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From Abundance to Vulnerability: Rethinking Canada's Freshwater as a Strategic Asset

Major Omar El-Gamal

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Introduction

Canada holds one of the world's largest endowments of freshwater, with nearly 20% of global surface water and approximately 7% of renewable flows within its borders.[1] Historically, this immense abundance was regarded as a fortunate environmental legacy that can be exploited for economic gain rather than a strategic concern.[2] The predominant belief was that water was inexhaustible, leading to high consumption rates, inconsistent governance at the provincial and federal levels, and limited long-term planning.[3] Yet, the 21st Century has shifted that paradigm with the realization that fresh water is a finite source. With intensifying climate change, global population growth and transboundary pressures transforming water from an overlooked environmental asset to be exploited to a critical element of economic vitality, geopolitical strategy and national security.

No other nation does this strategic transition appear to be more urgent than in Canada. IN 2024, then former and now current U.S. President Donal Trump suggested that British Columbia could serve as a "very large faucet" to alleviate California's droughts. This reignited long-standing fears about the commodification and export of Canadian water.[4] This comment came amidst broader international concern over an emerging global water crisis, as the United Nations projected that global water demand may exceed sustainable supply by as much as 40% by 2030.[5] Over the last several decades analysts have increasingly identified water access as not just an environmental issue but as a growing source of conflict, instability and humanitarian risk.[6]

This paper aims to show that Canada must redefine its freshwater resources not merely as a natural inheritance, but as a strategic national asset. It argues that Canada's water governance must evolve to address domestic vulnerabilities, withstand international pressure, and contribute constructively to global water diplomacy. Further, it argues Canada must enhance its existing governance structures of water through empowerment of state institutions at both the federal and provincial levels. The paper will explore this by first disproving the myth of unlimited Canadian water supplies and emerging domestic pressures. Then exploring how climate change and global scarcity elevate water into a national security concern. Then assessing Canada's fragmented governance landscape. Examine the international geopolitical implications of Canada's water supplies. Explore topic of arctic freshwater and northern sovereignty concerns with vast reserves of

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[1] Environment and Climate Change Canada, "Water Use in Canada," Canada.ca, March 7, 2025, https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/water-use.html.
[2] Rob De Loë, "A Canadian Vision and Strategy for Water in the 21st Century," Policy Options, April 30, 2019, https://policyoptions.irpp.org/magazines/canadas-water-challenges/a-canadian-vision-and-strategy-for-water-in-the-21st-century .
[3] Ibid.
[4] Donald Trump quoted in Amy Judd, "Donald Trump claims B.C.'s 'very large faucet' could help California's water woes," Global News, September 17, 2024, https://globalnews.ca/news/10760647/donald-trump-bc-very-large-faucet-california-water-woes/.
[5] United Nations, World Water Development Report 2023: Partnerships and Cooperation for Water (Paris: UNESCO, 2023), https://www.unwater.org/publications/un-world-water-development-report-2023.
[6] Puja Pandit, "Water Investment Key to Averting Global Conflict Surge," Vision of Humanity, October 30, 2024, https://www.visionofhumanity.org/water-investment-key-to-averting-global-conflict-surge.

freshwater being held in frozen form. Then finally, outlines a path forward and recommending a national water strategy.

Section I: Canada's Abundant Freshwater and the Myth of Inexhaustibility

Canada's international reputation as a resource rich, and in particular, water-rich country is well founded. Boasting over two million lakes and countless rivers, and the Great Lakes alone accounting for nearly 84% of North America's surface freshwater, it is evident where Canada got its reputation.[7] These features have underpinned narratives of abundance throughout Canadian history encouraging high consumption, exploitation and low urgency for water policy reforms.[8]

Yet with all this abundance, it is neither evenly distributed nor fully renewable. Only 38% of Canada's freshwater resources are renewed annually; the rest is stored in glaciers, deep aquifers, and lakes that accumulated their contents over millennia.[9] To further exacerbate the imbalance, approximately 60% of Canada's water flows northward into the sparsely populated Arctic regions, while most of the population resides in the south closer to the U.S. border.[10] This geographic misalignment has real implications with the Prairie provinces regularly experiencing droughts and growing urban centers face seasonal shortages.

