Climate Action Report: Nunavut

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Introduction

Nunavut faces a significant threat from climate change, as the far northern Arctic is warming over three times faster than the rest of the planet (McLennan et al., 2022). Since 1999, the Government of Nunavut has passed multiple territorial acts and launched initiatives in order to protect the environment, wildlife, forests, waters and land surface. The primary focus of these initiatives is the preservation of the environment, the development of renewable energy sources, and the autonomy and safety of Nunavummiut (Inuktitut for the residents of Nunavut) in accordance with the principles of Inuit Qaujimajatuqangit (Inuit traditional knowledge). This report will examine the current research into the effects of climate change on Nunavut's residents and environment, the territory's policies on climate action, and future directions for Nunavut's climate change strategies.

Literature Review

Research has demonstrated that climate change and global warming pose a great threat to Arctic communities and ecosystems. In keeping with the overall upward trend in temperatures across the North (and around the globe), average temperatures in Nunavut have risen over 1.5 degrees Celsius, with a surface air temperature anomaly of 2.2 °C in 2020 compared to 1981–2010 averages (Overpeck et al., 1999, cited in Government of Nunavut [GN], 2010; European State of the Climate, 2020). This leads to thinning sea ice, retreating glaciers, thawing permafrost, longer iceless seasons, and loss of habitat (Overpeck et al., 1999). As a result, species such as caribou, an important food source for the Inuit, have become endangered (Ford et al., 2019). Furthermore, plastic pollution has reached the remote

Arctic, mainly through long-range sources (Bergmann et al., 2022; Huntington et al., 2020), which threatens the health and livelihoods of people residing in the North (Liboiron et al., 2021). Much of the existing research has neglected smaller communities, focusing on the negative effects of climate change and the adaptation strategies of the larger territory (Ford et al., 2012). Both adaptation and mitigation of climate change are important components of climate change policy (Environment and Climate Change Canada [ECCC], 2022).

Despite Nunavut's vulnerability to the worst effects of climate change, the territory is currently unprepared for the risks (Auditor General of Canada [AGC], 2018). Since 2003, there have been two efforts to draft an official action plan to address climate change, but these plans were never finalized (Murray, 2018). Nunavut has faced criticism for its outdated climate change action plan and for being underprepared to manage the negative effects of climate change on local communities and ecosystems (Lamberink, 2021), as evidenced by the lack of renewable energy sources and insufficient plans to address housing damage due to melting permafrost (AGC, 2018). As a result, Nunavut is still reliant on diesel as a fuel, and emissions have increased 25% since 2005 (Dusyk et al., 2021, p. 39). Additional efforts to combat climate change include task forces and community projects (Climate Change Nunavut [CCN], n.d.). Some recommendations for adapting to the health consequences of climate change (such as increases in illness, accidents, and food insecurity) include preserving cultural knowledge to promote safe food harvesting practices, government and non-government co-management of wildlife, and increasing funding for support programs for harvesters (Ford et al., 2007; Ford et al., 2014).

Territory Introduction

Bordered by the Northwest Territories to the west and Manitoba to the south, the territory of Nunavut, meaning "our land" in Inuktitut, is located in the northernmost region of Canada (Kikkert, 2023). Though Nunavut has a relatively small population of 36,858 people

as of the 2021 census (Statistics Canada [StatCan], 2023), it is one of the largest regions in Canada, encompassing 21% of Canada's total landmass (Kikkert, 2020/2023). The majority of Nunavummiut identify as Inuit (30,865, or 83.74% of the total population; StatCan, 2023). In 2019, Nunavut's greenhouse gas emissions constituted around 0.1% of Canada's total emissions (Dusyk et al., 2021, p. 39 and 41).

In the spirit of the Government of Canada's aims to achieve net zero emissions by 2030 (now 2050; Government of Canada [GC], 2024a), Nunavut intends to achieve a net zero energy grid by 2035 (Lovekin & Savic, 2022); however, no specific emissions target has been set (Dusyk et al., 2021, p. 58). As of July 1, 2019, in order to reduce emissions from fossil fuels, Nunavut has implemented the federal carbon pricing system per the *Greenhouse Gas Pollution Pricing Act* (GGPPA; Department of Finance [DoF], 2019; ECCC, 2018). The two main components of this system are a regulatory charge on fossil fuels (the fuel charge) and a performance-based trading system for industries (the Output-Based Pricing System; ECCC, 2023).

