing for infrastructure construction (e.g., banks)
O	project management & engineering (e.g., design, legal surveys)
P	construction of surface & subsurface elements**
6. First Nation Development Corporations	
Q	financing for infrastructure construction
R	engineering design, project management & permitting activities (e.g., YESAB proposals)
S	construction of surface & subsurface elements**
7. Lessees—Residential and Commercial	
T	residences
U	businesses

Notes:
*A development agreement is a collaboratively developed document that confirms the jurisdictional parameters and roles of the development partner

** *Surface* includes clearing, grubbing and grading, land remediation, roads, sidewalks, traffic control, landscaping, trails, parks, playgrounds. *Subsurface* includes water storage & distribution, wastewater collection & disposal, storm water, electrical, telephone, and cable.

In terms of fiscal effects, self-governing Yukon First Nations hold direct taxation powers.[3] As a result, 95% of the personal income tax revenues from individuals living on Settlement Land (both First Nations citizens and non-citizens) can be allocated to the First Nation owning the Settlement Land.[4] The volume of personal income tax revenues received by the First Nation varies depending on two factors: the number of individuals living on the Settlement Land, and the annual incomes of those individuals.

With direct taxation powers, self-governing Yukon First Nations could also negotiate access to the property tax base in Yukon municipalities. To date, none have done so as it is not clear that the revenues raised would be sufficient to deliver municipal services at the level required given that Settlement Land parcels are dispersed within municipal boundaries rather than forming a single block of land within a municipality. In the meantime, First Nations governments are obligated to pay property taxes to the municipalities within which Settlement Lands are located.[5] Increased availability of housing and commercial development on Settlement Land would allow First Nations governments to shift their property tax burden to the leasehold owners of any properties located on Settlement Land—that is, instead of the First Nation government continuing to cover the cost of the property tax, the individuals and/or businesses leasing settlement land would now pay to the First Nation an amount equivalent to the property taxes.

Three development scenarios as hypothetical examples have been constructed to help illustrate what different Settlement Land development projects could look like. The three development scenarios are a Yukon–Yukon First Nation housing co-development, Yukon Government staff housing, and an industrial park on settlement land in an unincorporated community. These hypothetical examples are described below, together with diagrams that outline the roles and activities of the various entities. Potential fiscal impacts are also presented.

Scenario 1. Yukon Government – Yukon First Nation Housing Co-Development

In the first scenario, imagine that a new neighbourhood in Whitehorse is co-developed by a Yukon First Nation government and the Yukon government.[6] In this hypothetical scenario, the self-governing First Nation has first amended their self-government agreement to allow for registration of Settlement Land on the Yukon Land Titles Registry. The new neighbourhood is approximately 20 hectares in size, with a portion of the neighbourhood located on Yukon government land and a portion located on Settlement Land. Lots on the Yukon government portion of the development are sold on a fee simple basis and lots on Settlement Land are leased for 125 years.[7] Funding for subsurface infrastructure (e.g., water and sewer) is provided by the federal government across all 20 hectares of the development.

Government Roles

In this scenario, the Yukon First Nations government, in addition to owning the Settlement Land, would also contribute to planning in the form of a joint master plan that is aligned with the First Nation's land development values. The master plan would also conform with municipal bylaws, including zoning and subdivision bylaws. The First Nations government would participate in the collaborative drafting of a development agreement that confirms the jurisdictional parameters and roles of the Yukon, First Nations, and municipal governments.

The Yukon government would also participate in the collaborative drafting of the agreement confirming the parameters and roles of the development partners. In addition, leasehold and fee simple title for the individual building lots would be entered onto the Yukon's land titles registry. The Yukon government would also provide planning assistance and project management support for the development. In this scenario, the Yukon government may also provide financing for the construction of subsurface and surface infrastructure, as may the federal government.

The municipal government would also participate in the collaborative drafting of the development agreement and would provide land administration services including subdivision approval and any changes to zoning bylaws. The municipal government would also deliver municipal services in the completed neighbourhood, such as water, wastewater, garbage removal, and snow clearing.

