

Perspective

A Circumpolar Perspective on Northern Development: Is Canada Falling Behind?

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Abstract: This essay considers the state of the contemporary Circumpolar World and provides a general overview of the way the various circumpolar jurisdictions are addressing the challenges and opportunities of the twenty-first century. It considers how northern areas are attracting the resources necessary to lessen the socio-economic divide between northern and southern/urban areas. An overview of infrastructure, basic services, economic development, regional leadership, security, Indigenous governance, and plans for the future of the countries and regions that make up the Circumpolar North reveals significant strengths and challenges. This examination focuses, in particular, on where Canada sits in comparison to its northern neighbours, a perspective that does not always put Canada in the best light. In many respects, Canada's efforts in the North lag—sometimes considerably—behind circumpolar norms (aside from Russia). National and sub-national governments in Canada have not always attracted the funding, commitment, and vision needed to capitalize on the political, technological, and economic resources needed to better serve the peoples of the North; in recent years, some Arctic regions have done much better than others.

Introduction

The Circumpolar North is the focus of much attention at present, driven by Russian military adventurism, China's growing Arctic interests, the region's vulnerability to climate change, and global interest in northern resources and Indigenous rights. On international, national, and sub-national levels, Arctic affairs are attracting funding, media attention, and increasingly coordinated regional efforts at economic development, technological innovation, political empowerment, and the recognition of Indigenous treaty and legal authority. Across the Arctic, efforts are being made to improve infrastructure, strengthen the quality of life for residents, respond to environmental challenges, and build more diverse and stable economies.

This commentary considers the state of the contemporary Circumpolar World, based on professional engagement with the region as a political scientist (including study tours, conferences, and interviews with local specialists); the available scholarly and government literature; and recent field observations in all the regions, save for Russia. The goal is not to provide a detailed statistical analysis, which is done systematically and with some regularity by the *Arctic Human Development Report*,¹ but instead to provide a general overview of the way the various circumpolar jurisdictions are addressing the challenges and opportunities of the twenty-first century. The essay considers how northern areas are attracting the resources necessary to lessen the socio-economic divide between northern and southern/urban regions. An overview of infrastructure, basic services, economic development, regional leadership, security, Indigenous governance, and plans for the future of the countries and regions that make up the Circumpolar World reveals significant strengths and challenges. This examination focuses, in particular, on where Canada sits in comparison to its northern neighbours, a perspective that does not always put Canada in the best light. In many respects, Canada's efforts in the Far North lag—sometimes considerably—behind circumpolar norms.

National and sub-national governments in Canada have not always attracted the funding, commitment, and vision needed to muster the political, technological, and economic resources to best serve the Peoples of the North. The conclusion, argued below, is that Canada developed as a major force in Arctic affairs in the 1970s and 1980s, only to surrender its high standing in the last twenty years. Canada played a major role in the creation of the Arctic Council, the primary forum for the discussion of intra-regional affairs, and was instrumental in the establishment of the University of the Arctic, the leading example of circumpolar academic cooperation. The country had impressive and comprehensive research programs in the Arctic. In many ways, Canada has stepped back from its prominent

role in northern affairs. Canada's northern cities, educational institutions, economy and infrastructure, and social conditions lag behind most other northern nations (except Russia, although we fall behind the Russians in strategic investments and some types of infrastructure). Canada has, in effect, fallen behind other circumpolar countries, with considerable and negative effects on the people living in northern Canada. This is particularly true with respect to Indigenous Peoples in the region, whose life chances, economic options, and socio-cultural realities point to continuing intergenerational trauma due to the Indian Residential School history, and formidable public policy challenges. Many of the key socio-economic indicators for Indigenous Peoples living in northern Canada, such as life expectancy, educational attainment, income levels, and access to housing, among others, lag well behind Indigenous communities in the European North.²

Infrastructure development, social and economic programs, and human settlements reflect the real and fundamental challenges of the North: isolation, cold weather, darkness, long winters, short construction seasons, and a small population. The Circumpolar World is a diverse region consisting of the northern Norwegian counties of Troms, Finnmark, Nordland, and the island of Svalbard; Sweden's northernmost counties of Norrbotten and Västerbotten; Finland's provinces of Northern Ostrobothnia, Kainuu, and Lapland; in Canada the three northern territories (Nunavut, Northwest Territories, and the Yukon), Labrador, and the northern parts of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Quebec (the Provincial North); northern Alaska (excluding the panhandle and southern coastline); Greenland and the Faroe Islands (autonomous Danish territories); Iceland³; and the Arctic Zone of the Russian Federation, which includes the regions of Murmansk, Arkhangelsk, the Republics of Karelia and Komi, the Nenets Autonomous Area, the Sakha Republic, and the Chukotka Autonomous District.⁴ There are great variations in climate, population, and geography across the region. Northern Scandinavia—largely Subarctic in climate while northern in latitude, close to European markets, and beneficiaries of wealthy social-democratic nations—has produced and sustained a high quality of life, strong regional economies, and impressive state-provided services and infrastructure. The northern regions of Norway, Sweden, and Finland are reasonably large but lightly populated. The Sami, the Indigenous Peoples of northern Fennoscandia (Norway, Sweden, Finland, and Northwestern Russia), have been reindeer herders, hunters, gatherers, and fishers in their traditional homelands for generations. Of the estimated 90,000 to 100,000 Sami, approximately 2,000 live in Russia; 8,000 in Finland; 20,000 to 40,000 in Sweden; and 50,000 to 65,000 in Norway—with many Sami living in southern cities and coastal areas of these nations. The Sami, like Indigenous Peoples in many parts of the world, have been moving from rural areas and traditional towns into urban settings.⁵ In comparison, there are

approximately 180,000 Inuit in the Circumpolar North: 70,000 in Canada, 55,000 in Alaska, 56,000 in Greenland, and a smaller population in Chukotka (Russia).⁶

Russia's northern regions, with over half of the Arctic's residents, have numerous cities of reasonable size—the largest Siberian city, Novosibirsk, has 1.6 million residents. Siberia has experienced a sharp decline in population over the past three decades after the breakup of the Soviet Union and the relaxation of controls over personal movement. This period of retrenchment was followed by a major surge in mineral and energy development and the rapid remilitarization of its vast northlands and Arctic coastline, but without a major increase in permanent population.

Alaska has a strong but variable resource economy (primarily oil and mining) and a large military establishment, which both contribute to prosperity in the forty-ninth state. Greenland, Iceland, and the Faroe Islands have capitalized on the rich fishing resources of the North Atlantic to produce intensely innovative societies and they have become increasingly active and more assertive in circumpolar affairs. Iceland is a relatively small island state, most of which sits just below the Arctic Circle. The bulk of its population of under 400,000 lives in the capital city Reykjavik. Iceland relies on fishing, aluminum processing, and increasingly on tourism.

Canada, which has the second-largest share of the Circumpolar North after Russia, has an especially diverse northland. The territories of Nunavut, Northwest Territories, and the Yukon receive high subsidies from the Government of Canada and have active, if not expansive, resource economies. Their capital cities are particularly well-resourced and, by northern Canadian standards, quite prosperous. Indigenous Peoples are prominent in the economic and political landscape of the territories and many Indigenous governments have signed comprehensive land claims and self-government agreements.⁷ The Provincial Norths, from Labrador in the East to northern British Columbia in the west, are substantially “northern” in terms of climate, geography, and socio-economic isolation from the Canadian south, but they are not all incorporated into the Government of Canada's definition of the Arctic. Northern Quebec and Labrador, by dint of Quebec's special status in the Canadian Confederation and the presence of Inuit in both regions, are included in the federal boundaries of the Arctic; northern Ontario and the northern regions of the Canadian West are not. Consequently, the rest of the Provincial North relies on the “generosity” of provincial governments and, for constitutional reasons, receives no direct federal funding on a regional basis, and much less national interest. Across much of the Provincial Norths, many Indigenous Peoples and communities endure serious poverty, marked by insufficient housing leading to overcrowded conditions, poor infrastructure,

and the lack of adequate economic opportunities, although engagement with resource development has increased in recent years. With the important exception of northern Quebec, the Provincial North in Canada is considerably poorer and disadvantaged in terms of infrastructure, regional autonomy, and national attention.

Infrastructure

The quality of infrastructure in a region determines how easy it is for the region's citizens to live, learn, socialize, and do business. Infrastructure, such as transportation systems, electricity lines, and digital networks, connects places, people, and information. In the Circumpolar North, the population is sparse and spread out over vast distances with many small and isolated communities. This creates additional challenges and expense for governments in the building of inter-community transportation and digital infrastructure. Add winter into the mix, with its cold weather, snow, and limited winter daylight, and both challenges and expenses rise. As a result, northern infrastructure often does not compare well to national standards or standards of service across the nation, although people in northern and remote regions do not expect that all infrastructure will reach the standards of southern urban areas.