From 2019 onward, carbon emissions in Nunavut were taxed at 20 Canadian dollars per tonne of carbon dioxide starting in 2019, and set to be taxed at 50 Canadian dollars per tonne of carbon dioxide by 2022 (ECCC, 2020, p. 2). As of 2023, the Nunavut Carbon Rebate (NCR) subsidizes 50% of the carbon tax for residents, meaning that residents pay 50% while the Nunavut government pays the other 50%; after 2024, this rebate will be gradually reduced 10% per year until it is completely phased out by 2028 (DoF, 2019). In addition, a Nunavut carbon credit is available to offset the costs associated with federal carbon pricing for individuals and their families at any income level (Canada Revenue Agency [CRA], 2024). In Nunavut, the main sources of carbon emissions are from burning diesel for transportation (63%) and stationary sources, such as home heating and electricity (33%); only 1% of emissions come from industrial use and 0% from agriculture (National

Inventory Report, 2015). As of 2020, 72% of all emissions in Nunavut are covered under the carbon pricing system, and revenue is used for rebates and tax credits (ECCC, 2020).

Key Policies

In 2003, the Government of Nunavut's Department of Sustainable Development released the Nunavut Climate Change Strategy (2003), a document that outlined the challenges associated with combating climate change and their plans for climate action (pp. 3–18). Since then, Nunavut has adopted legislation to preserve nature (including wildlife and forests), protect food and water systems, and move to clean energy sources. Residents, corporations and industries involved in energy projects, and the federal and territorial government are common stakeholders for each piece of legislation.

Nature and Environment

In 1988, the Northwest Territories passed several statutes which later served as the foundation for the comprehensive Nunavut *Environment Protection Act* (EPA; 1988, amended in 2011), which addresses land and waste management, pollution, and other climate concerns, including sections on forests, wildlife, and water systems. Other acts, such as the *Forest Protection Act* (1988 [N.W.T.]; 1999 [Nu]) and the *Wildlife Act* (2003), govern the specific dimensions of the forests and wildlife of Nunavut.

Like the EPA (1988), the *Forest Protection Act* (1988) originated from legislation passed by the Northwest Territories and was later amended in 1999. In its 53 sections, it sets guidelines for forest management and use, regulates logging using a system of permits, and calls on the cooperation of forest personnel (e.g. loggers, forest rangers, forest managers) to preserve forest ranges. To further protect the wildlife of Nunavut, the *Wildlife Act* (2003, last amended in 2022) regulates the harvesting of wildlife (including hunting and research activities), the protection of local ecosystems, and penalties for violating regulations.

Food and Water Systems

The *Public Health Act* (2016) governs all areas of public health, including health protection and disease prevention through vaccination, food and water safety, occupational safety regarding funerary and mortuary services, assessments of health outcomes through epidemiological studies, and the process of reporting and announcing public health concerns or emergencies. The sections on food safety address how food supply chains and food vendors should handle their products to ensure the safety of consumers and businesses. Under the Licences and Tags Regulations (2015) passed under the *Wildlife Act* (2003), licences are required for harvesting wildlife for consumption as well as other purposes (such as research). A licence authorizes the holder to harvest wildlife according to their "economic, social and cultural needs," or up to the limit allowed by the minister (*Wildlife Act*, 2003, p. 15). These limits are intended to control the level of harvesting and protect vulnerable species from over-harvesting while respecting the needs of Nunavummiut.

To protect the rivers, lakes, and oceans in and around Nunavut, the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (2002; last amended August 28, 2019) governs the use of water and disposal of waste into bodies of water in Nunavut; it also governs the use of land and mineral resources (mining). The Nunavut Waters Regulations (2013) passed under this Act prohibit the dumping of any waste that compromises the quality and safety of water sources. Furthermore, the Spill Contingency Planning and Reporting Regulations under the EPA (1988) set guidelines for responding to hazardous substances escaping into the environment, such as oil spills; these guidelines cover the reporting, remediation and prevention of spills to protect the homes of nearby residents and habitats of wildlife. Both organizations (such as the oil and gas industry, mining corporations, etc.) and individuals face fines and other penalties for violating regulations.

Cleaner Energy, Cleaner World

Nunavut employs the standards set in the federal GGPPPA (2018) to tax and regulate emissions. Unlike other provinces and territories, there are currently no territory-wide acts that specifically govern solid waste pollution and management in Nunavut**.** However, the federal *Arctic Waters Pollution Prevention Act* (2019) bans the dumping of waste in Arctic waters (GC, 2019), and Yukon, the Northwest Territories, and Nunavut have collectively kept 28,820 tonnes of solid waste from landfills in 2020 (StatCan, 2022).

Inuit-run energy corporations, such as the Qulliq Energy Corporation, Qikiqtaaluk Corporation and Nunavut Nukkasarvut Corporation, are consulting with communities on plans to build renewable energy projects, such as solar panels, wind turbines, and hydroelectric power links (CBC News, 2023). As part of its 2023 $40 billion commitment to supporting clean energy projects across Canada, the Government of Canada has invested $4.1 million in solar power projects in Nunavut and $7 million in the Kivalliq Hydro-Fibre Link, a project aiming to bring clean hydroelectric energy and broadband Internet service to Kivalliq, Nunavut (GC, 2023b). Clean Energy Canada estimates that 6,800 clean energy jobs will be created in the Canadian North between 2025 and 2050 (Clean Energy Canada, 2023, as cited in GC, 2023b).

Area of Interest: Human Geography and Landscape of Nunavut

The People and the Land

The unique climate of northern territories plays an important role in how the effects of climate change manifest, as well as how they affect the residents. Land, water and ice are culturally and traditionally significant for the Inuit (Inuit Tapiriit Kanatami [ITK], n.d.). Many Inuit rely on traditional knowledge to track seasons, animal migration patterns, traverse the environment, and adapt to changing conditions; the rapid pace of global warming makes it difficult to adjust (GN, 2010). The geographical and topographic features of Nunavut also

affect its dependence on fossil fuels. Nunavut's northernmost islands have nights that last 24 hours in the winter and temperatures drop to the lowest averages recorded in Canada (ranging from −10 °C to −50 °C over the year in Grise Fiord, the coldest community; Kikkert, 2023, para. 9). Heating and lighting are thus crucial for Nunavummiut to carry out daily activities and stay warm through the bitter cold.

Most of the land in Nunavut is tundra, characterized by its rocky soil, lack of trees and thick layer of permafrost (land which remains below 0 degrees Celsius year round) that penetrates from a few metres up to 1,500 metres deep (Kikkert, 2023, para. 7). Permafrost is an important carbon sink, component of wildlife habitats, and the foundation for much of Nunavut's infrastructure (GN, 2010, p. 16). Like much of the Arctic, Nunavut's tundra is not suitable for engaging in large-scale industrial agriculture, and thus Nunavummiut traditionally rely on food harvested from the land through hunting and foraging (Ford, Clark, & Naylor, 2019). Higher temperatures may also spoil food caches previously preserved in the elements (GN, 2010, p. 15). Thawing permafrost also damages infrastructure and delays future housing projects (GN, 2010, p. 16). Thus, high temperatures, diminishing wildlife populations, changing migration patterns, and loss of biodiversity not only disrupt the local ecosystem but threaten the food security of Nunavummiut.

Water and Ice

Rising temperatures lead to rising sea levels, increases in precipitation, and loss of ice on land and at sea, contributing to flooding, harsher blizzards, and other unpredictable extreme weather events (McLennan, 2022; Overpeck et al., 1999). In the Arctic Archipelago and the waters of the surrounding Arctic Ocean, sea ice can become multiple metres thick (Kikkert, 2023, para. 8). Ice and snow reflect sunlight, while the ocean and land absorb it; when this ice melts due to warming, it creates a feedback loop whereby the loss of sea ice and snow coverage accelerates warming (McLennan, 2022). Travel and transportation of goods

becomes more dangerous due to unpredictable weather and melting permafrost. Longer iceless seasons mean more fossil fuel tankers in the waters, increasing the risk of spills (CCN, n.d.; GN, 2010, p. 17).

Area of Interest: Inuit Culture and Climate Action

Legal Sovereignty and Inuit Self-Determination

Nunavut is located on the traditional land of the Inuit, called the Inuit Nunangat to reflect the importance of land, water, and ice to Inuit communities (ITK, n.d.). During British colonization, the British Crown designated Nunavut and parts of the Northwest Territories as the North-Western Territory, which became a territory of the Canadian Confederation in 1870; the *Nunavut Act* (1999) and the Land Claims Agreement (1993; last amended in 2017) separated Nunavut from the Northwest Territories and established the rights of the Government of Nunavut (Kikkert 2007/2023). Decades later, the Government of Nunavut, Nunavut Tunngavik Incorporated, and the Government of Canada signed the *Nunavut Lands and Resources Devolution Agreement* on January 18, 2024 (Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC], 2024). This agreement, like the devolution agreements with the Northwest Territories (2014) and Yukon (2003), transfers land, responsibility and powers previously held by the Crown and the Canadian government to the Nunavut government, granting Nunavummiut power over land use, water rights, and resource management (CIRNAC, 2024). These parties aim to complete the transfer of responsibilities from the Government of Canada to Nunavut by April 1, 2027 (CIRNAC, 2024), granting Nunavummiut more control over the economy, environmental and climate policy.