Private Sector Roles

In terms of private sector roles, banks and other lending institutions would need to provide financing for lot purchases and construction financing. Engineering companies would provide legal survey and design services as well as project management services. A First Nations development corporation would be responsible for submitting the project proposal to a designated office of the Yukon Environmental and Socio-economic Assessment Board, and for providing engineering design and project management services as well as project financing. One or more First Nation development corporations and construction companies would build surface and subsurface elements (*surface* includes clearing, grubbing and grading, land remediation, roads, sidewalks, traffic control, landscaping, trails, parks, and playgrounds; *subsurfa*ce includes water storage and distribution, wastewater collection and disposal, storm water, electrical, telephone, and cable).

Lessees – Residential and Commercial

Lessees, both homeowners and businesses, round out the entities involved in this hypothetical Scenario 1. Lease terms of up to 125 years can be expected for residential properties. Lease terms for commercial properties would typically be in the range of 25 to 50 years.[8]

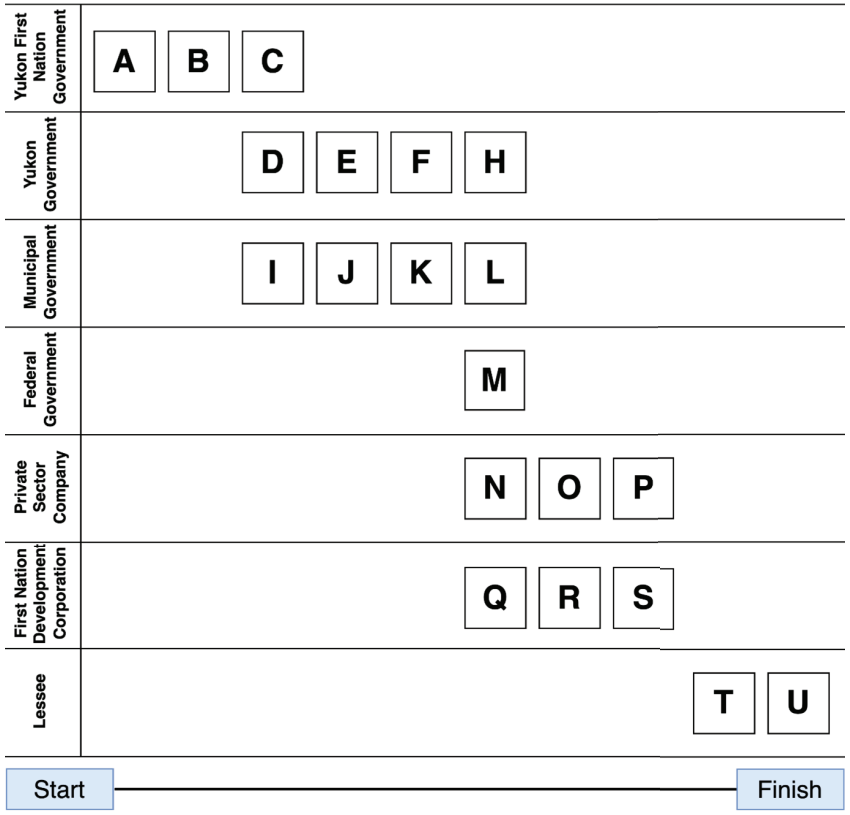
Fiscal Effects

In terms of Scenario 1's fiscal effects, the volume of personal income tax revenues raised and allocated to the Yukon First Nation government would correspond to the number of residents on the First Nations portion of the neighbourhood who are filing tax returns, and to the tax payable by each tax filer. For example, if one house is home to two tax filers, one with federal and territorial income tax payable of $25,000, and the other with federal and territorial income tax payable of $15,000, then $38,000 in personal income tax revenues would be allocated to the First Nation, calculated as ($25,000 + 15,000) x 0.95. The personal income tax revenues for this hypothetical house, as well as all other dwelling units located in the Yukon First Nation portion of the neighbourhood, will flow to the Yukon First Nation in each year the leasehold arrangement is in place (e.g., for at least 125 years).

Until Yukon First Nations draw down authority to levy property taxes under self-government agreement provisions, they must pay property taxes to municipal governments, which in this scenario, would be the City of Whitehorse. The First Nation could, however, recover the property taxes through the lease arrangements, and so it could shift this property tax burden to the lessee (meaning the lessee would pay the property tax, not the First Nation).

Figure 1 presents a swim lane diagram illustrating the entities that would be involved in this scenario, and each of their roles and activities in the development process—that is, "who would do what and when."

Figure 1. Yukon – Yukon First Nation Housing Co-Development (scenario 1) "swim lane diagram" illustrating the entities that would be involved and their roles, activities, and steps over time. Source: Author.



Key
(see details in Table 1)

1. Yukon First Nation Governments
   - **A** Settlement Land owners
   - **B** planning, aligned with values, bylaws, regulations
   - **C** development agreements*
2. Yukon Government
   - **D** development agreements*
   - **E** land titles registration
   - **F** planning assistance & project management
   - **G** lands administration outside municipalities
   - **H** financing for infrastructure construction
3. Municipal Governments
   - **I** development agreements*
   - **J** planning & preliminary design
   - **K** land administration (zoning & subdivision bylaws)
   - **L** delivery of municipal services
4. Federal Government
   - **M** infrastructure funder
5. Private Sector Companies
   - **N** financing for infrastructure construction
   - **O** engineering & project management
   - **P** construction of surface & subsurface elements
6. First Nation Development Corporations
   - **Q** financing for infrastructure construction
   - **R** permitting activities
   - **S** construction of surface and subsurface elements
7. Lessees – Residential and Commercial
   - **T** residences
   - **U** businesses

* a development agreement is a collaboratively developed document that confirms the jurisdictional parameters and roles of the development partners.

Scenario 2. Yukon Government Staff Housing

For the second hypothetical scenario, consider that a fourplex is built on the Settlement Land of a self-governing Yukon First Nation in an incorporated community outside of Whitehorse. In this example, the self-governing First Nation has amended their self-government agreement to allow for registration of Settlement Land on the Yukon land titles registry. The fourplex would be owned by the Yukon Housing Corporation and be built to house community health centre staff. Construction and project management for the fourplex would be undertaken by the First Nation's development corporation. Costs for subsurface infrastructure (e.g., water and sewer) would be shared between the federal government and the First Nation. Figure 2 illustrates what entity would undertake what activity and process throughout the project timeline.

Government Roles

In this scenario, the Yukon First Nation government would, in addition to owning the Settlement Land, undertake planning aligned with the First Nation's land development values. While a master plan would not be required, the development would conform with municipal bylaws, including zoning and subdivision bylaws. The Yukon First Nation government would participate in the collaborative drafting of a development agreement that confirms the jurisdictional parameters and roles of the Yukon First Nation and municipal governments.

In this scenario, the Yukon government's role would be limited to entering leasehold title for the fourplex units onto the Yukon's land titles registry. The federal government would provide financing for the construction of subsurface and surface infrastructure. The municipal government would participate in the collaborative drafting of a development agreement with the First Nation government, and would also provide land administration services including subdivision approval and changes related to zoning bylaws. The municipal government would also deliver municipal services such as water, wastewater, garbage removal, snow clearing to the fourplex.

Private Sector Roles

Banks and other lending institutions would provide construction financing to the First Nation development corporation. Engineering companies would provide legal survey and design services as well as project management services. The First Nation development corporation would be responsible for submitting a proposal to the designated office of the Yukon Environmental and Socio-economic Assessment Board, as well as for providing financing, engineering design, and project management services. The First Nation development corporation

would also build the surface and subsurface elements (as above, *surface* includes clearing, grubbing and grading, land remediation, roads, sidewalks, traffic control, landscaping, trails, parks, and playgrounds; *subsurface* includes water storage and distribution, wastewater collection and disposal, storm water, electrical, telephone, and cable). Construction of the fourplex would also be undertaken by the First Nation development corporation.

Lessees – Residential

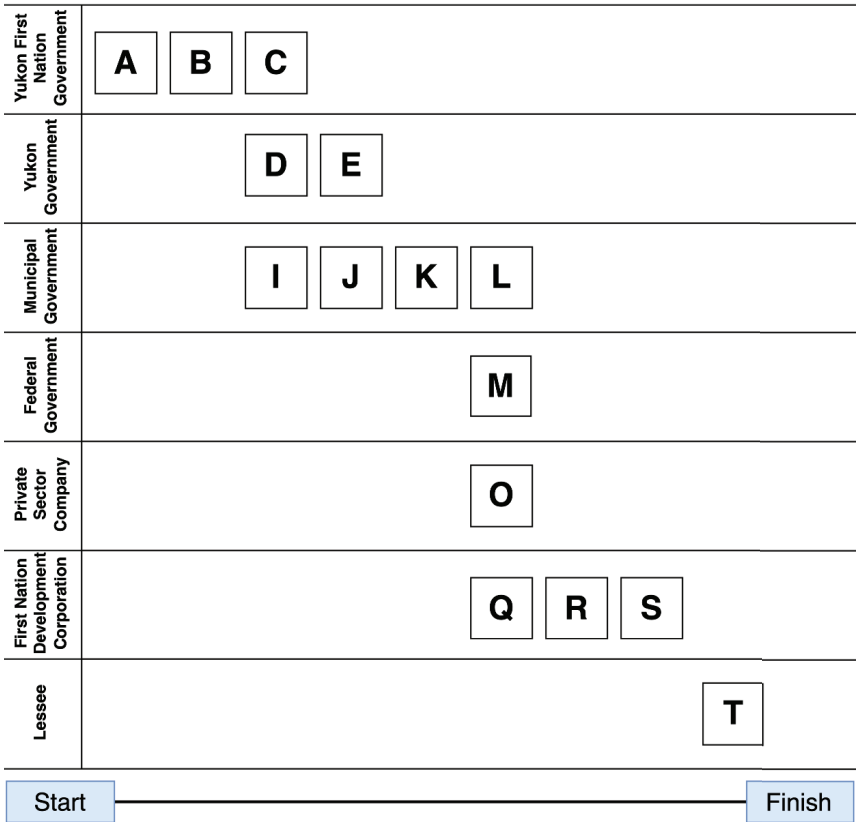
In this scenario, the Yukon government is the only lessee and would enter into a lease for the fourplex (land and building) for 35 years.[9]

Fiscal Effects

In this second scenario, the volume of personal income tax revenues raised and allocated to the Yukon First Nation government would correspond to the number of people living in the fourplex who file income tax, and to the amount of tax payable by each taxfiler. For example, if there are a total of six taxfilers resident in the fourplex, and if the annual aggregate tax owing by all six is $145,000, then $136,800 in personal income tax revenues would be allocated to the First Nation (calculated as $145,000 x 0.95). This amount of personal income tax revenues—or whatever amount it is each year depending on the number of taxfilers and what they owe—would flow to the Yukon First Nation in each year the leasehold arrangement is in place (e.g., for 35 years).

As above, since a Yukon First Nation has yet to draw down property tax authority, the First Nation would remain liable for the fourplex's property taxes charged by the municipal government. The First Nation could, however, choose to recover the property taxes through the lease arrangements with the Yukon government, and therefore shift the property tax burden to the lessee.

Figure 2. Yukon Government Staff Housing (scenario 2) "swim lane diagram" illustrating the entities that would be involved and their roles, activities, and steps over time. Source: Author.



Key
(see details in Table 1)

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2. Yukon Government
   - **D** development agreements*
   - **E** land titles registration
   - **F** planning assistance & project management
   - **G** lands administration outside municipalities
   - **H** financing for infrastructure construction
3. Municipal Governments
   - **I** development agreements*
   - **J** planning & preliminary design
   - **K** land administration (zoning & subdivision bylaws)
   - **L** delivery of municipal services
4. Federal Government
   - **M** infrastructure funder
5. Private Sector Companies
   - **N** financing for infrastructure construction
   - **O** engineering & project management
   - **P** construction of surface & subsurface elements
6. First Nation Development Corporations
   - **Q** financing for infrastructure construction
   - **R** permitting activities
   - **S** construction of surface and subsurface elements
7. Lessees – Residential and Commercial
   - **T** residences
   - **U** businesses

* a development agreement is a collaboratively developed document that confirms the jurisdictional parameters and roles of the development partners.

Scenario 3. Industrial Area in an Unincorporated Community

The third scenario envisions the development of an industrial area on the Settlement Land of a self-governing Yukon First Nation in an unincorporated Yukon community. As with the other scenarios, the First Nation would first need to amend their self-government agreement (if they haven't already) to allow for registration of Settlement Land on the Yukon land titles registry. Construction of the industrial area could allow a mining company to locate its offices in the community, co-located with other businesses that provide supply and service support to the mine. This scenario assumes that the project is self-financed by the First Nation or a consortium of Yukon First Nations. It is also assumed that no one would be living in the industrial area.

See Figure 3 for this scenario's swim lane diagram illustrating what entity would undertake what activity and process throughout the project timeline.

Government Roles

In this scenario, the Yukon First Nation government, in addition to owning the Settlement Land, would undertake planning aligned with the First Nation's land development values. The First Nation government would also participate in the collaborative drafting of a development agreement that confirms the jurisdictional parameters and roles of the First Nation and Yukon governments.

The Yukon government would also participate in the collaborative drafting of the agreement confirming the jurisdiction and roles of the development partners. In addition, leasehold title for the individual building lots would be entered onto the Yukon's land titles registry. The Yukon government would also provide planning assistance and project management support for the development. As the project would be located outside of an incorporated municipality, responsibility for zoning and subdivision would default to the Yukon government, and the development would need to conform with territorial zoning and subdivision regulations. We can imagine in this hypothetical that the Yukon and federal governments would both provide financing for the construction of subsurface and surface infrastructure, in pursuit of their critical minerals development objectives. There is no role in this scenario for a municipal government.

Private Sector Roles

As this hypothetical project would be self-financed by the First Nation, there is no role in this scenario for banks and other lending institutions. Engineering companies would provide legal survey and design services as well as project management services. The First Nation development corporation would be responsible for submitting a project proposal to the designated office of the Yukon Environmental and Socio-economic Assessment Board, as well as for providing financing, engineering design, and project management services. The First Nation development corporation would also build the surface and subsurface elements (as above for the other scenarios, *surface* includes clearing, grubbing and grading, land remediation, roads, sidewalks, traffic control, landscaping, trails, parks, and playgrounds; *subsurface* includes water storage and distribution, wastewater collection and disposal, storm water, electrical, telephone, and cable). Construction of the industrial area would be undertaken by the First Nation development corporation.

Lessees – Commercial

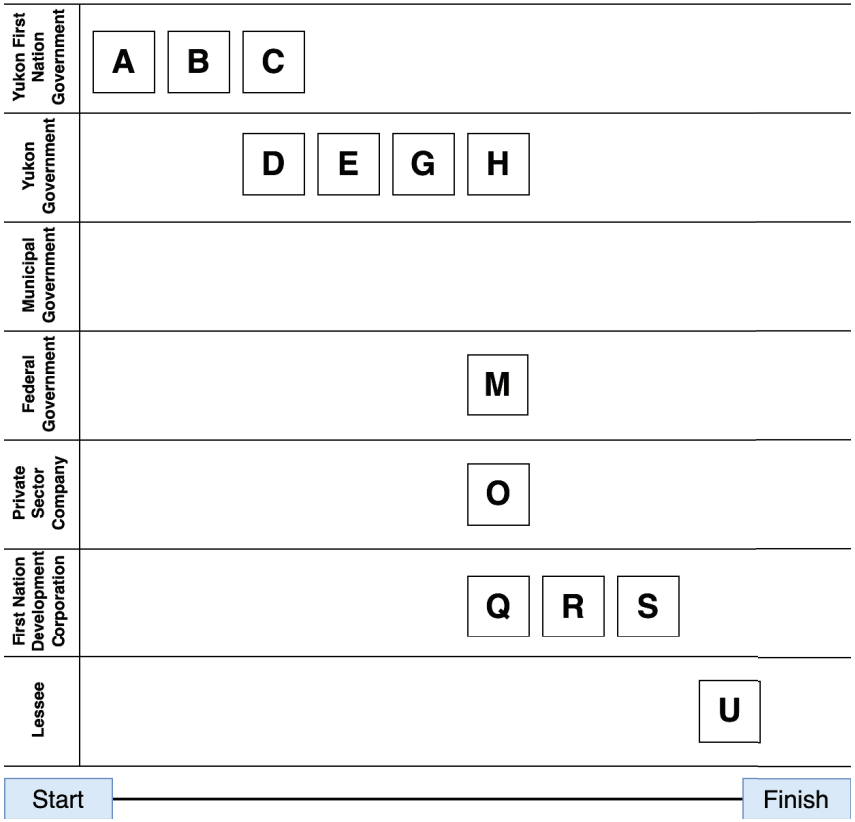
In this scenario, the mining company and each of the supply and service businesses would enter into 35-year leases with the Yukon First Nation.

Fiscal Effects

As no one lives in the industrial area, no personal income tax revenues would be available for sharing among the Yukon First Nation, territorial, and federal governments. Conceptually, drawing on the Yukon First Nation's direct taxation powers, corporate income tax revenues could be shared to the extent that an incorporated business has a building or other structure (a "permanent establishment") situated on Settlement Land.[9] However, as the federal and Yukon governments have yet to negotiate a corporate tax sharing agreement with Yukon First Nations, it is not yet possible for Yukon First Nations governments to receive corporate income tax revenues associated with economic activity on Settlement Lands.

As the property tax field has not yet been occupied by any Yukon First Nation, the First Nation will pay all the property taxes associated with land and improvement in the industrial park. The First Nation could, however, recover the property taxes through the lease arrangements and so shift the property tax burden to the lessees instead.

Figure 3. Industrial Area in an Unincorporated Community (scenario 3) "swim lane diagram" illustrating the entities that would be involved and their roles, activities, and steps over time. Source: Author.



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   - **T** residences
   - **U** businesses

* a development agreement is a collaboratively developed document that confirms the jurisdictional parameters and roles of the development partners.

Conclusion

In this implementation primer, swim lane diagrams were used to illustrate how governments and private sector partners can successfully develop Yukon First Nations Settlement Lands. The diagrams outline the roles, steps, and activities to be undertaken by governments (Yukon First Nations, municipal, and Yukon) and private sector partners. The analysis can be used as a starting point for the collaborative discussions required to complete Settlement Land development projects. Three hypothetical development scenarios were presented. Potential fiscal effects of Settlement Land development for each of the scenarios, in the form of income tax and property tax, were also explored.

Notes

1. Paul Kishchuk, "Yukon First Nations Settlement Land Development," *The Northern Review* 57 (2025): 51–72, https://doi.org/10.22584/nr57.2025.007.
2. For more on swim lane diagrams generally, see Whāraurau, "Quality Improvement Tools: Swim Lane Mapping," National Centre for Infant, Child and Adolescent Mental Health (ICAMH) Workforce Development, New Zealand, https://www.wharaurau.org.nz/all-resources/quality-improvement-tools-swim-lane-mapping.
3. See Finance Canada, "First Nations Personal Income Tax Administration Agreements," Government of Canada, last modified, 26 March 2026,https://www.canada.ca/en/department-finance/programs/tax-policy/indigenous/tax-administration-agreements/first-nations-personal-income-tax.html.
4. Under section 14.6 of the KDFN Final Agreement, the "Yukon Minister of Finance may enter into taxation agreements with the Kwanlin Dün First Nation": The Kwanlin Dün First Nation Self-Government Agreement, 2004, https://www.rcaanc-cirnac.gc.ca/eng/1298901032405/1542817159784; section 5, Kwanlin Dün First Nation Personal Income Tax, Tax Room Sharing Agreement between the Government of Yukon and Kwanlin Dün First Nation, 9 December 2019, last updated 27 June 2025, https://yukon.ca/en/kwanlin-dun-first-nation-personal-income-tax-room-sharing-agreement; Paul Kishchuk, "Yukon First Nation Taxation: Personal Income Tax Sharing," Northern Research Institute, May 2003; Paul Kishchuk, "Tax Monies: Opening Doors to Self-Government," *Visions North*, Winter/Spring 2001.
5. See Council of Yukon First Nations, *An Understanding of the Umbrella Final Agreement*, Chapter 21, 2013, https://cyfn.ca/wp-content/uploads/2013/08/ufa-understanding.pdf.
6. Inspiration for this scenario was drawn from the Range Point neighbourhood currently under development by the Yukon and Kwanlin Dün First Nation governments, as described at: "Master Plan Finalized for a Range Point Neighbourhood Development," Government of Yukon, 19 June 2023, https://yukon.ca/en/news/master-plan-finalized-range-point-neighbourhood-development and "Range Point Joint Master Plan Finalized," Kwanlin Dün First Nation, https://www.kwanlindun.com/heritage-lands-and-resources/range-point.

7. This would be similar to the 125 year leases issued for the Copper Ridge West development owned by the Kwanlin Dün First Nation: See Chu Nǘikwän Development Corporation (n.d.), *Copper Ridge West: Welcome Home Whitehorse*, https://www.chuniikwan.ca/copper-ridge-west
8. For example, see Chu Nǘikwän Development Corporation, "The Lease Advantage," https://www.chuniikwan.ca/lease-advantage.
9. See s 400(2), Income Tax Regulations, CRC, c 945, Department of Justice Canada: https://laws-lois.justice.gc.ca/eng/regulations/C.R.C., _c._945/section-400.html

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Book Review

Engraved on Our Nations: Indigenous Economic Tenacity. Edited by Wanda Wuttunee and Fred Wien. University of Manitoba Press, 2024. 304 pp.

Reviewed by Dakota Erutse

If, like me, the reader has an affinity for real analogies and real parallels, then they will recognize a kind of erudition, as it *is* in one's self, moulded wholly in the mind *in abstracto*, ready to meet the logician's abstracts. It is hard to be above ground about certain things. What comes as one, surely must come in two; and what comes as an object of the mind is not necessarily a tangible object in the physical sphere. Adam Smith famously gave a most useful illustration of the movement of the free market, in his treatise on capitalism, by referring to an "invisible hand" thereof. Likewise, Toni Morrison referred to a "glove [that] has to be pulled inside out," in noting the literary double standards by which Black writers were held as regards American literature—a function of racism. How often the familiar -ism has been put forward as an embodiment, as an aspect of human entities. Now that the groves of academe remain with the post-structuralists, under the airless spirit of Foucault, it is perhaps no surprise that capitalism has been imbued with a temperament, blowing the analogy as a rhetorical device out of proportion.

In *Engraved on Our Nations*, as it were, capitalism can meander through people and places, like a ghost. It can harm a biophysical environment, like an invasive species. It can die like an animal. It is toxic. Moreover, as Clifford Gordon Atleo maintains, in his chapter "Capitalism: Can It Be Indigenized?" capitalism has a red face, is on the reserve, is among Indigenous Tribes, and among Indigenous communities. It lies in the background of community development and economic development, like a prickly bush on an estate. It cannot be subsumed by Indigeneity any more than Indigeneity can be subsumed by it. That is to say, there

is a fundamental contradistinction, an inconsistency, between capitalism and the whole of Indigenous world views and values. Atleo's essay is a part of, but does not sum up, the book's theoretical approach, which is:

> Upon the ravages of capitalism and colonialism, Indigenous nations and communities are convalescing.