The imbalances in direction of freshwater flow have long been masked by high per capital water availability. In the early 2000s, Canada ranked among the top five nations globally in terms of water consumption per person, averaging 300 liters per day, double the usage of many European countries.[11] Contributing to this was low pricing, poor metering practices, and lax enforcement of conservation standards. Although progress has been made, the legacy of overuse and inefficiency persists.[12]

With climate change and environmental degradation this picture is further complicated. Dozens of First Nations communities remain under long-term boil water advisories, highlighting the imbalances and chronic underinvestment in Indigenous water infrastructure.[13] In 2024 alone, over 30 such advisories remained in place.[14] Other critical challenges include pollution from agricultural runoff, industrial contaminants and

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[7] Krista Cheeseman, "Great Lakes, Is There Hope - Wilderness North," Wilderness North, May 17, 2024, https://wildernessnorth.com/is-there-hope-for-the-great-lakes.
[8] Jack Neighbour, "Does Canada need to conserve its water?" National Geographic, September 16, 2020, https://www.nationalgeographic.com/science/article/partner-content-where-our-water-goes-canada.
[9] StatCan "Human Activity and the Environment: Section 1: Introduction," n.d., https://www150.statcan.gc.ca/n1/pub/16-201-x/2010000/part-partie1-eng.htm?
[10] Karen Bakker, "Water security: Canada's challenge," Policy Options, July 1, 2009, https://policyoptions.irpp.org/magazines/canadas-water-challenges/water-security-canadas-challenge/.
[11] Ibid.
[12] OECD, "OECD Environmental Performance Reviews: Canada," 2004, https://www.oecd.org/content/dam/oecd/en/publications/reports/2004/09/oecd-environmental-performance-reviews-canada-2004_g1gh41d5/9789264107786-en.pdf.
[13] Indigenous Services Canada, "Ending long-term drinking water advisories," Government of Canada, accessed May 25, 2025, https://www.sac-isc.gc.ca/eng/1506514143353/1533317130660.
[14] Ibid.

increasing occurrences of harmful algal blooms in freshwater systems such as Lake Erie.[15] These issues are further compounded and complicated by the logistical difficulty of transporting water from northern basins to high-demand southern regions. Inter-basin transfers while on paper seem like a good idea, economically and environmentally are costly and not sustainable.

The commonly touted idea that Canada has “water to spare” is misleading at best. While the overall aggregate volume is immense, its renewability, accessibility and quality vary significantly. This reality necessitates a new national understanding of our freshwater resources, one that drive the message that it is not an endless reserve but as a finite and strategically significant resource.

Section II: Climate Change, Global Scarcity, and National Security

Globally, water is increasingly understood as a security issue. In its 2023 World Water Development Report, the United Nations warned that the world is facing a "global water crisis" driven by overconsumption, pollution, and intensifying climate disruption.[16] By 2030, global demand for water is expected to outstrip sustainable supply by up to 40%.[17] Water scarcity is not just an environmental concern; it is an accelerant of conflict, migration, and economic instability.

Water stress already affects nearly half the global population for part of the year.[18] In 2023, Mexico City, home to over 22 million people, came within weeks of "Day Zero" when municipal water would have ceased flowing due to drought-depleted reservoirs.[19] In the Middle East and sub-Saharan Africa, water scarcity has triggered mass displacement, regional conflict, and institutional fragility. As noted by security expert Peter H. Gleick, water can be both a trigger and a weapon in violent conflict.[20]

Canada is not sheltered or immune to these dynamics. While Canada is water-rich by global standards, climate change is transforming its hydrological cycle. Flooding is more frequent and sever, leading to the country’s most expensive natural disasters, costing insurers over $800 million annually.[21] These events do not just carry a financial burden,

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[15] Environment and Climate Change Canada, “Lake Erie Algae,” