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NAVAL WAR COLLEGE

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CLIMATE & ENVIRONMENTAL SECURITY POLICIES  
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A changing climate will see shifts in Canada's economic development, shipping transportation, human security, national sovereignty, and Indigenous Peoples' preservation in a changing climate. After a brief background of Canada, this discussion will frame the expected climate predictions with the likely impacts. Next, the focus will be on a few highlighted areas of concern: economic development, shipping navigation, environmental security, and the role of the Canadian Armed Forces (CAF). First, the economic matters include policies determining mining access, new drilling (oil, natural gas), and infrastructure projects. Second, shipping transportation will involve legal issues, environmental impacts, and freedom of navigation. Third, environmental protection of Indigenous Peoples' land. Finally, the CAF has been and will be charged with an array of new duties and responsibilities to ensure proper management, search and rescue (SAR) operations, emergency response, and law enforcement.

Canada is not immune to the effects of global human-caused climate change. These effects are amplified in the vulnerable Arctic region where warming is happening four times as fast as the rest of the world.<sup>1</sup> In the past twenty years, Canada produced three broad, national climate change assessments. They included regional and sector-specific reports on human health, defence, and transportation/marine assessments in order to communicate the risks, opportunities, adaptation, and security impacts.<sup>2</sup> These recently published assessments are critiqued and offer policy recommendations with proposed solutions.

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<sup>1</sup> Rebecca Hersher. "The Arctic is heating up nearly four times faster than the whole planet, study finds." National Public Radio. Accessed January 14, 2023. <https://www.npr.org/2022/08/11/1116608415/the-arctic-is-heating-up-nearly-four-times-faster-than-the-rest-of-earth-study-f>

<sup>2</sup> Elizabeth Bush, and D.S. Lemmen, editors. "Canada's Changing Climate Report." (Ottawa, ON: Government of Canada, 2019), 12.

### ***Canadian Overview & Background.***

Canada has been a completely independent nation since the early 1980s having previously been under the control of France and the United Kingdom. Canada has two official languages (English and French), a federal system of government with a parliamentary form of legislature, and a population of nearly 40 million (the vast majority concentrated near the US border).<sup>3</sup> Canada is a member of the United Nations, G7, World Trade Organization, and Organisation for Economic Cooperation and Development (OECD), among others. By area, it is the second largest nation on the planet with 40% of its landmass considered to be an arctic-type climate.<sup>4</sup> Canada's gross domestic product ranks 9th in the world at \$2 trillion USD, has few water scarcity and food insecurity issues, a highly educated population, ranks 15th in the world in Human Development Index, and 6th overall in the Human Freedom Index. Canada shares a lot of human security patterns with Europe and other welfare states with strong social programs. Canada is in a prime position to take steps to adapt and mitigate climate change better than poorer, less developed countries. However, Canada is still considered "highly insufficient" in curbing greenhouse gases, climate financing, and enacting strong policies and action.<sup>5</sup>

### ***Canadian-United States Relationship.***

The historical relationship between Canada and the United States predates the American Revolution. Through a shared set of geography, interests, culture, political values, and timelines, the Canadian-American bilateral partnership is one of the strongest in the world. The two countries share the longest international border, including the largest freshwater lake system in

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<sup>3</sup> The Henry M. Jackson School of International Studies. "Canada Fact Sheet" University of Washington, 2018. Accessed January 21, 2023. <https://jsis.washington.edu/canada/wp-content/uploads/sites/20/2018/06/canada-fact-sheet.pdf>

<sup>4</sup> Heidi Kutz. "Canada: Canada and the Arctic Region" Accessed January 16, 2023. Arctic Council.

<sup>5</sup> Climate Action Tracker. *Canada*. Climate Analytics and New Climate Institute. Accessed December 9, 2022. <https://climateactiontracker.org/countries/canada/>

the world. As a result, the two countries have immense trading and economic cooperation with nearly \$2.6 billion in goods and services being traded across their borders per day.<sup>6</sup> Additionally, the two countries have a strong multifaceted defense pact including interoperability, joint training exercises, the North American Aerospace Defense Command (NORAD), and members of the North Atlantic Treaty Organization (NATO). Consequently, and appropriately, these two nations have heavy stakeholderships regarding the impacts of climate change, particularly in the Arctic region.

### *Climate Change.*

Across Canada, the diverse biomes, geography, and ecology are being modified through increasing temperatures, changing precipitation patterns (rain/snow), biodiversity variations, lake and sea ice coverage, tundra melt, and availability of freshwater. These changes are only expected to intensify by the end of the century and play a major role in the geopolitical landscape, Canadian culture, economics, and policy.

The winter temperatures in Canada have increased the most within the last century and rate of increase was higher than in any other season. Between 1948 and 2016, the mean temperature for Canada (as a whole) increased 1.7°C (2.3°C for northern Canada) and could, depending on the climate model and future human factors, increase more than 6.0°C by 2100.<sup>7</sup> Likewise, precipitation amounts, patterns, and seasonality variation will see a similar change. Observational evidence concludes that annual and winter precipitation has increased, on average (with higher amounts in the Arctic) and is also forecasted to continue to increase throughout this century.<sup>8</sup> Despite the increase in precipitation, snow coverage and accumulation decreased

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<sup>6</sup> United States Department of State. "U.S. Relations With Canada: Bilateral Relations Fact Sheet" United States Department of State. August 22, 2022. Accessed January 14, 2023. <https://www.state.gov/u-s-relations-with-canada/>

<sup>7</sup> Bush, "Canada's Changing Climate Report," 116.

<sup>8</sup> Bush, "Canada's Changing Climate Report," 117.

between 5-10% per decade since 1981 and expected to continue to decline in the coming 70 years.<sup>9</sup> In the Arctic itself, both winter and summer sea ice extent, thickness, and coverage have declined (approximately by 13% per decade since 1979), melting began earlier in the season, and may experience the first ice-free summer by 2035.<sup>10</sup> Economics, shipping, and the military are a few examples where climate change's impact will benefit some while incurring irrevocable costs on others.

### ***Economic Impacts & Policy.***

There are potential benefits associated with a warming Arctic from a purely economic perspective and regardless of the environmental impacts and issues connected to Canada's changing climate. The remoteness and austerity of the Arctic has led to untapped economic activity and criticism of Canada for its lack of investment in recognizing its strategic importance in a changing international environment.<sup>11</sup> Given the large, previously inaccessible, land area and inability to properly conduct explorations, there is a large but imprecisely known amount of oil, natural gas, and minerals that could be drilled and excavated.

The Canadian government realizes this potential and is actively promoting developmental projects to increase the economic output of the Northern Arctic. The strength of the northern economy is based on rich endowments of renewable and nonrenewable resources with billions of dollars being invested by the private sector, such as in mineral and gem exploration. Additionally, the oil and gas sector is the focus of intense activity, hydroelectric development holds hopes for clean energy, and fisheries are developing into a competitive sector.<sup>12</sup> Major

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<sup>9</sup> Bush, *Canada's Changing Climate Report*, 198.

<sup>10</sup> R.L. Thoman, J. Richter-Menge, and M.L. Druckenmiller, editors. "Arctic Report Card 2020," (National Oceanic and Atmospheric Administration, 2020), 44-45.

<sup>11</sup> Walter Berbrick, et al. "Newport Manual on Arctic Security." (Annapolis, MD: Naval Institute Press, 2022), 43.

<sup>12</sup> Government of Canada. "A Northern Vision- A Stronger North and a Better Canada." (Whitehorse, YT: Canada's North, 2007), 7.

mining and drilling projects include the Mackenzie Gas Project (a once proposed gas pipeline through the Northwest Territories), diamond and iron ore mining (Ekati and Mary River mines), and government-funded advanced geographic mapping services to understand and explore the undiscovered geology.<sup>13</sup> Reliance, interconnectedness, and interdependency factors shape economic policy, and climate change will only exasperate the complexities of how Canada will adapt, develop, and implement these policies. Without climate change (longer summers and milder winters), these projects would likely have been delayed, suspended, or not even possible. Extracting natural resources beneath the tundra is rapidly becoming a contentious and promising industry.

One of the more geostrategic important mining operations is the Mary River Mine located on Baffin Island in the territory of Nunavut. This mine, which recently opened in 2014, is one of the largest undeveloped iron ore deposits in the world with nearly 337 million untapped tons.<sup>14</sup> One of the reasons (and controversies) over the mine is its unforeseen economic benefits as climate change created warmer winters and extended ice-free waterways on this Inuit-owned land/sea. This allows the mine to conduct its operations year-round, which would be nearly impossible without climate change. These opportunities, along with rising mineral commodity prices could improve the viability of arctic mineral operations by reducing the shipping costs, a major operating expense in the profitability of iron ore.<sup>15</sup> However, paradoxically, the same environmental changes due to global warming will also adversely affect its mining operations.

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<sup>13</sup> Government of Canada. "Canada's Northern Strategy Our North, Our Heritage, Our Future." (Ottawa, ON: Government of Canada, 2009), 15-16.

<sup>14</sup> Ashleigh Gaul. "Who Is Baffinland? A timeline of the Mary River project and Baffinland Iron Mines' part in it, from 1962 to present." IsumaTV, June 12, 2012. Accessed January 22, 2023. <http://www.isuma.tv/ashleigh-gaul/who-is-baffinland>

<sup>15</sup> Tara Cater, et al. "Chapter 19 Mining and Communities," In Bell, T. and Brown, T.M (Eds), from *Science to Policy in the Eastern Canadian Arctic: An Integrated Regional Impact Study (IRIS) of Climate Change and Modernization*. (Québec City, QC:ArcticNet). 2018. 502.

The very infrastructure that keeps the mine operating (freighters, roads, structures, etc.) is also very susceptible to thawing permafrost and sea-level rise. In addition, warming air, increasing precipitation patterns, and frequency of extreme weather events will significantly hamper production rates, stability of pit walls, acid rock drainage, contamination, and reclamation challenges.<sup>16</sup> The exploitation of the Arctic's resources comes at a price, not only to the environmental harm, but also to the Indigenous Peoples. For this reason, Canada is looking into policies that build the resiliency and sustainability of these communities despite private investment into oil, gas, and mining operations.

Northern economic development is challenged by a number of factors including harsh weather, higher operating business costs, dispersed small populations, high energy needs, limited access to education, connectivity, and protection of a 'boom and bust' cycle.<sup>17</sup> The opportunities for new jobs, and specifically, a diverse set of jobs for individuals with a wide range of skills, will only increase as climate change reshapes Canada's Arctic. In its *Northern Policy Framework* document, the Canadian government has outlined several goals and objectives to combat climate risks and ensure security. These include increasing local populations' labor force into the developing economy, retaining wealth in the northern communities, reducing income inequality, driving innovation investments in cold climate resource extraction, providing support systems, and enhancing trade and global investment.<sup>18</sup> While admirable, the growing economies of the north cannot expand without the necessary infrastructure in place to support and sustain these maturing industrial sectors.

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<sup>16</sup> Cater, *Science to Policy*, 501.

<sup>17</sup> Government of Canada. "Canada's Arctic and Northern Policy Framework." (Ottawa, ON: Government of Canada, 2019), 45.

<sup>18</sup> Government of Canada, "Northern Policy Framework," 46.

Strengthening the infrastructure in the Arctic includes improving transportation systems, building facilities designed to withstand the environment, providing more reliable clean/cleaner fuel, and engineering better telecommunication networks. Out of the three most northern territories, only 70 of its communities are accessible year-round (via air, water, or ice roads) which makes the movement of goods, people, and services extremely expensive and time-consuming. In fact, the National Aboriginal Economic Development Board, a non-political organization to promote the growth of indigenous business in Canada, has estimated that for every dollar invested in transportation or energy (e.g., transition to hydroelectric power vs diesel or building high-speed internet services), it can generate a return of investment of more than ten times that amount.<sup>19</sup> Having a viable infrastructure system is the foundation of long-term economic success. Access to international markets and foreign investments are important factors for continued growth and embracing the shipping industry will be the cornerstone to facilitating exports and goods across the world.

### ***Shipping & Navigation Policy.***

Climate change is opening up new opportunities, quite literally, for maritime navigation and shipping routes/passages. Navigating the open waters of the northern Canada is not only controversial, but harbors advantages and challenges within the maritime security dimension. Within the next decade, it is likely the Arctic Ocean will see its first ice-free summer in modern times. Issues concerning environmental matters, legal status, governance, and sovereignty are only a few of the debates. Nonetheless, Canadian Arctic shipping traffic has increased, tripling in the last 25 years.<sup>20</sup> Furthermore, in the six years between 2013-2019, the number of vessels

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<sup>19</sup> Government of Canada, "Northern Policy Framework," 44.

<sup>20</sup> Malte Humpert. "High North News: Canadian Arctic Shipping Traffic Nearly Tripled Over 25 Years." Arctic Today, March 15, 2018. Accessed: January 20, 2023. <https://www.arctictoday.com/canadian-arctic-shipping-traffic-nearly-tripled-25-years/>

increased 25%, the total distance traveled jumped 160%, and total shipping traffic nearly tripled in the last 25 years.<sup>21</sup> The United Nations (via the United Nations Convention on the Law of the Sea (UNCLOS)), Arctic Council, and International Maritime Organization are the main governing bodies concerning arctic shipping traffic. These organizations define the roles, rights, and responsibilities of nations concerning the use of the seas, safety, regulations, jurisdictions and international waters, ship design, and icebreaker operations. However, nations can and have established their own policies of governance of these waters. Such is the case with Canada.

The status of the Northwest Passage (NWP) is contested, and the Canadian government insists its arctic archipelago is considered internal waters and claims full sovereignty of the route as opposed to an international strait subject to UNCLOS rules.<sup>22</sup> The Canadian Government cites a number of positions. In UNCLOS's Article 234, Canada interprets vessels can be regulated traveling through its exclusive economic zone on the basis of environmental protection. The Canadian Government never ratified the 1958 Convention of the Territorial Sea and the Contiguous Zone and thus never established innocent passage protection. Therefore, UNCLOS cannot be applied to the NWP because Canada cannot uphold and meet the UNCLOS requirements for safety, security, search and rescue, icebreaking capability, and defense of unauthorized vessels.<sup>23</sup> Even from a human security perspective, Canada focuses on its water sovereignty through its Indigenous Peoples- and many claim these waters are sacred and should

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<sup>21</sup> Arctic Council. *The Increase in Arctic Shipping: Arctic Shipping Status Report (ASSR) #1. Protection of the Arctic Marine Environment.* (Arctic Council: March 21, 2020), 9.

<sup>22</sup> Brandon Boylan. *Increased Maritime Traffic in The Arctic: Implications For Governance Of Arctic Sea Routes.* Marine Policy. (Amsterdam, NE: Elsevier, 2021), 5.

<sup>23</sup> Boylan, *Increased Maritime Traffic*, 5.

be protected. Specifically, this environmental protection is outlined in Canada's *Oceans Protection Plan* (OPP).<sup>24</sup>

***Environmental Security.***

In 2016, President Justin Trudeau signed the *Oceans Protection Plan* to invest nearly \$2 Billion (CAD) to enhance the protection and restoration of Canada's marine ecosystems. Many Canadians, namely the Indigenous Peoples, for generations have relied on coastal communities for food security, culture, livelihood, and transportation.<sup>25</sup> Among others, this plan's goal is to create better partnerships with the local Indigenous populations to protect the marine environment and participate in safety training initiatives. This funding will also help oil spill and emergency response capacities, share real-time shipping data, modernize enforcement, preserve vulnerable ecosystems and animals, increase fisheries, acquire environmental response equipment for the Canadian Coast Guard, and reduce the impact of day-to-day vessel traffic.

Through scientific research and utilizing the local knowledge of Indigenous communities and other coastal residents, the OPP aims to preserve the environmental security of the ocean waterways.<sup>26</sup> Although the legality of Canada's waterways are disputed on the international stage, the policies surrounding their claim to sovereignty are consistent in their government's messaging. Shipping traffic will only increase in the coming decades and proper regulation of their claimed internal waters needs to be addressed through environmental protection, navigation, safety, and human factors. This is important because not all the Canadian environmental security policies have generated positive outcomes.

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<sup>24</sup> Justin Trudeau. "Delivering Clean Oceans and Healthy Coasts With An Expanded Oceans Protection Plan." Office of the Prime Minister of Canada, July 22, 2022. Accessed January 22, 2023. <https://pm.gc.ca/en/news/news-releases/2022/07/19/delivering-clean-oceans-and-healthy-coasts-expanded-oceans-protection>

<sup>25</sup> Trudeau, "Oceans Protection Plan."

<sup>26</sup> Government of Canada. Transport Canada: Oceans Protection Plan. July 8, 2020. Accessed January 20, 2023. <https://tc.canada.ca/en/initiatives/oceans-protection-plan>

The Athabasca Oil Sands (Alberta) presents a serious disconnect between meeting Canada's energy and economic needs while preserving the environmental security of Indigenous communities. These tar sands are currently the world's third-largest proven oil reserve (totaling 170 billion barrels) and produce roughly 2.6 million barrels per day.<sup>27</sup> Local communities have protested the projects' environmental health impacts, its degradation of water and subsistence agriculture, as well as how the project limits native peoples' access to traditional lands.<sup>28</sup> From a security perspective, the rights of the Indigenous population conflict with the regulations and environmental impact accountability of the energy industry. A number of communities have opened court cases against the provincial or federal governments for failure to consult local populations and for infringements on traditional lands or treaty rights (e.g. the Chipewyan Prairie Dene First Nation and Beaver Lake Cree Nation cases regarding waterway drainage and land tenure permits).<sup>29</sup> To address their issues, the governments have established corporate social responsibility controls through consultation, environmental impact assessments, and impact-benefit agreements.<sup>30</sup> The extent to which these policy answers will correct and improve the situation remains to be seen.

### ***Canadian Armed Forces Policy.***

An expanded presence in the Arctic due to an increase in shipping traffic, law enforcement, and protection of economic development will also drive the need for an increased presence in the Canadian Armed Forces. In their whole-of-government approach, the CAF's

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<sup>27</sup> Stephen Leahy. "This is the World's Most Destructive Oil Operation-and it's Growing." National Geographic, April 11, 2019. Accessed March 22, 2023. <https://www.nationalgeographic.com/environment/article/alberta-canadas-tar-sands-is-growing-but-indigenous-people-fight-back>

<sup>28</sup> Philippe Le Billon and Angela Carter. "Chapter 9: Securing Alberta's Tar Sands: Resistance and Criminalization on a New Energy Frontier." In: Schnurr M and Swatuk L (eds) *Critical Environmental Security: Rethinking The Links Between Natural Resources And Political Violence*. (Dalhousie University, Halifax, NS:, 2012), 4.

<sup>29</sup> Le Billon and Carter. *Securing Alberta's Tar Sands*, 6.

<sup>30</sup> Tarje Wanvik. "Governance Transformed into Corporate Social Responsibility (CSR): New Governance Innovations in the Canadian Oil Sands." *The Extractive Industries and Society*, Vol 3, Issue 2. (April 2016), 518.

responsibilities will seek two major broad focus areas: security and safety. A variety of international interest groups are forecasting the Arctic to be of geostrategic importance in the coming decades. In their territorial waters, the CAF must be positioned to enforce their sovereignty, provide search and rescue functions, mitigate threats (offensive or defensive military operations), project force, and improve their logistics operations. Two recent policy documents explain the military's focus areas: Canada's Defense Policy, *Strong Secure Engaged* (2017) and Canada's *Arctic and Northern Policy Framework* (2019).<sup>31,32</sup>

However, in a shift of policy from large-scale deployments or major procurement programs, the CAF's arctic capacity is being redefined and measured not by its force levels but by its ability to respond to realistic threats through adaptable situational awareness.<sup>33</sup> One of their solutions to addressing this challenge is investing in their Navy and Coast Guard. Specifically, their *Defence Policy Plan* involves the delivery of five to six Arctic Offshore Patrol Ships capable of transiting through ice and will provide armed, sea-borne surveillance of Canada's internal waterways, enforce sovereignty, and provide safety awareness activities.<sup>34</sup> As the NWP opens to shipping traffic throughout the year, these patrol vessels will become the backbone of military maritime operations and travel through previously inaccessible areas of the NWP.