Hence the word "tenacity" which appears in nearly all essays in the book, to the point of overuse. But the editors only intend for it to convey, on this caustic foundation of our two inimical *isms*, the inflexible, persistent presence of Indigenous peoples today. Incidentally, there are underlying tones of sympathy here, over the extant condition of Indigenous Peoples, as well as feelings of future shock and mild stupefaction, expressed from a collective as opposed to an individual point of view: in the repetitive use of the term, including during attempts to relate history to the present, the narrative effect is to say, "somehow we survived, and we are still here." Arguably this is a mindset, and the effect is psychological. "If the dialogue on Indigenous economic activity in Canada is focused on tenacity," Wuttunee and Wien assert in their concluding chapter, "then it must begin by considering the 'continued existence of Indigenous peoples in Canada' as one part of the tenacity conversation as well as considering what 'continued existence' looks like."

In what ways have Indigenous nations and communities shown tenacity in areas of economic activity? This is the general aim of the book. The case study approach is used to offer a cross-section of Indigenous economic development in Canada.

By collecting these essays and case studies, the editors have inadvertently shown the extremely institutional nature of organized society among Indigenous Peoples today—in Canada, that is. Among band councils, urban and rural reserves, urban and regional municipalities, planning commissions, hunters and trappers associations, self-governments, and provincial and federal partnerships, Indigenous nations and communities are availing themselves of the opportunity to develop their economies, resources, and communities. There is a collective sense of responsibility, but the book reads best when it presents narratives of genuine leadership and individualistic pursuit. The one chapter related to the North is a profile of a business owner in the Northwest Territories. Still, despite the ambivalence of the discussion as a whole, and considering recent announcements from the Government of Canada that relate to assertions of Arctic sovereignty and funding investments in northern economic and security corridors, the book *can* reconcile us to the idea that as a video-viewing, typing, and flying public, as Indigenous and non-Indigenous people living in a modern capitalist society, the means of economic development are a means of survival. As if those intangible human elements—the shadow characters of capitalism and colonialism—are not by themselves a barrier.

References

Morrison, Toni, "Toni Morrison Beautifully Answers an 'Illegitimate' Question on Race (Jan. 19, 1998)." YouTube, uploaded by Charlie Rose, 4 September 2015, https://youtu.be/-Kgq3F8wbYA?si=3BDq36FIunF_HNqF

Smith, Adam, *The Theory of Moral Sentiments*, 1759, par IV, chapter 1.

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Cover Art

Nàagàii Ddhah (Bead Mountain)

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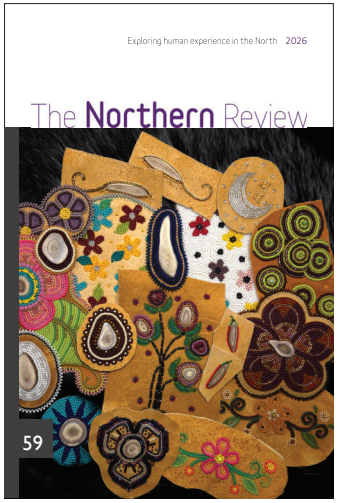

Copper Caribou crafts each piece to instill a sense of power and confidence in those who wear their accessories and jewellery, or use their handmade tools. Infused with good intentions and expert craftsmanship, their unique creations are not just fashion statements, but also celebrations of culture and contemporary style.

Sisters from the Yukon, Montana and Delaney Prysnuk are members of the Vuntut Gwitchin First Nation with ties to Inuvialuit, as well as having Ukrainian and Scandinavian heritage.

Vadzaih ch'ijì (caribou antler) and nàagàii (beads) on hometan vadzaih dhòh (caribou hide) are main components of their art. Adhòh tr'ahshii (hide tanning) and working with youth is a large part of Copper Caribou. Montana and Delaney aim to encourage positive mental health practices through hide tanning and traditional ways of knowing and doing. They honour their culture and Indigenous Knowledge through beadwork, artwork, hidework, and language.

Màhsi' choo, gwiinzii ts'aii ndoò ohdàh.
(Thank you, go forward in a good way.)

Photo by Kali Spitzer