The difficulties in building good infrastructure are not the same across the Circumpolar World. Some regions have milder winters (much of Scandinavia) or larger population centres (particularly in Russia), but most of the North faces familiar Arctic challenges such as transportation. Countries have taken different approaches to travel across a region or territory especially during the winter months. Iceland does not prioritize rapid road clearance during the winter but does subsidize air travel to its coastal communities. (The 2020 program Loftbrú or Air Bridge, provided a subsidy of 40% off the cost of travel to the nation's capital, with each community resident eligible for three trips per year).⁸ Greenland, whose communities are all coastal, subsidizes a ferry service along the west coast between April and January (weather-dependent in the winter), and is now investing heavily in airport construction.⁹ Good quality roads have been developed and maintained across the rest of the Nordic countries, including on the Faroe Islands although its secondary paved roads are single lane with frequent pull-outs to allow cars to pass. Of the eighteen islands that make up the Faroe Islands, seventeen are inhabited; they are well connected with tunnels, bridges, and ferries.¹⁰ The communities of the Alaskan panhandle in Southeast Alaska and along the southern coast are serviced by the subsidized Alaskan Marine Highway System year-round. Juneau, the state capital, has regularly scheduled air service. There are good roads connecting the major communities of the interior to the coast, the Alaska Highway connects to

the continental United States through the Yukon and northern British Columbia, and there are extensive (and compared to Canada, inexpensive) air services to the far-flung communities of the state.

Canada's northern territories are different when it comes to transportation infrastructure. All of the Yukon's communities except one (Old Crow) are accessible by good quality, all-season roads. The southern Northwest Territories is accessible by road, but all communities in Nunavut and the northern Northwest Territories are small, isolated, and without road connections. Air services between communities or to and from the territorial capitals are expensive—a return trip flight from Gjoa Haven to Iqaluit, the capital of Nunavut, is over \$3,300¹¹ (some government or employment travel subsidies are available). Canada's Provincial North has reasonably good road connections although the roads decline in quality outside of more major centres. Roads to First Nations or Métis communities are often poorly maintained as are roads in Indigenous communities.

Maritime transport is a key part of Russia's plans for the Arctic. As global warming melts Arctic sea ice and makes the northern waters navigable for more of the year, the potential for Russia's Northern Sea Route (a 5,600 km route stretching from the Barents Sea to the Bering Strait) becomes extremely significant. The Northern Sea Route would enable Russia to get its oil, gas, and minerals to world markets in a timelier manner. If the route were to be ice free for significant blocks of time, a portion (it remains debatable how large a portion) of the world's shipping could take the Northern Sea Route rather than routes like that through the Suez Canal,¹² a longer and, due to the risk of piracy, more dangerous route.¹³ The bulk of Arctic deepwater ports that are viable for commercial purposes, sixteen in total, are in Russia, on the Bering Strait and along the Arctic coast.¹⁴ Many of these ports have been in existence for years and are visited regularly by the Russian fleet of military and commercial icebreakers. Murmansk, the largest deepwater port north of the Arctic Circle, remains ice-free all year and has been expanded significantly over the past two decades in response to the increased production of offshore oil and minerals.¹⁵ Along with the sixteen ports, over the past decade Russia has also built up other aspects of its Arctic presence including fourteen new airfields, six military bases, anti-aircraft missile systems, small ports, and four new Arctic combat teams.¹⁶ Russia is prepared to protect its territory from any perceived northern threats.

The rest of the Arctic, including Canada and Alaska, is far behind Russia in terms of infrastructure, particularly in terms of economically vital deepwater ports, despite the long northern coastlines. None of Alaska's four deepwater ports are along its Arctic coastline; the closest to the Arctic is in Dutch Harbor in the Aleutian Islands. In 2022, however, the United States Congress approved funding for half the cost of a deepwater port in Nome.¹⁷ Greenland's west coast

hosts a number of deepwater ports, although only a few currently handle large-scale commercial traffic. Norway, Iceland, and the Faroe Islands have many ports developed for local fishing purposes and a few (Tromsø, Hammerfest, Kirkeness, and Bodø in Norway, and Torshavan in the Faroe Islands) are deepwater commercial ports. After over a decade of negotiations, in 2021 Iceland and Bremenport, a German port operator, finalized plans to construct a deepwater port and industrial site at Finna fjord in northeastern Iceland. The location was selected in the hope that it would make Finna fjord an important Arctic shipping hub.¹⁸ With the acceleration of Arctic militarization, the strategic significance of deepwater ports has come into focus, a reality that emphasizes the scale and reach of Russia's investments, the American effort to catch up with its Nome project, and the minimal role of Canada's northern investments in strategic preparations.

Canada, with the longest coastline in the world (half of that in Nunavut), has a deepwater port in Tuktoyaktuk although it is of limited use since the approach is quite shallow; Canada's best deepwater port is in Churchill, Manitoba, on Hudson Bay.¹⁹ In 2021, the federal government announced the construction of a deepwater port in the Nunavut community of Qikiqtarjuaq, at the approach to the Northwest Passage.²⁰ Discussion about a deepwater port in Nanisivik, an old mining town on Nunavut's Baffin Island, emerged in 2007. A Nanisivik port, operating seasonally, would give Canadian sovereignty patrols and civilian ships an opportunity to refuel, allowing for further Arctic travel. Plans for the Nanisivik Naval Facility have been subject to numerous delays.²¹ Currently the port is scheduled to open in 2024 (nine years behind schedule) as a summer season refueling station, not of sufficient scale to jump-start any economic activity in the region.²²

The development of Arctic infrastructure in the Circumpolar World, launched in earnest during and after the Second World War, has accelerated in recent years. Noting that Russia has reopened and modernized thirteen Cold War-era military bases across the Arctic since 2000 as well as dozens of other smaller posts, the University of Calgary's Rob Huebert has asked: "They can find the political will to make that happen and we can't get Nanisivik up and running?"²³ The infrastructure gap between the Canadian North and the rest of the Circumpolar World, already substantial in the twentieth century, has only widened since that time.

Icebreakers have become of increasing importance, particularly with the opening of Arctic waters due to climate change. In support of its goal to keep the Northern Sea Route open year-round to allow for the shipping of Liquefied Natural Gas (LNG) and oil, Russia has been expanding its fleet of icebreakers. Russia now has over forty-five icebreakers, with more under construction or planned. Six of these are over 45,000 BHP (Brake Horse Power), making them the most powerful of the polar icebreakers. They are also nuclear-powered, which allows them to stay at sea for a longer period of time than a diesel-powered ship.²⁴

The Russian government approved funding for two additional nuclear icebreakers for Russia's fleet in January 2023.²⁵ The United States Coast Guard has five icebreakers, two of which are over 45,000 BHP, although one of those is no longer used except for parts.²⁶ Concerned that it only has two icebreakers capable of operating in heavy ice, the US Coast Guard hoped to have three to six more of these icebreakers by 2027 or 2028. However, delivery of the first of these, the USCGC *Polar Sentinel*, has been subject to numerous delays and a delivery date is currently uncertain.²⁷ The Canadian Coast Guard has eighteen icebreaking vessels in its fleet; most of these serve the Atlantic coast, Great Lakes, and connecting waterways. There are seven medium to heavy icebreakers, two of which are between 20,000 and 45,000 BHP. One of these two icebreakers spends the summer months in the Eastern Arctic while the other spends nine months of the year there. In 2021, Canada announced construction of two new polar icebreakers to replace these two aging vessels. The new heavy icebreakers will operate in the Arctic for nine months of the year and are scheduled to be completed in 2030. One of these new icebreakers had been initially scheduled for completion in 2017.²⁸

Finland is one of the world's leading designers and builders of icebreakers. It also has its own fleet of ten icebreakers, including seven medium vessels (20,000–45,000 BHP). Sweden has seven icebreakers, four medium.²⁹ In 2022, the Swedish Maritime Administration (SMA) announced that it had received government funding to buy two or potentially three new icebreakers to replace its current vessels. These icebreakers are used in the Baltic Sea and the Gulf of Bothnia.³⁰ Norway has two icebreakers; one went into service in August 2018 and almost reached the North Pole the following summer.³¹

Internet Infrastructure

In the modern era, lack of access to cell phone coverage and the internet severely limits opportunities. Some parts of the Circumpolar World are better served than others. Digital connectivity is faster and more reliable in densely populated areas in the industrial world; people in small settlements and isolated regions are accustomed to much weaker connectivity. In the twenty-first century, however, cost-effective and reliable internet is a precondition for effective engagement across many domains. Few people would expect that connectivity in Finnmark would match that of Oslo, or that Old Crow would have the same service as Calgary. However, Canada's Connectivity Strategy, set in 2019, called for download speeds of only 50 Mbps as a minimum standard; at present, regular domestic service in major Canadian cities is already twice as fast (1 GB speeds can be purchased).

Northern and remote parts of Scandinavia have excellent connectivity; Svalbard has superb connections. That one can continue a phone conversation while driving through an 11 km tunnel under the ocean between two of the

Faroe Islands really illustrates the point! This contrasts dramatically with the international headline-grabbing story of a Siberian student who, during the pandemic, had to climb a tree to get an internet connection that would enable him to join his classes by Zoom.³² In many places in rural and northern Canada, sometimes even in places not far from urban centres, internet and cell phone coverage is poor and inconsistent. In Nunavut, internet access is slow (in June 2023 the highest speed, in Iqaluit, was 15 Mbps) and expensive, with low monthly data limits.³³ To add insult to injury, the internet often slows down or stops working.³⁴ Alaska does much better, reflecting its more competitive economy, the strength of the resource economy, and the widespread presence of the US military. According to Broadband Now, an American broadband advocacy group, 77.7% of Alaskans have access to 100 Mbps broadband, a ranking that still left Alaska in forty-ninth place among all US states.³⁵ A closer look reveals that 77.3% of the population has access to 1 G broadband. However, like the vast majority of remote North America, Broadband Now shows that most of the more isolated parts of the state do not have any broadband coverage at all, a function of the high costs of delivering services across vast distances.³⁶

The Russian Far North is similar in several key respects to the Canadian North. When asked about internet access, local people often ironically reply “internyet”! In 2018, President Putin promised fast internet to all communities with 250 people or more, including in the Arctic.³⁷ The following year, Russia launched an \$850 million plan to establish high-speed internet infrastructure, including an underwater fibre optic cable from Murmansk to Vladivostok across the Russian Arctic. Estimated completion is 2026 although the invasion of Ukraine may have altered this schedule. The high-speed internet will be of enormous benefit to oil and gas companies and ports in the region as well as to the local population.³⁸

Starlink was established in 2019 by entrepreneur Elon Musk to break the land-based dominance of internet delivery that had left rural, remote, and Indigenous communities poorly served. As of November 2022, Starlink's satellite-based services are now available throughout most of the three territories although take-up has mostly been in the Subarctic. Two major initiatives have the potential to address the current gap. OneWeb, a broadband satellite internet system based in London, England, launched a series of satellites as part of its plan to deliver high-speed internet access across the globe including the Arctic. OneWeb now has 542 satellites on order.³⁹ In 2024, Space Norway, a Norwegian state-owned company, will launch two satellites into space. These two satellites are designed to provide continuous broadband coverage at the 68th parallel north, ensuring coverage throughout the Circumpolar North.⁴⁰ OneWeb and/or Space Norway could solve the problems of digital connectivity through the region, relieving the burden on Alaska and northern Canada. However, the fact that these regions have

been deprived of connectivity for so long, and that the Canadian and American governments have not done much to solve the problem, reveals a great deal about the low priority and the lack of urgency to extend one of the primary tools of innovation into the North.

A couple of Arctic cities are beginning to explore the implementation of smart city concepts. Smart cities collect a wide range of data to monitor and provide services more efficiently (e.g., water, energy, public transport). Raspotnik et al. explore how smart city development might work in the Arctic with its different set of challenges (e.g., relatively low populations and severe climate).⁴¹ The authors looked specifically at the smart city initiatives in Anchorage, Alaska, in Bodø, Norway, and in Oulu, Finland, observing that the three cities focused on efficiency and self-sufficiency in transportation, energy, and government services, often through large-scale investments in infrastructure.⁴² In 2015, Anchorage implemented an Intelligent Transportation System (ITS) to improve the efficiency of its transportation. Anchorage has also launched some smart governance initiatives including “a separate automated text-based alert system to plug in car engines when temperatures drop below 20 degrees Fahrenheit.”⁴³ Bodø, a city of 56,000 in northern Norway, is planning to construct a smart city district beginning in 2025. In the meantime, the Smart Transport Bodø project is testing a variety of mobility options and will use the results to inform decisions for the smart city.⁴⁴ Oulu, a Finnish city of approximately 200,000 people 170 km south of the Arctic Circle, is basing its sustainable growth plans around the sixth-generation wireless technologies needed for intelligent transportation systems, the automation of production, and decentralized energy systems. Oulu, which rose to prominence as the headquarters for Nokia phones, has been a pioneer in 5G networks and their predecessors, and in the use of renewable energy resources.⁴⁵

Energy

Energy drives the global economy and determines, in many ways, the viability of specific communities and regions. High prices and inconsistent access to energy can cripple commercial activities and have severe effects on households. Arctic energy, unless supplied by readily accessible hydroelectric power or local oil and/or natural gas, is typically much more expensive than southern and urban supplies, reflecting the high cost of delivery and the smaller regional markets. Ideally, northern energy would be realistically priced (taxed less aggressively as can be seen in Whitehorse, Yukon, where gas has been as much as 40 cents less a litre than in Victoria, BC) and offset sufficiently by the generally higher wages in northern areas.

Oil and gas, and the potential discovery of more oil and gas, has been part of the lure of the Arctic for decades. A major oil deposit was discovered in

Norman Wells in the Mackenzie River valley in 1911, and a pipeline to southern Canada was constructed in the 1980s. Additional Arctic oil and gas deposits were discovered in 1962 at Tazovskoye Field in Russia and then in 1968 in Prudhoe Bay, Alaska. Over sixty large oil and gas fields have since been found in Russia (42), the Northwest Territories (11), Alaska (6), and Norway (1). Fifteen of these fields have not gone into production, including all of those in the Northwest Territories.⁴⁶ Oil and gas production accounts for a significant portion of the economies of Alaska, Arctic Russia, and northern Norway, and contributes substantially to each nation’s wealth.

Russia is deeply committed to Arctic oil and gas exploration and drilling. According to a 2022 International Energy Agency report, fully 90% of Russia’s natural gas production and some 20% of its oil output already comes from the Arctic.⁴⁷ The United States has wrestled with the environmental impacts of drilling; all the companies with leases in the Arctic National Wildlife Refuge, the calving grounds for the Porcupine Caribou herd, have now withdrawn to the delight of the Gwich’in living in northern Yukon and central Alaska. However, in March 2023, US President Biden approved ConocoPhillips’s Willow Project, an enormous oil drilling project in the National Petroleum Reserve on Alaska’s North Slope. ConocoPhillips is the only company that is currently drilling in this area.⁴⁸

The US Geological Survey estimated in 2008 that a substantial portion of the world’s untapped oil and gas reserves are in the Arctic. Their assessment showed that “the Arctic might contain 90 billion barrels of undiscovered oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of undiscovered natural gas liquids. The Arctic is thus supposed to account for about 13% of undiscovered oil, 30% of undiscovered natural gas, and 20% of undiscovered natural gas liquids in the world.”⁴⁹ Over three-quarters of this oil and gas is thought to be within 200 nautical miles of a coastline, primarily in the Russian, Alaskan, and Canadian Arctic. Pressure to develop these resources varies considerably. Russia is moving aggressively while Norway proceeds more methodically. Canada has imposed strict constraints on Arctic exploration while Alaska’s development plans are caught in harsh and even ideological conflicts between pro-development Republican and more environmentally-concerned Democratic Party leadership.

Many Arctic and northern regions have been investing in renewable energies. In an effort to reduce its dependence on imported oil, Greenland established its first hydropower plant in 1993 and added four more between 2004 and 2013. In 2021, a sixth plant was approved. Greenland will soon be able to obtain 90% of its power from renewable energy (this does not include fuel used for transportation or the oil or diesel needed to power generators in remote communities).⁵⁰ Sweden built many hydropower projects, especially on its big northern rivers above

the Arctic Circle, in the 1950s–1970s. This investment is paying off as energy intensive industries are attracted to northern Sweden. Skellefteå's attraction for the Northvolt battery factory (discussed later) is one example of this. Hydro is also a major source of electricity throughout Norway, including the north, and in Iceland. Iceland is also blessed with vast amounts of geothermal energy, which accounts for two-thirds of the country's energy mix.

There are also a variety of renewable projects across the Canadian North. Canada has quite a lot of geothermal resources although little of this has been converted to energy. A number of potential geothermal energy projects are now under consideration. One of those in the testing phase is Tu Deh-Kah Geothermal, owned by the Fort Nelson First Nation in northern British Columbia just south of the Yukon border. Geothermal could bring substantial benefits to Canada's northern communities and industrial sites that currently depend on diesel, which is expensive and produces carbon dioxide, for their energy. Waste heat could even potentially be used to heat greenhouses and improve northern food security.⁵¹

Sweden has also invested heavily in wind power, much of which is based in the northern part of the country. Plans have been announced for the construction of large offshore wind farms in the Bay of Bothnia (the sea between Finland and Sweden) although there are concerns about their impact on winter shipping when icebreakers must clear routes.⁵² Equinor, a Norwegian energy firm, is building the world's largest floating wind farm 140 km off the coast of Norway. The renewable energy will be used to power oil and gas operations in the North Sea.⁵³ Solar power is increasingly used across northern Scandinavia.

Northern regions have extreme energy needs for electricity, heat, and transportation, and the pursuit of renewable energy systems hold particular importance in the Arctic. Cheap, reliable, and effective energy would be a game changer for Arctic life, but to date the experiments and installations have made marginal improvements to the cost and availability of northern energy.

Economic Development

Many regions of the Circumpolar World present very divided economic realities. Non-Indigenous workers, including government employees, resource workers, and professionals, earn incomes that are well above average. The average incomes for northern jurisdictions are often quite high, masking pockets of economic despair and deep poverty. Many people in remote settlements, particularly Indigenous people, have annual incomes that are below average, often well below national standards. The national and circumpolar challenge is to build vibrant and stable northern economies that ideally are not over-reliant on government transfer payments and commercial subsidies.

The economies of the Arctic nations vary quite considerably, but they share some features and challenges in common. As Joan Nyman Larsen and Andrey N. Petrov point out, the Arctic economies are primarily based around three sectors: major resource extraction, particularly mining; subsistence and small-scale traditional industries (hunting, gathering, trapping, crafts, clothing); and the public government sector as both a source of employment and transfer payments.⁵⁴ The remoteness and inaccessibility of much of the Arctic combined with limited access to workers, especially highly-skilled labour, makes production in the North very expensive, even prohibitively so. Another significant challenge that impacts the potential for local economic development in the Arctic is the environmental and social consequences of industrial development. The fragility of the Arctic ecosystem means that the consequences of any kind of exploration or development (e.g., drilling or clearing) can be extremely long lasting.⁵⁵ Vegetation grows back very slowly because of the poor and cold soil. Scientists have also noted that toxic compounds—carried by the wind or the ocean and through marine shipping and local mining and oil exploration—are accumulating in the Arctic and threatening the health of people and animals.⁵⁶

Resource development is obviously also subject to the vagaries of supply and demand in markets thousands of kilometres from the source of the mine or fish or oil field. A small remote community can be swamped socially and economically by the opening of a new mine nearby. When that mine closes, the impact on the community can be devastating. While many parts of the world struggle with the management of commercial fisheries and fish farms, northern Scandinavia appears to be particularly successful in this regard.⁵⁷ The four areas—Norway, Faroe Islands, Iceland, and Greenland—have robust local economies and small communities, a strong emphasis on conservation, and national involvement with economic development. The Faroe Islands and Norway have extensive fish farming operations, which contribute to the economic vitality of many coastal communities. Norway's work on far-offshore fish cages has the potential to reinvent an industry subject to great criticism for ecological damage. Greenland's state-owned enterprise, Royal Greenland, operates large processing plants throughout the nation.⁵⁸ Collectively, the fishing and processing activities are the largest economic sector in the country, with a continuing emphasis on Greenlandic employment and commercial development.

Commercial fishing operations have only recently expanded into Canada's Eastern Arctic, with promising initial results but limited reach to date.⁵⁹ Alaska has a robust fishing industry in its south and western regions (non-Arctic climatic conditions), albeit one disrupted in recent years by staggering ecological collapses and associated economic disruptions and uncertainty.⁶⁰ Alaska and northern Norway have begun collaborating on “blue economy” governance issues. This

AlaskaNor project, based at Nord University in Bodø, Norway, is looking for ways to enhance Arctic fishing and the ocean economy across the Arctic. AlaskaNor focuses on their shared dependence on maritime industries and the potential for collaboration in “offshore petroleum, maritime transportation/shipping, offshore wind, fisheries and aquaculture.”⁶¹

Gradually, the Arctic is also seeing the beginnings of economic growth outside the three main sectors of resource development, subsistence living, and government jobs and transfer payments. The knowledge and creative industries, small-scale manufacturing, tourism and recreation, and professional and technical work have all been growing. In the Russian Arctic, Alaska, and northern Scandinavia, there are pockets of scientific and value-added development. In the Russian Arctic, particularly the regions of Murmansk and Arkhangelsk, new innovative economic clusters are being developed. Arkhangelsk has been home to a shipbuilding cluster since 2012 and a forestry and pulp and paper industry since 2014.⁶² A tourism and recreation cluster was formed in Murmansk in 2015 and three years later the Northern Design Cluster of the Murmansk Region was established, focused on publishing, digital technology, fashion, design, and architecture.⁶³

Russia’s Arctic territory is immense and the commercially valuable resources considerable. The Republic of Sakha (Yakutia) remains one of the wealthier states in Russia and has substantial mineral resources and untapped economic potential. Over half of the world’s Arctic coastline is Russian. In the past few years, Russian military expansion has proceeded alongside economic expansion. The military presence across northern Russia has contributed substantially to employment and economic development in Arctic Russia, supporting the development of airfields, roads, Arctic ports, and regional communication infrastructure.⁶⁴

Russia’s engagement in the Arctic also has substantial innovation elements, including the development of a floating nuclear power station that can be shipped to mine sites or industrial cities to power industrial or resource activities. The first such nuclear plant, the *Akademik Lomonosov*, was deployed in the Chukotka area in 2019.⁶⁵ Russia’s northern activities are relatively unconstrained due to the tiny role of environmental NGOs and the comparative absence of environmental regulation and oversight. Russia’s advantage over democratic nations, one it shares with China, is its authoritarian political system, which means that the rights of local residents, including Indigenous Peoples, as well as the needs of the environment, are routinely sublimated to national strategic priorities.

Northern Alaska’s economy is centred on oil and gas, fishing, tourism, mining, and the services (engineering, finance, healthcare) that support those sectors. In Anchorage, by far the largest city in Alaska with half of the state’s residents living within its economic region, efforts have been made to diversify. The non-profit organization Launch Alaska, based in Anchorage, describes itself as “a climate

tech accelerator” focused on decarbonizing systems of energy, transportation, and industry. Launch Alaska assists new companies in finding projects and partnerships so that these new decarbonizing technologies will be used to build a clean economy in Alaska.⁶⁶ US military spending, with over 29,000 military, civilian, and reserve employees and billions of dollars in annual spending in the area, provides a solid foundation for broader economic development, employment, and even innovation.⁶⁷

The northern Nordic region has numerous economic development success stories. Oulu, Finland, previously home to the once-dominant cell phone company Nokia,⁶⁸ survived the company’s sharp decline and has developed a sizeable ICT cluster with several major companies and several hundred technology-based small and medium sized enterprises.⁶⁹ The Swedish city of Luleå used its cold weather to attract large-scale server farms that give off a great deal of heat. In a cold climate, fans can pull in outside air and cool the warm servers inexpensively. Facebook saw the advantages of Luleå and opened a server farm there in 2013, aided by substantial tax exemptions on electricity that made this cost-competitive.⁷⁰ The small town of Arjeplog, Sweden, has become one of the most important places in the world for winter testing of car and car parts. Skellefteå, Sweden, won an international competition to become the site of Swedish battery developer and manufacturer Northvolt’s massive 3.8 billion Euro electric battery factory. Access to inexpensive hydropower was a major draw. Skellefteå also established the Arctic Game Lab, encouraging graduates in gaming and graphic design programs from the Luleå University of Technology’s Skellefteå’s campus to stay in the city and establish companies. The city created an incubator to assist start-ups in a small northern city that, only twenty years earlier, was a classic resource-dependent community with little economic diversification.⁷¹

Several communities have looked to the skies for economic development. The commercialization of space has expanded, with Alaska building on the long-term success of the University of Alaska’s Geophysical Institute, launch services in Russia (now closed to the West), observational capabilities in Inuvik, and important space initiatives in Andøya in northern Norway and Kiruna in northern Sweden. There have also been efforts made to exploit northern tourism potential, from Rovaniemi’s Santa Claus Village, Santa Claus House in North Pole, Alaska, ice hotels in Kiruna and Alta, and northern lights tourism in Tromsø, Yellowknife, and Fairbanks.⁷²

The Canadian North has small pockets of entrepreneurship and new-economy businesses. The Canadian Federation of Independent Business, the country’s primary small business association, in 2018 named Whitehorse, Yukon, one of the top three communities in Canada in terms of the financial, administration, and regulatory support for entrepreneurship.⁷³ Whitehorse has

strong assistance for start-up firms including a local venture capital investing group; the greatest difficulty is ramping up firms to the next level due to the small size of the local market. The community also created Yukonstruct, a community innovation hub with office space, a makerspace with a wood shop, metal shop, electronics lab, podcasting studio, and digital fabrication lab, and a range of start-up supports.⁷⁴

Whitehorse is home to Yukon University, Canada's first university north of 60 (it transitioned from Yukon College in 2020); it is very small in comparison to other Arctic universities (1,300 students, the majority in college programs), particularly the Luleå Institute of Technology (19,000), University of Umeå (31,000), Nord University (12,000), the University of Tromsø, Norway's Arctic University (17,000), and the large and diverse University of Alaska system (close to 30,000 college and university students).

The Northwest Territories focuses on services for the mining sector. A polytechnic to support technical economic development activities is in the planning stages.⁷⁵ Entrepreneurship programs have emerged in Whitehorse, Yellowknife, and Iqaluit, the territorial capitals. Many of the programs are specifically focused on the incorporation of Indigenous values into the training. Indigenous economic re-empowerment has changed regional models as First Nations entrepreneurs are more likely than outsiders to invest locally. Northern Canadian entrepreneurship programs include Inspire Nunavut (a twelve-week leadership and entrepreneurship program for young people from across the territory)⁷⁶ and EntrepreNorth (a nine-month program of mentorship and support for northern Indigenous entrepreneurs).⁷⁷

Indigenous Rights, Autonomy, and the Resource Economy

The United Nations Declaration on the Rights of Indigenous Peoples, adopted by the United Nations General Assembly in 2007, provides minimum standards, albeit aspirational and not legally binding, for the relationship of signatory states with the Indigenous Peoples living in their territories. Circumpolar North countries have taken dramatically different approaches to Indigenous affairs, with most of them deeply influenced by their own nation's history. Arrangements vary from long-ago treaties to complex contemporary land claims agreements, from the inclusion in generous national welfare systems to active efforts to oppress Indigenous protests and assimilate Indigenous cultures. There is a growing international consensus about the need to deal fairly and honourably with Indigenous Peoples and communities, and to respect their rights, as now defined in UNDRIP, and their connections to Traditional Territories. The Circumpolar World has some of the most creative and comprehensive agreements with Indigenous Peoples, along with widespread socio-economic and cultural challenges.

One area where northern Canada and Alaska stand apart from northern Scandinavia rests in aspects of Indigenous rights and economic engagement. Indigenous Peoples in northern Canada remain among the poorest in the country in terms of annual income and general quality of life. The Sami in northern Scandinavia have much better life outcomes, in terms of personal income, education, health, and general well-being. But through a series of major court victories, modern treaties, and collaborations with the resource sector, Inuit, Métis, and First Nations Peoples in northern Canada and Indigenous Peoples in Alaska have secured substantial rights and practical authority.⁷⁸ The Red Dog zinc mine in western Alaska, leased from the Iñupiat, has the potential to become a model for collaborative resource development in many countries,⁷⁹ much as the diamond mines in the Northwest Territories⁸⁰ and Vale's Voisey's Bay Mine in Labrador have been.⁸¹ Indigenous economic development corporations in Canada and the native corporations in Alaska are major players in the northern economies, controlling hundreds of companies, employing thousands of Indigenous people, and holding equity investments in airlines, energy infrastructure, hotels, and tourism operations. Further, Indigenous Peoples, particularly those with treaties in northern Canada, have substantial authority in environmental management, project approval and oversight, and the management of their affairs through important self-government agreements. In Northern Quebec, land claims agreements and resource development agreements with the Cree and the Inuit have created substantial Indigenous wealth and community well-being, a pattern of local success that has, curiously, attracted little national attention.

Across the Arctic, save for Russia, a new narrative has emerged about resource development in the North. For most of the post-contact history of the region, southern entrepreneurs and governments have viewed the North as a treasure chest, to be exploited at will. Starting in the 1970s, particularly in Canada and Alaska, Indigenous Peoples pushed back against unchecked development. Aided by land claims agreements that empowered Indigenous communities in the decision-making processes and in economic activity generally, Indigenous Peoples slowly gained a foothold in the economy.

Collaboration agreements are now commonplace in Greenland; local opposition to a uranium mining plan stopped one major project recently. The Sami across Scandinavia have had less success, but they are increasingly concerned by plans that interfere with reindeer herding. As companies and shareholders have become increasingly concerned about public protests, and the benefits of cooperation with Indigenous communities have become clear, the basic equations of northern resource development have changed. All around the world accommodations with Indigenous Peoples have come slowly, pushed

by Indigenous legal and political actions, public activism, and culturally-based consciousness raising.

Arrangements vary dramatically across the Circumpolar World. In northern Canada, Indigenous self-government has become widespread. Inuit lead the public government in Nunavut and play a prominent role in northern Quebec. There is a Sami parliament in Norway, with just an advisory relationship with the national government but a growing program presence in the lives of Sami people.⁸² Sweden and Finland both have representative Sami bodies as well. The Sami do not have community governments formally recognized by land claims agreements, as exist across the Canadian North and in Alaska under the Alaska Native Claims Settlement Act. The Sami, however, participate actively across the Nordic region with a substantial presence in the post-secondary education system and the professions. And they have incomes and quality of life standards comparable to non-Indigenous Norwegians, Finns, and Swedes. None of the Sami groups, however, have clear and obvious roles in resource development and project approvals, although some have taken legal and political action, with limited success, to protect their interests (including a high profile 2023 victory in a battle over a wind farm built on Sami reindeer lands).⁸³

The circumpolar comparisons are interesting. Sami, Greenlandic, Faroese, and Icelandic people have better infrastructure, generally better-constructed homes, superior local education, much better health care, and more stable incomes. Indigenous governments and communities in North America, in contrast, often (but not always) have substantial own-source revenues, particularly from the resource sector, and substantial authority in the development of the northern economy. Nordic nations focus on ensuring rough equality of circumstance and opportunity; the Canada and American Norths emphasize Indigenous rights and the negotiated arrangements that follow the state recognition of those rights.

Circumpolar Leadership

In generations past, the United States and European nations including Russia, Norway, and Britain, competed for pride of place in Arctic affairs, primarily by sending explorers and agents of economic expansion into Arctic regions. The Far North took on greater importance after the Second World War, when the Cold War brought about a rapid militarization in Russia and the United States, with subsidiary strategic investments across the region. Over time, the expansion of regional autonomy in the North, national commitments to northern integration, and a major push for resource development changed the international conversation about the Arctic. This effort broadened with advancements in Indigenous rights and modern treaties and growing international interest in the Arctic environment. Over time, leadership in circumpolar affairs shifted between national governments,

reflecting the changing dynamics of northern politics and economic and strategic considerations.⁸⁴

For decades, Canada played major roles in the development of circumpolar awareness and collaboration. Much of the early work was done by the Inuit, particularly through the Inuit Circumpolar Conference, founded in 1977 with Alaskan and Canadian leadership.⁸⁵ Collaboration between the Inuit (led by Mary Simon, now Canada's Governor General, the titular head of state) and the Government of Canada led to the creation of the Arctic Council, an assembly of Arctic states that include Indigenous representatives as Permanent Participants. The Arctic Council has fallen on difficult times, largely because of Russia's increasing isolation from the Western world, a process accelerated by the Russian invasion of Ukraine in 2022. At the same time, Canada has stepped back from its prominent roles, ceding much of Arctic leadership to Norway. Tromsø, Norway, is now the headquarters of the Arctic Council Secretariat. Northern Norway's flagship institution, the University of Tromsø, has branded itself as Norway's Arctic University and the city has greatly expanded its polar-related activities. Norway and Iceland sponsor large international conferences on Arctic issues, and both seek to increase their influence in Arctic intellectual affairs and policy matters. Finland has stepped forward, including through major commitments to the production of icebreakers and the expanded role of the Arctic Centre of the University of Lapland.⁸⁶

Canada, in contrast, has stepped back from northern Canadian issues and has been less overtly and less constructively engaged in circumpolar affairs than in previous decades. In June 2023, Canada announced it was shutting down its Canadian International Arctic Centre in Oslo and moving it to Ottawa. In the same month, the United States stated its plans to open an American Presence Post in Tromsø. Alaska has moderated its involvement in Arctic affairs, save for strategic and military matters (through the establishment of the Ted Stevens Center for Arctic Security Studies⁸⁷), although the Biden administration has taken some measures to increase overall American engagement and has improved the presence of Alaskans in Washington. The Alaska situation has been exacerbated by the steady decline in state funding for the flagship University of Alaska system.⁸⁸

Looking Forward

Circumstances and conditions clearly vary dramatically across the Arctic and Subarctic regions. The northern regions of the Nordic nations are substantially indistinguishable in economic and social development from the southern parts of the region. Norway, Sweden, Finland, Iceland, and the autonomous territories of Denmark (Greenland and the Faroe Islands) have produced a higher quality of life and better opportunities for their northern citizens than among the

Indigenous Peoples in northern North America. Across the Nordic nations, national standards in infrastructure and services have been achieved. As has been discussed, in some areas important new economy initiatives have been launched. There have been major investments in post-secondary education across the region. In comparison with other parts of the Arctic, the Nordic countries have some significant advantages including a much smaller landmass with shorter distances between communities, a relatively large northern population, milder winters, and close proximity to European markets and consumers. In contrast, in the area of resource revenue sharing with Indigenous Peoples, the needs, rights, and aspirations of the Sami are only beginning to be taken into account.

Canada, on the other hand, is a leader in resource revenue sharing with Indigenous Peoples, the signing of modern treaties and the gradual transition to First Nations self-government and Indigenous involvement with resource development. Indigenous legal, constitutional, and self-government rights are impressive, and Canada has made significant progress in balancing resource development and environmental protection, through such initiatives as the Indigenous Protected and Conserved Areas.

Canada is well behind in many crucial areas, however, particularly related to Indigenous outcomes. Most of Canada's Arctic and Subarctic communities are small and isolated; many are only accessible by plane and are vast distances from their nearest community. As a result, these are government-dependent economies and societies. The development of northern infrastructure and the provision of services is inconsistent and often falls well short of needs. Educational achievement in the North, despite considerable investment in information technologies and strong efforts to Indigenize curricula, falls far below that of southern Canada. Conversely, and this is a situation worsened by the increase in opioid use, suicide rates and violence are among the highest in the country.

When it comes to the US 49th state, "Alaska still runs on oil" as the Alaska's Resource Development Council put it.⁸⁹ Oil revenues, which are unpredictable and subject to global price fluctuations, prop up the entire state; in 2019, the industry paid \$3.1 billion in state and local taxes.⁹⁰ The military is also a key component of Alaska's involvement in the Arctic. The state is one of the most militarized in the United States, hosting over 20,000 active-duty personnel on nine bases, most of which are in the central or northern part of Alaska. Alaska's location also makes it a crucial part of the US ballistic missile defence system. As relations between the United States and Russia deteriorate, Russia militarizes its Arctic, and as climate change transforms what might be possible in the region, discussions about the need to expand the presence of the US military in Alaska are ongoing.⁹¹

Since the Soviet days, the population of the Russian Arctic has declined quite significantly in the smaller settlements and in areas where there is no oil and gas exploration or production. As noted earlier, Russia has invested heavily in the Arctic over the past decade. On the economic front, Russia hopes to access hitherto inaccessible mineral and energy resources and control the Northern Sea Route. United States officials even report that Russia is demanding that other countries ask permission before transiting the area and that if not, force may be used. Following Russia's invasion of Ukraine and the ensuing war, Russia cancelled commercial overflights of its territory.⁹² Militarily, Russia has been aggressively expanding its presence and its capabilities across the Russian Arctic. Russia's invasion of Ukraine may have slowed down its Arctic plans. As one analyst writes, "Russia's application of deep resources toward its Ukrainian war while under sanctions and with a deteriorating economy has diminished its Arctic undertakings and its northern fleet's capabilities and prospects."⁹³

The Circumpolar North finds itself in flux. Climate change presents a potential existential threat to life in the region. Russian militarism has injected further instability into the Far North. Demand for energy and critical minerals has, in recent years, accelerated development pressure on the region. In some respects global perceptions of the Far North have changed, through the Arctic Council, the activism of northern Indigenous Peoples, steadily increasing tourism, and the impressive achievements of northern Scandinavia in particular. While Canadian laws and courts have contributed to the re-empowerment of Indigenous Peoples across the North, gradually and impressively re-righting the political and economic balance in the region, Canada, which once stood in the forefront of the reinvention of the Arctic, has taken a middle, if not a back seat in terms of commercial innovation, improvements in the quality of life of northern residents, and strategies for environmental sustainability—these are all stronger in northern Scandinavia. Put simply, there are both important and salutary lessons to be learned from each part of the Circumpolar World.

Promising beginnings on circumpolar collaboration remain in view, if somewhat diminished. The Arctic Council (its operations currently paused owing to Russia's invasion of Ukraine) supported intra-regional collaboration and then pioneered the full recognition of Indigenous Peoples in diplomatic relations. But with Russia sidelined, the Arctic Council's role and effectiveness are uncertain. Major international agreements on climate change and the management of the world's oceans may push the Arctic Council further into the background while nonetheless focusing additional international attention on circumpolar issues. The University of the Arctic, a creative collaboration of northern-focused universities, has had important successes, including extensive Arctic student exchanges and

wide-ranging research cooperation. But the desired integration of circumpolar teaching and learning among Arctic scholars and students remains elusive.

Chief Perry Bellegarde, former national chief of the Assembly of First Nations, has spoken of the “gap” between First Nations Peoples and other Canadians, pointing out that Canada ranked in the top eight nations in terms of quality of life—First Nations, if they were a country taken all together, would come in at sixty-third.⁹⁴ A similar challenge faces the Circumpolar World and Canada’s Arctic regions. Although wages in the Far North are generally higher than national averages, costs are considerable and most socio-economic indicators lag behind southern standards. By most metrics, including economic growth, population growth, standard of living, educational outcomes, health conditions, northern infrastructure, and Indigenous quality of life, it appears that the Canadian North has slipped well behind Scandinavia and even Alaska in many respects, with the gap seeming to widen in recent years.⁹⁵

Canada’s northern regions have considerable advantages: abundant natural resources, substantial political autonomy, and empowered Indigenous Peoples. But they also cope with a wide variety of economic and infrastructure shortcomings. As northern Canadian governments, communities, and organizations look to the future, they face the now formidable challenge of bridging the gap with northern Scandinavia. Creating a new, bold, and practical vision and strategy for the Canadian North and the Circumpolar World will require a deeper awareness of what is happening across the Arctic and the grit and innovation needed to reimagine the future of one of the world’s most unique and important regions.

Canada spends a great deal of money in the Canadian Arctic, particularly through direct annual payments to the governments of Nunavut, Northwest Territories, and the Yukon. Comparable support has been provided to First Nations, Métis, and Inuit communities across the North. Yet in other areas of potential government engagement, including basic infrastructure, military and strategic preparedness, and commitments to the development of “new economy” initiatives, northern Canada lags well behind the rest of the country. As a consequence, the Canadian North, including large sections of the Provincial North, has fallen behind most other parts of the Circumpolar World (except for Alaska), as well as behind much of Canada.

Canada has not had a strong or coherent plan for the improvement of security or socio-economic and cultural conditions in the Canadian North although numerous analysts, experts, and parliamentary committees have recommended that Canada develop one. Most recently, in June 2023, the Senate Standing Committee on National Security, Defence, and Veterans Affairs released a report emphasizing the risks facing the Arctic and encouraging the Canadian government to make investments in infrastructure, security, and defence.⁹⁶ Periodic Arctic

and northern “strategies” have promised” renewed attention to the region but, in contrast to developments in the Scandinavian North, Greenland, Iceland and, to a lesser extent, Alaska, the reality is that Canada does not have a firm or consistent strategy for the improvement of regional life and the development of a coherent approach to the Canadian North. This essay, in the end, is an appeal for greater comparative analysis. Understanding Canadian experiences, commitments, and investments requires an appreciation of how other Arctic countries, governments, companies, and Indigenous Nations and organizations have addressed the challenges and opportunities of the Circumpolar North.

Notes

1. Niels Einarsson, Joan Nyman Larsen, Annika Nilsson, and Oran R. Young, *Arctic Human Development Report* (Stefansson Arctic Institute, 2004); Joan Larsen and Gail Fondahl, eds., *Arctic Human Development Report: Regional Processes and Global Linkages* (Nordic Council of Ministers, 2015).
2. Joan Nyman Larsen, Peter Schweitzer, and Gail Fondahl, eds., *Arctic Social Indicators* (Nordic Council of Ministers, 2010).
3. Iceland and the Faroe Islands have comparatively recently pushed for inclusion among the Arctic jurisdictions, with Iceland being more assertive. Neither area has an Indigenous population. In both instances, the current populations are primarily descendants of the original inhabitants from northern Europe.
4. The Far North, the Arctic and the Circumpolar North are used interchangeably in this essay.
5. For additional information, see the “Sápmi,” International Working Group for Indigenous Affairs, accessed 27 June 2023, <https://www.iwgia.org/en/sapmi.html#:~:text=Around%2020%2C000%20live%20in%20Sweden,gatherers%20traditionally%20use%20these%20lands>.
6. About ICC, Inuit Circumpolar Council, <https://www.inuitcircumpolar.com/about-icc/>
7. Canada has signed 26 modern treaties and 18 self-government agreements, most of them in the Territorial North. The Yukon has 11 agreements, with 3 First Nations outside the treaty process. See “Aboriginal and Treaty Rights Information System (ATRIS) Interactive Map,” Crown-Indigenous Relations and Northern Affairs Canada, accessed 27 June 2023, <https://www.rcaanc-cirnac.gc.ca/eng/1605796533652/1605796625692#sec3>.
8. “Lofitbrú,” IcelandAir, <https://www.icelandair.com/support/pre-flight/loftbrú/>.
9. “Experience Greenland,” Arctic Umiaq Line, <https://aul.gl/en/experience-greenland/>.
10. “Interconnected,” Faroe Islands.fo, <https://www.faroeislands.fo/people-society/interconnected/>.
11. “Canadian North,” <https://canadiannorth.com/>. Flight estimate was for July 2023.

12. Malte Humpert, "The Future of the Northern Sea Route—A 'Golden Waterway' or a Niche Trade Route," The Arctic Institute, September 15, 2011, <https://www.thearcticinstitute.org/future-northern-sea-route-golden-waterway-niche/>.
13. R. Douglas Brubaker and Claes Lykke Ragner, "A Review of the International Northern Sea Route Program (INSROP)—10 Years On." *Polar Geography* 33, no. 1-2 (2010): 15–38, <https://doi.org/10.1080/1088937X.2010.493308>; Jeroen Prunyn, "Will the Northern Sea Route Ever be a Viable Alternative?" *Maritime Policy & Management* 43, no. 6 (2016): 661–675, <https://doi.org/10.1080/03088839.2015.1131864>.
14. "Arctic Ports," ARCTIS Knowledge Hub, 2009, <http://www.arctis-search.com/Arctic+Ports>.
15. "Arctic Ports."
16. Robbie Gramer, "Here's What Russia's Military Build-Up in the Arctic Looks Like," *Foreign Policy*, January 25, 2017; Nurlan Aliyev, "Russia's Icebreakers, North Sea Route, and Invasion of Ukraine," *Ponars Eurasia Policy Memo* No. 797, September 22, 2022, <https://www.ponarseurasia.org/russias-icebreakers-north-sea-route-and-invasion-of-ukraine/>.
17. "Alaska's Arctic Deep Draft Port at Nome," Port of Nome, <https://www.nomealaska.org/port-nome>.
18. Malte Humpert, "Iceland Invests in Arctic Shipping with Development of Finnafjord Deep-Water Port," *High North News*, April 16, 2019, <https://www.highnorthnews.com/en/iceland-invests-arctic-shipping-development-finnafjord-deep-water-port>.
19. "The Port of Churchill has Played an Important Role in the Development of Canada's North since its Opening in 1931," Arctic Gateway, <https://www.arcticgateway.com/port-of-churchill>.
20. "Aikiqtarjuaq Deep Sea Port," Qikiqtaaluk Corporation, <https://www.qcorp.ca/qc-services/qikiqtarjuaq-deep-sea-port/>.
21. Steve Chase, "Long-Delayed Naval Facility in the High Arctic Now Postponed to 2023," *The Globe and Mail*, March 30, 2022, <https://www.theglobeandmail.com/politics/article-long-delayed-naval-facility-in-the-high-arctic-now-postponed-to-2023/>.
22. "Arctic Naval Refuelling Station Set to Open in 2024, 9 Years Behind Schedule," *CBC News*, January 19, 2023, <https://www.cbc.ca/news/canada/north>.
23. Chase, "Long-Delayed Naval Facility."
24. Aliyev, "Russia's Icebreakers"; U.S. Coast Guard Office of Waterways and Ocean Policy, "Major Icebreakers of the World," last modified 2017, <https://www.dco.uscg.mil/>.
25. Malte Humpert, "Russian Government Approves \$1bn for Construction of 6th and 7th Arktika-class Nuclear Icebreakers," *High North News*, January 5, 2023, <https://www.highnorthnews.com/en/russian-government-approves-1bn-construction-6th-and-7th-arktika-class-nuclear-icebreakers>.
26. Joseph Trevithick, "Trump Says He's Working to Get 10 More Icebreakers for the Coast Guard from 'A Certain Place'," *The Drive*, July 13, 2020, <https://www.thedrive.com/the-war-zone/34751/trump-says-hes-working-to-get-10-more-icebreakers-for-the-coast-guard-from-a-certain-place>.
27. Abbie Tingstad, Scott Savitz, Dulani Woods, and Jeffrey A. Drezner, "The U.S. Coast Guard Is Building an Icebreaker Fleet: What Comes Next? Issues and Challenges," *Rand Corporation*, 2020, <https://www.rand.org/pubs/perspectives/PEA702-1.html>; Patricia Kime, "Coast Guard Pleads for Commercial Icebreaker as Timeline for New Polar Cutter Falls Apart," *Military News*, April 19, 2023, <https://www.military.com/daily-news/2023/04/19/unsure-when-its-new-icebreakers-will-be-built-coast-guard-pleads-congress-commercial-stopgap.html>.
28. "Polar Icebreakers," Public Services and Procurement Canada, last modified June 30, 2023, <https://www.tpsgc-pwgscc.gc.ca/app-acq/amd-dp/mer-sea/sncn-nss/polaire-polar-eng.html>.
29. Arne Finne, "Finland Wants to Break the Ice—For Everyone, Everywhere," *High North News*, <https://www.highnorthnews.com/en/finland-wants-break-ice-everyone-everywhere>.
30. "Sweden Prepares to Order Two New Icebreakers," *Maritime Executive*, June 19, 2022, <https://maritime-executive.com/article/sweden-prepares-to-order-two-new-icebreakers>.
31. "RV Kronprins Haakon—Norway's Ice-Class Research Vessel," Norwegian Polar Institute, <https://www.npolar.no/en/kronprins-haakon/>.
32. Pete Thomas, "Student Who Must Climb Tree to Join Zoom Classes Issues Plea," *USA Today*, November 12, 2020, <https://ftw.usatoday.com/2020/11/student-who-must-climb-tree-to-join-zoom-classes-issues-plea>.
33. "Compare the Home Internet Plans Available in Iqaluit, NU," PlanHub, accessed June 27, 2023, <https://www.planhub.ca/internet-service-prices-iquait>.
34. Emily Tranter, "'Deeply disturbing:' Nunavut internet still slower, more costly than rest of country," *Toronto Star*, January 24, 2021, https://www.thestar.com/news/canada/deeply-disturbing-nunavut-internet-still-slower-more-costly-than-rest-of-country/article_f462c3c8-1953-599d-af0d-3487f1436801.html.
35. "Alaska Internet Coverage & Availability in 2023," *Broadband Now*, <https://broadbandnow.com/Alaska>
36. "Alaska Internet Coverage."
37. Thomas Nilsen, "All Russian Arctic Settlements to Get Fast Internet," *The Barents Observer*, March 1, 2018, <https://thebarentsobserver.com/en/arctic/2018/03/all-small-arctic-russian-settlements-get-fast-internet>.
38. "Russia Starts Building \$850M High-Speed Arctic Internet," *The Moscow Times*, November 19, 2020, <https://www.themoscowtimes.com/2020/11/19/russia-starts-building-850m-high-speed-arctic-internet-a72089>.
39. "OneWeb Confirms Successful Deployment of 40 Satellites Launched with SpaceX," Eutelsat OneWeb, January 10, 2023, <https://oneweb.net/resources/oneweb-confirms-successful-deployment-40-satellites-launched-spacex-0>.
40. Astri Edvardsen, "Taking Network Coverage in the Arctic to New Heights," *The North News*, September 22, 2022, <https://www.highnorthnews.com/en/taking-network-coverage-arctic-new-heights>.
41. Andreas Raspotnik, Ragnhild Grønning, and Victoria Herrmann, "A Tale of Three Cities: The Concept of Smart Sustainable Cities for the Arctic," *Polar Geography* 43, no.1 (2020): 64–87, <https://doi.org/10.1080/1088937X.2020.1713546>.

42. Raspotnik, "A Tale," 81.
43. Raspotnik, "A Tale," 69.
44. Martin Opdal Sandtrøen, "The City in the City: The Norwegian Smart City Being Developed from the Ground Up," *Intelligent Transport*, February 3 2020, <https://www.intelligenttransport.com/transport-articles/95468/the-city-in-the-city-the-norwegian-smart-city-being-developed-from-the-ground-up/>.
45. "6G Flagship," Nordic Smart City Network, <https://nscn.eu/6GFlagship>; "Finland's Largest Solar Power Unit to be Built in Oulu," YLE, <https://yle.fi/a/3-7900615>.
46. Arnfinn Jørgensen-Dahl, "Arctic Oil and Gas," ARCTIS Arctic Knowledge Hub, 2010, <http://www.arctis-search.com/Arctic+Oil+and+Gas>.
47. "International Energy Agency, Energy Fact Sheet: Why Does Russian Oil and as Matter?" International Energy Agency, March 21, 2022, <https://www.iea.org/articles/energy-fact-sheet-why-does-russian-oil-and-gas-matter>.
48. Ella Nilsen, "The Willow Project has been Approved. Here's What to Know About the Controversial Oil-Drilling Venture," *CNN*, March 14, 2023, <https://www.cnn.com/2023/03/14/politics/willow-project-oil-alaska-explained-climate/index.html>.
49. Jørgensen-Dahl, "Arctic Oil."
50. Kevin McGwin, "Greenland Approves Two Hydroelectric Projects," *Nunatsiaq News*, November 16, 2021, <https://nunatsiaq.com/stories/article/greenland-approves-two-hydroelectric-projects/>.
51. Government of Canada, "Advancing the Development of Conventional and Enhanced Geothermal Energy," last modified April 6, 2021, <https://natural-resources.canada.ca/energy/offices-labs/canmet/ottawa-research-centre/renewable-energy/advancing-the-development-conventional-and-enhanced-geothermal-energy/23540>.
52. Charles Szumski, "Planned Wind Farms in North Sweden Risk Big Problems for Industry," *Euractiv*, December 13, 2022, <https://www.euractiv.com/section/politics/news/planned-wind-farms-in-north-sweden-risk-big-problems-for-industry/>.
53. Camille Fine, "The 'World's Largest Floating Wind Farm' Off Norwegian Coast Produces its First Power, Company Says," *USA Today*, November 14, 2022, <https://www.usatoday.com/story/money/energy/2022/11/14/worlds-largest-floating-wind-farm-norway/10696413002/>.
54. Larsen and Petrov, "The Economy of the Arctic," in *The Palgrave Handbook on Arctic Policy and Politics*, eds. Ken Coates and Carin Holroyd (Palgrave Macmillan Chan, 2020), <https://doi.org/10.1007/978-3-030-20557-7>.
55. Raymond Zhong, "The Arctic is Becoming Wetter and Stormier, Scientists Warn," *New York Times*, December 13, 2022, <https://www.nytimes.com/2022/12/13/climate/arctic-climate-change.html>.
56. Tatiana N. Savinova, Geir Wing Gabrielsen, and Stig Falk-Petersen, "Chemical Pollution in the Arctic and Sub-arctic Marine Ecosystems: An Overview of Current Knowledge," The Joint Norwegian-Russian Commission on Environmental Cooperation, The Seabird Expert Group, Report no. 3, 1994/95, <https://www.nina.no/archive/nina/pppbasepdf/fagrappport/001.pdf>.
57. "Fish Farming in Norway," Dyrevernalliansen, Animal Protection Alliance, May 25, 2022, <https://dyrevern.no/dyrevern/fish-farming-in-norway/>.
58. "Meet Royal Greenland Canada," Royal Greenland, <https://www.royalgreenland.com/en-ca/>.
59. "Fisheries," Oceans North, <https://www.oceansnorth.org/en/what-we-do/fisheries/>.
60. Yereth Rosen, "Alaska Crab Fishery Collapse Seen as Warning about Bering Sea Transformation," *Alaska Beacon*, December 19, 2022, <https://alaskabeacon.com/2022/12/19/alaska-crab-fishery-collapse-seen-as-warning-about-bering-sea-transformation/>.
61. Svein Vigeland Rottem and Andreas Østhagen, "Governing the Blue Economy in Alaska and North Norway," The Arctic Institute, January 18, 2022, <https://www.thearcticinstitute.org/governing-blue-economy-alaska-north-norway/>.
62. A. A. Pankratov, R.A. Musaeu, and S.V. Badina, "Innovation Clusters in the Arctic Zone of Russian Federation," *IOP Conference Series: Materials Science and Engineering* 941 (December 2020): 012023, <https://doi.org/10.1088/1757-899X/941/1/012023>.
63. Pankratov et al., "Innovation."
64. Nick Paton Walsh and Sarah Dean, "Russia's Militarization of the Arctic Shows No Sign of Slowing Down," *CNN*, December 22, 2022, <https://www.cnn.com/2022/12/21/europe/russia-arctic-military-intl/index.html>.
65. "Akademik Lomonosov Floating Nuclear Co-Generation Plant," *Power Technology*, May 24, 2021, <https://www.power-technology.com/projects/akademik-lomonosov-nuclear-co-generation-russia/>.
66. "Accelerating the Energy Transition," Launch Alaska, <http://www.launchalaska.com/>.
67. Arnaud Leparmentier, "Alaska is Becoming a US Outpost against Russia," *Le Monde*, September 16, 2022, https://www.lemonde.fr/en/international/article/2022/09/16/alaska-is-becoming-a-us-outpost-against-russia_5997209_4.html.
68. Yves L. Doz, "The Strategic Decisions that Caused Nokia's Failure," INSEAD, <https://knowledge.insead.edu/strategy/strategic-decisions-caused-nokias-failure>.
69. "Oulu," Innocities, <https://www.innokaupungit.fi/en/innocities/oulu/>.
70. Wong, Joon Ian, "A New Tax Law is Making Sweden Very Attractive to the World's Biggest Tech Companies," *Quartz*, 13 April 2017, <https://qz.com/957750/sweden-cuts-data-centers-electricity-tax-rate-by-97-and-tech-companies-fb-amzn-are-loving-it/>.
71. Carin Holroyd and Ken Coates, "Northern Sweden and Economic Development," *The Journal of Northern Studies* 15, no. 1 (2021): 7–24, https://www.jns.org.umu.se/JNS_1_2021.pdf.
72. Carina Ren and Daniela Chimirri, "Arctic Tourism: More than an Industry?" The Arctic Institute, April 3, 2018, <https://www.thearcticinstitute.org/arctic-tourism-industry/>.
73. "Canada's Top Cities for Entrepreneurship: Whitehorse, Winkler and Victoriaville Lead the Way," Canadian Federation for Independent Business, April 3, 2019, <https://www.cfib-fcei.ca/en/media/canadas-top-cities-entrepreneurship-whitehorse-winkler-and-victoriaville-lead-way>.
74. "Our Story," Yukonstruct, <https://yukonstruct.com/about-us/>.

75. “Aurora College Transformation,” Government of Northwest Territories, <https://www.ece.gov.nt.ca/aurora-transformation/>.
76. “Inspire Nunavut,” Small Economy Works, <https://www.smalleconomyworks.com/inspirenunavut>.
77. “Who We Are,” EntrepreNorth, <https://www.entreprenorth.ca/about.html>.
78. Ken Coates and Brian Crowley, “New Beginnings: How Canada’s Natural Resource Wealth Can Re-Shape Relations with Aboriginal Canadians” (Ottawa: Macdonald-Laurier Institute, 2013).
79. “Red Dog,” Teck Resources, <https://www.teck.com/operations/united-states/operations/red-dog/>.
80. Rebecca Hall, “Diamond Mining in Canada’s Northwest Territories: A Colonial Continuity,” *Antipode* 45, no. 2 (2013): 376–393, <https://doi.org/10.1111/j.1467-8330.2012.01012.x>.
81. Jacques Poitras, “How Industry, Indigenous Nations and Provincial Leaders Forged a Consensus in Labrador,” *CBC News*, December 9, 2021, <https://www.cbc.ca/news/canada/new-brunswick/forging-consensus-in-labrador-first-nations-1.6278536>.
82. Else Grete Broderstad, “The Promises and Challenges of Indigenous Self-Determination: The Sámi Case,” *International Journal* 66, no. 4 (2011): 893–907; Ken Coates and Else Grete Broderstad, “The Indigenous Peoples of the Arctic: Re-Taking Control of the Far North,” in *The Palgrave Macmillan Handbook of Arctic Policy and Politics*, eds. Ken Coates and Carin Holroyd (Palgrave Macmillan, 2020): 9–25, https://doi.org/10.1007/978-3-030-20557-7_2.
83. “Norway Wind Farms at Heart of Sami Protest Violate Human Rights, Minister Says,” *Reuters*, Mar 2, 2023, <https://www.reuters.com/world/europe/norway-wind-farms-heart-sami-protest-violate-human-rights-minister-says-2023-03-02/>.
84. Shelagh Grant, *Polar Imperative: A History of Arctic Sovereignty in North America* (D & M Publishers, 2011); Ken Coates, P. Whitney Lackenbauer, William R. Morrison, and Greg Poelzer, *Arctic Front: Defending Canada in the Far North* (Dundurn Press, 2010).
85. Gary Wilson and Heather A. Smith. “The Inuit Circumpolar Council in an Era of Global and Local Change,” *International Journal* 66, no. 4 (2011): 909–921; John English, *Ice and Water: Politics, Peoples, and the Arctic Council* (Penguin Canada, 2013).
86. “Arctic Centre, University of Lapland,” <https://www.arcticcentre.org/EN>.
87. “Ted Stevens Center for Arctic Security Studies,” <https://tedstevensarcticcenter.org/>.
88. Yereth Rosen, “University of Alaska Regains Stability After Years of Cuts and Turmoil, President Says,” *Alaska Beacon*, February 22, 2023, <https://alaskabeacon.com/2023/02/22/university-of-alaska-regains-stability-after-years-of-cuts-and-turmoil-president-says/>.
89. “Alaska’s Oil and Gas Industry,” Resource Development Council for Alaska, <https://www.akrdc.org/oil-and-gas>.
90. “Alaska’s Oil and Gas.”
91. Mike Baker, “With Eyes on Russia, the U.S. Military Prepares for an Arctic Future,” *The New York Times*, March 30, 2022, <https://www.nytimes.com/2022/03/27/us/army-alaska-arctic-russia.html>.
92. Baker, “With Eyes.”
93. Aliyev, “Russia’s Icebreakers.”
94. Kim Macrae, “Close the Gap between Canada and its Aboriginal People,” *Globe and Mail*, May 13, 2015, <https://www.theglobeandmail.com/news/politics/close-the-gap-between-canada-and-its-aboriginal-people-afn-chief/article24430620/>.
95. Larsen et al., “Arctic Social Indicators.”
96. Senate Standing Committee on National Security, Defense and Veteran Affairs, “Arctic Security Under Threat: Urgent Needs in a Changing Geopolitical and Environmental Landscape, June 28, 2023, https://sencanada.ca/en/info-page/parl-44-1/secd-arctic-defence?utm_source=targeted-email&utm_campaign=banc-bi&utm_content=report&cmp=1&utm_medium=email#collapse-thereport.