The Canadian government summarized several objectives to ensure the North is safe and secure. Canada has promised to increase their training in the harsh environment by utilizing and inviting the United States for interoperability exercises and sharing information. Likewise, the

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<sup>31</sup> Government of Canada. "Canada's Defence Policy- Strong Secure Engaged." (Ottawa, ON: Government of Canada, 2017), 35.

<sup>32</sup> Government of Canada, "Northern Policy Framework"

<sup>33</sup> Adam Lajeunesse. "The Canadian Armed Forces in the Arctic: Purpose, Capabilities, and Requirements." (University of Calgary: Centre For Military and Strategic Studies, 2015), 1.

<sup>34</sup> Canada. *Strong Secure Engaged*, 35.

CAF has plans to modernize the aging NORAD North Warning System, a fixture of mutual deterrence in the Arctic.<sup>35</sup> These are some examples of how Canada is strengthening its domain awareness for surveillance and control capabilities, supporting community safety, collaborating with international partners, and increasing the whole-of-society emergency management capabilities.<sup>36</sup>

***Policy Critique.***

Overall, Canadian policies regarding its arctic economic development, sovereign internal waterways, and military capabilities are impressive albeit imperfect. Through their holistic and whole-of-government approach, they have prioritized their environmental security element as the forefront of their policymaking. Canada's assessments mention increasing its presence in the Arctic, but these broad platforms do not provide specific details. Recommendations do include funding more intelligence, surveillance, and reconnaissance capabilities, possibly as unmanned aerial vehicles. Given how harsh the environmental conditions are in the Arctic, personnel may not be able to physically track vessels, monitor international activities, report environmental hazards, and aid in search and rescue. Unmanned Aircraft Systems (UASs) would provide similar capabilities but with substantially less risk.

In addition, increased funding for meteorological stations will better keep the waterways safe during extreme weather events, provide better forecasting, and boost long-term climate data. Canada is a partner in the defense of North America, however Canada may look to the United States for assistance in a few areas. Primarily along the Alaskan/Canadian border, these include mutual search and rescue operations, enforcing environmental controls on passing ships, and

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<sup>35</sup> John Conger and Shiloh Fetzek. "A Climate Security Plan for Canada: How the Government of Canada Can Combat the Security Risks of Climate Change." (Washington, DC: The Center for Climate and Security, Institute of the Council on Strategic Risks, 2021), 22.

<sup>36</sup> Government of Canada. "Northern Policy Framework," 45.

possible joint basing. Finally, as previously mentioned, the New Climate Institute rates Canada as highly insufficient. Even as Canada signed onto the Paris Climate Accords, their policies for greenhouse gas emissions are not aggressive enough and lack the strength to meet their carbon goals and reduce global warming.

***Conclusion.***

Canada's arctic climate change will affect the interrelationships of the physical environment to the drivers of geospatial economics. The arctic policies of Canada, notably the economic development, the navigation of ships, and the posture of their armed forces, all have a common theme of prioritizing human security and the Indigenous Peoples. An assessment of these policies included infrastructure plans, mining and drilling, freedom of navigation of their waters, and the shift in the role of the Canadian Armed Forces. The Arctic will continue to warm, at least for the next century. As Canada adapts to these climate changes, new environmental security policies and updates must be written and enforced. The international community, whether through the Arctic Council, United Nations, or otherwise will also become a strategic stakeholder in Canada's decision-making. Proper management and proactive approaches are needed now and in the future in order to ensure Canada's continued sovereignty, economic growth, and world leadership in climate mitigation.

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