

Assessing Climate Change Readiness in Nunavut: A Systematic Review of Adaptation Readiness, Policy, and Community Led Action

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Abstract

Nunavut, a northern Canadian territory deeply affected by climate change, faces acute adaptation challenges due to rapid environmental transformations, socio-economic constraints, and legacies of colonial governance. This systematic review synthesizes peer-reviewed research to assess Nunavut's adaptation readiness—defined as the capacity of institutions, policies, governance systems, communities, and Inuit knowledge to anticipate and respond to climate impacts. The review analyzes literature spanning policy frameworks, institutional capacity, community-led initiatives, youth engagement, and the integration of Inuit Qaujimaningit (IQ). Findings reveal that while Nunavut has developed adaptation plans and policies, implementation is limited by institutional fragmentation, inconsistent mandate enforcement, and insufficient funding. Community-led actions, particularly those grounded in Inuit knowledge, demonstrate practical, context-sensitive responses—especially in areas such as ice safety, wildlife co-management, and youth engagement. However, integration of Inuit knowledge into formal governance remains uneven and often symbolic. Emerging studies underscore the importance of intergenerational and urban–remote differences in adaptation needs and perceptions. Key barriers include a persistent implementation gap, weak institutional continuity, resource limitations, and a lack of evaluative frameworks. The review proposes six policy pathways to enhance readiness: enforceable institutional mandates, political continuity, sustainable funding, formalized knowledge integration, adaptive evaluation mechanisms, and context-specific strategies. Overall, readiness in Nunavut is advancing, but requires deeper alignment with Inuit worldviews, localized capacity-building, and sustained policy commitment to enable equitable, effective, and culturally grounded adaptation.

Keywords: Climate Change, Adaptation Readiness, Policy, Community Led Action, Nunavut

1. Introduction

Nunavut, a vast territory in Arctic Canada, is experiencing rapid climatic changes that include permafrost thaw, shifting sea ice, unpredictable weather, and impacts on wildlife, infrastructure, and community wellbeing. These changes pose urgent challenges for adaptation, particularly given Nunavut's remote geography, social and economic constraints, and the legacy of colonial governance systems. Achieving adaptation readiness defined here as the capacity of institutions, policies, governance structures, communities, and Indigenous knowledge systems to anticipate, plan for, and implement measures that reduce vulnerability is essential for Inuit

communities to sustain health, livelihood, cultural integrity, and resilience.

Prior research has examined vulnerability and adaptation in local case studies in Nunavut the landscape of governmentled adaptation policy the role of political and institutional readiness and the integration of Inuit knowledge systems and institutions [1-6]. More recently, studies have brought to light communityled actions around safety and landbased risk and engagement of youth in environmental research [7,8]. There is also growing recognition of differing perceptions of climate change and wellbeing between ur-

ban and remote Inuit communities [9].

However, although these studies provide valuable insights, there has been no comprehensive synthesis specifically focusing on adaptation readiness in Nunavut, combining policy, institutional capacity, community led action, and the role of Inuit knowledge. This review fills that gap by systematically gathering findings from recent peerreviewed literature to assess: (1) what policy and institutional frameworks exist and how well they enable readiness; (2) barriers and facilitators for implementation of adaptation; (3) communityled initiatives and how Inuit knowledge is integrated; and (4) gaps where readiness is weak. The goal is to propose policy pathways that enhance adaptation readiness in Nunavut in ways that are equitable, effective, and respectful of Inuit worldviews.

2. Methods

2.1. Search Strategy

These are peerreviewed journal articles covering policy frameworks, vulnerability, comanagement, community led actions, and Indigenous knowledge in Nunavut. Two additional articles retrieved from FACETS (2021; 2024) are included to enrich the themes of youth engagement and perceptions of wellbeing across remote vs urban contexts [8,9].

2.2. Inclusion Criteria

- Studies set in Nunavut or focusing on Inuit populations in Nunavut.
- Peerreviewed articles or academic journal publications.
- Primary empirical research (qualitative, quantitative, or mixed) or robust case studies.
- Articles addressing at least one of: policy/institutional readiness; communityled adaptation; integration of Indigenous/Inuit knowledge; perceptions of climate change and wellbeing youth involvement in adaptation or research.