Inuit Qaujimajatuqangit and Inuit Qaujimaningit: Inuit Ways of Knowing and Applications in Climate Action

Climate change negatively affects Inuit mental health, livelihoods, and relationship to the land (Ford et al., 2014; GN, 2010, p. 14). Much climate action in the North is spearheaded

by the majority Indigenous residents. Thus, the Government of Nunavut has adopted Inuit Qaujimajatuqangit (Inuit traditional knowledge) as official policy; along with Inuit Qaujimaningit (a traditional way of knowing which includes traditional, communal, local, ecological, and other forms of knowledge), they have been incorporated as guiding principles for other policy (ITK, 2016). These values include *Aajiiqatigiinniq* ("Decision making through discussion and consensus"), *Avatittinnik Kamatsiarniq* ("Respect and care for the land, animals and the environment"), *Ikajuqtigiinniq* ("Working together for a common cause"), *Inuuqatigiitsiarniq* ("Respecting others, relationships and caring for people"), *Pijitsirniq* ("Serving and providing for family and/or community"), *Pilimmaksarniq* ("Development of skills through observation, mentoring, practice, and effort"), *Tunnganarniq* ("Fostering good spirit by being open, welcoming and inclusive"), and *Qanuqtuurniq* ("Being innovative and resourceful" (GN, 2010, pp. 8–9).

These values underscore the importance of collaboration, partnership, and innovation to Inuit climate action. Inuit youth and research organizations collaborate on initiatives such as the ArcticNet program, which researches the effects of climate change on Arctic communities and ecosystems (ITK, 2023), the Nunavut Permafrost Monitoring Network (Nunavut Climate Change Secretariat, n.d.), and community efforts to monitor wildlife migration patterns (Etiendem et al., 2020). Furthermore, plastic pollution in the North often comes from the southern regions of the world, which affects the health, wellness and sovereignty of Inuit communities (Liboiron et al., 2021). However, much research into plastic pollution is done by non-Inuit researchers, who may not be aware of the unique challenges faced by the Inuit people living in the Inuit Nunangat (Liboiron et al., 2021).

Conclusion

Northern territories face unique challenges compared to southern Canada due to the differences in climate, population density and size, and investment from the government. The

cold temperatures and lack of sunlight lead to an environment unsuitable for agriculture and the pressing need for heating to prevent deaths and illness.

Though Nunavut is one of the largest territories in Canada, comprising over one-fifth of Canada's total area, it accounts for less than 1% of Canada's total emissions (Dusyk, 2021). Furthermore, plastic pollution originating from non-northern sources is accumulating in the Arctic, suggesting that waste management policies in the North must address these external sources (Huntington et al., 2020). Nunavut alone cannot be responsible for managing the effects of climate change in the region; the onus is on Canada's other provinces and territories to work collaboratively with Nunavut and reduce their own emissions and pollution.

Nunavut's relative shortage of funding, remoteness, and need for heating and transportation continue. The high cost of implementing renewable energy sources, such as solar panels and wind turbines, have been prohibitive for Nunavut's expansion of green energy (AGC, 2018). The federal government and the Nunavut government must therefore cooperate with local communities and energy corporations to fund these projects, for example using tax revenue to fund renewable energy projects once the NCR is phased out.

Finally, Nunavut's latest climate change strategy was published in 2003, making it over two decades out of date. Despite the Nunavut government's ongoing efforts to create new plans, without updated data and a clear allocation of responsibility among the various departments and other stakeholders, it is difficult to implement initiatives to combat climate change (Murray, 2018). Developing an updated action plan with concrete emissions and fuel targets, assignments of responsibility, and funding is the priority. Involving Inuit elders, youth, and community members in consultation, research, and implementation of policy can strengthen climate change responses by drawing from local labour and traditional knowledge, upholding Inuit Qaujimajatuqangit and rights to self governance, and protecting the health

and safety of Nunavummiut, thus ensuring Nunavut's vision of climate action is just and equitable.

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