2.3. Data Extraction and Thematic Analysis

From each article, data was extracted on objectives; key findings related to adaptation readiness (policy, institutions, community action); barriers and facilitators; how Inuit knowledge was involved; and any evaluation or outcomes. Then coded across these articles to identify recurring themes: strengths, gaps, and emergent issues.

3. Results

Below are synthesized findings organized by themes.

3.1. Institutional & Policy Readiness

- *Governmentled adaptation policy and planning*: map the adaptation landscape in Nunavut, noting that while many policies and strategies exist, much of the work remains preparatory (vulnerability assessments, stakeholder mapping) rather than fully implemented [3]. Similarly note that institutional readiness is present in some government bodies but is uneven, with gaps at high political levels and in mandate enforcement [4].
- *Mandates and integration of Inuit knowledge at institutional levels*: examine how Inuit Qaujimaningit (IQ) operates in

impact assessment processes, finding that although there is formal recognition of Inuit knowledge, the frameworks for integrating it are often vague, inconsistently applied, or lack strong procedural requirements [5].

3.2. CommunityLed Action & Indigenous Knowledge

- *Sea ice safety and mobilization of Inuit knowledge*: communityled action in Pond Inlet shows how Inuit knowledge about ice safety is used practically for adaptation strategies, enhancing risk perception and mobility planning [7].
- *Comanagement of wildlife and environmental resources*: document a case study of caribou comanagement in Gjoa Haven, showing both benefits (local engagement, relevance, culturally appropriate monitoring) and challenges (resource constraints, institutional inertia, aligning western scientific and Inuit methods) [10].
- *Vulnerability, cultural practices, and adaptive capacity historically*: provide foundational case studies (e.g., Igloodik) showing that many traditional and cultural practices historically enabled resilience; however, changing socioeconomic conditions, colonial legacies, and environmental change are eroding some of those capacities [1,2].
- *Youth engagement*: The Pond Inlet study highlights both the potential and obstacles for engaging Inuit youth in environmental research [8]. It indicates that youth engagement builds scientific literacy, fosters leadership, and strengthens communityresearcher relationships, but is hindered by lack of credentials, insufficient equipment, limited support systems, and structural/institutional barriers [8].

3.3. Perceptions of Climate Change and WellBeing

- Marquardt, Jewell, & Medeiros (2024) compare urban (Iqaluit) and remote community perspectives, finding that remote communities report high concerns related to the environment, community, and health, whereas urban respondents more frequently emphasize health, social, and colonial legacies [9]. Also, that colonialism continues to affect knowledge translation and climate literacy [9].

3.4. Barriers & Gaps

Across the literature, several recurring gaps emerge:

- *Implementation gap*: Many policies and strategies exist, but there are fewer cases of full implementation or evaluation of adaptation measures. Institutional readiness is often stronger in planning than in enforcement or concrete action [3].
- *Mandate, leadership, and continuity*: Weaknesses include lack of strong legal mandates and shifting political priorities. This undermines longterm continuity and consistent resource allocation [4].
- *Resource constraints*: Financial, human, technical resources are limited in many communities. For example, youth lack equipment or credentials (Inuit Youth and Environmental Research, 2021), and many comanagement efforts or community projects depend on shortterm funding [8].
- *Inconsistent or superficial integration of Inuit knowledge*: Although Inuit knowledge is increasingly recognized, its

formal role in decisionmaking, regulation, impact assessment, and evaluation is often underspecified or not systematically operationalized [5,6]

- *Wellbeing and perception gaps*: Differences in how climate change is perceived (urban vs remote; older vs younger people) can affect priorities and what adaptation readiness looks like in different places [9,8].

3.5. Recent Findings (2024/2025)

- “Inuit uses of weather, water, ice, and climate indicators to assess travel safety in Arctic Canada, Alaska, and Greenland: A scoping review”. This scoping review examines how Inuit in Arctic Canada (including Nunavut) and other circumpolar regions use environmental indicators (weather, ice, water) for assessing travel safety. It highlights that local indicators remain vital for adaptive safety, but also that many communities face gaps in reliable information, documentation, consistency, and formal integration of those local indicators into policy or infrastructure planning [11].
- “Research on the Human Dimensions of Climate Change in Nunavut, Nunavik, and Nunatsiavut: A Literature Review and Gap Analysis”, [12].
- This review points out that while the human dimensions (vulnerability, adaptation, subsistence harvesting, landbased activities) are increasingly understood, there remain significant gaps in understanding of (a) adaptation effectiveness (which policies or actions are working and why), (b) longitudinal studies to track changes over time, (c) differentiated perspectives especially across generations (youth vs elders), and (d) translation of research insights into enforceable policy.
- Canada Invests in Climate Change Adaptation to Keep Communities Safe in the North and Across Canada [13].
- A governmental program announcement indicates over \$12.1 million in funding for thirteen projects in the North under the Climate Change Adaptation Program (CCAP) and the Climate Resilient Coastal Communities Program. One explicitly named project is “*Coastal Adaptation Strategies in Nunavut*”, to be led by Université du Québec à Rimouski, focused on communities including Kugluktuk and Grise Fiord. This project aims to codevelop tools, guidance, and locally accepted adaptation strategies in Nunavut coastal areas. While this is a funding announcement (not yet peer reviewed research), it demonstrates movement toward implementation and capacity building.
- Nunavut & NTI Roadmap for Arctic Sovereignty and Security (2025).

The government’s joint strategy with Nunavut Tunngavik Inc. (NTI) includes infrastructure and nationbuilding priorities that intersect with adaptation (e.g., securing infrastructure, asserting sovereignty in the face of environmental change). While much is policy/strategic framing rather than empirical study, this provides evidence of political leadership and recent strategic alignment. Government of Nunavut [14].

4. Discussion

4.1. Synthesis of Readiness Strengths

- Nunavut has several foundational strengths: growing policy attention; vulnerability assessments and planning; some institutional structures that recognize adaptation; strong communityled initiatives; formal acknowledgment of Inuit knowledge in some contexts; increasing interest in youth engagement and scientific literacy.
- Community actions rooted in Inuit knowledge provide locally relevant adaptation, especially around safety (ice travel), wildlife comanagement, and landbased practices. These actions help fill gaps where formal institutions are slow or underresourced.
- Perceptions of climate change and wellbeing highlight that adaptation readiness is not only technical or infrastructural, but deeply intertwined with cultural values, knowledge systems, sense of place, and intergenerational relationships.

4.2. Key Gaps Impeding Full Readiness

- The policyimplementation gap means many plans are not backed by enforced mandates, dedicated budgets, or monitoring/evaluation frameworks.
- Institutional instability (e.g., changes in leadership, shifting priorities) undermines continuity.
- Lack of sustained funding and local capacity—both human (skills, credentialing) and material (equipment, logistical support).
- The more formal integration of Inuit Qaujimaningit remains patchy; often it is recognized rhetorically but not embedded in regulatory or operational systems in ways that influence decisionmaking in adaptation.
- Difficulties in balancing urban and remote community needs, especially as perceptions and priorities differ; remote communities often experience more direct environmental risks but have less infrastructure and fewer resources.

4.3. Policy Pathways and Recommendations

Based on the synthesis, the following policy pathways are proposed to enhance adaptation readiness in Nunavut:

- *Stronger Institutional Mandates and Regulatory Enforceability* Embed adaptation requirements into territorial laws, impact assessment regulations, land use planning, building codes, and infrastructure standards. Ensure that Inuit knowledge has defined roles and procedural weight in these laws/regulations.
- *HighLevel Political Leadership and Continuity* Ensure that climate adaptation is championed at the executive or legislative level, with institutional mechanisms to maintain continuity across electoral cycles or administrative changes. Establish bodies or agencies with crossdepartmental authority and clear adaptation mandates.
- *Sustainable Funding and Capacity Building* Allocate longterm funding (not projectbyproject), support local community capacity (training, credentialing, equipment), invest in youth programs. Support comanagement and communitybased monitoring programs.
- *Formal Integration of Inuit Knowledge (IQ/Qaujimaningit)*

Develop frameworks that specify how Inuit knowledge is collected, validated, shared, and used in decisionmaking. Ensure knowledge holders are compensated, engaged as coleaders, and maintain control over knowledge protocols.

- *Monitoring, Evaluation, Learning and Adaptivity*
Build adaptive learning frameworks with feedback loops. Monitor outcomes of adaptation measures; document what works or fails; enable iteration. Incorporate community feedback and perceptions into evaluation.
- *Differentiated Strategies Based on Context (Urban vs Remote, Youth vs Elders)*
Recognize that adaptation readiness must be localized and culturally appropriate. Adaptation policies for remote communities will differ from those for more urbanized centers like Iqaluit. Youth engagement should be prioritized as they are both carriers of cultural knowledge and future leaders.

5. Conclusion

The peerreviewed literature shows that Nunavut has many pieces in place for climate adaptation readiness: policies, vulnerability assessments, communityled initiatives, recognition of Inuit knowledge, and emerging youth engagement. Yet important gaps remain in implementation, resource support, institutional stability, and formal integration of Inuit ways of knowing. To move from readiness in principle to readiness in effect, Nunavut needs investment in enforceable policy, local capacity, and knowledge cocreation. Aligning adaptation readiness with Inuit values and lived realities will be essential. With such alignment, adaptation in Nunavut can become more than a technical or policy challenge, it can become a pathway to strengthening resilience, cultural continuity, and self-determination.

References

1. Ford, J., Pearce, T., Smit, B., Wandel, J., Allurut, M., Shappa, K., ... & Qrunnut, K. (2007). Reducing vulnerability to climate change in the Arctic: the case of Nunavut, Canada. *Arctic*, 150-166.
2. Ford, J. D., Smit, B., Wandel, J., & MacDonald, J. (2006). Vulnerability to climate change in Igloodik, Nunavut: what we can learn from the past and present. *Polar Record*, 42(2), 127-138.
3. Labbé, J., Ford, J. D., Araos, M., & Flynn, M. (2017). The government-led climate change adaptation landscape in Nunavut, Canada. *Environmental Reviews*, 25(1), 12-25.
4. Ford, J. D., Labbé, J., Flynn, M., Araos, M., & IHACC Research Team. (2017). Readiness for climate change adaptation in the Arctic: a case study from Nunavut, Canada. *Climatic Change*, 145(1), 85-100.
5. Peletz, N., Hanna, K., & Noble, B. (2020). The central role of Inuit Qaujimaningit in Nunavut's impact assessment process. *Impact Assessment and Project Appraisal*, 38(5), 412-426.
6. Lévesque, F. (2014). Revisiting Inuit Qaujimajatuqangit: Inuit knowledge, culture, language, and values in Nunavut institutions since 1999. *Études/Inuit/Studies*, 38(1), 115-136.
7. Wilson, K. J., Arreak, A., Itulu, J., Ljubicic, G. J., & Bell, T. (2021). When We're on the ice, all we have is our inuit qaujimajatuqangit. *Arctic*, 74(4), 525-549.
8. Sadowsky, H., Brunet, N. D., Anaviapik, A., Kublu, A., Killiktee, C., & Henri, D. A. (2022). Inuit youth and environmental research: exploring engagement barriers, strategies, and impacts. *Facets*, 7(1), 45-70.
9. Marquardt, A. U., Jewell, C., & Medeiros, A. S. (2024). Inuit perspectives on climate change and well-being: a comparison between urban and remote communities in the Arctic. *FACETS*.
10. Ljubicic, G., Okpakok, S., Robertson, S., & Mearns, R. (2018). Uqsuqtuurmiut inuita tuktumi qaujimaningit (Inuit knowledge of caribou from Gjoa Haven, Nunavut): Collaborative research contributions to co-management efforts. *Polar Record*, 54(3), 213-233.
11. Bishop, B., Paquette, E., Carter, N., Ljubicic, G., Oliver, E. C., & Aporta, C. (2025). Inuit uses of weather, water, ice, and climate indicators to assess travel safety in Arctic Canada, Alaska, and Greenland: a scoping review. *FACETS*, 10, 1-25.
12. Ford, J., Bolton, S., Shirley, J., Pearce, T., Tremblay, R., & Westlake, M. (2025). Research on the human dimensions of climate change in Nunavut, Nunavik, and Nunatsiavut: A literature review and gap analysis. *Arctic*, 65 (3):289
13. Natural Resources Canada. (2025, March). Canada Invests in Climate Change Adaptation to Keep Communities Safe in the North and Across Canada. Canada Invests in Climate Change Adaptation to Keep Communities Safe in the North and Across Canada - Canada.ca (accessed on 05 September 2025).
14. Government of Nunavut, & Nunavut Tunngavik Inc. (2025). *Nunavut & NTI roadmap for Arctic sovereignty and security*. <https://www.arcticsecuritysummit.ca> (accessed on 29 July 2025).

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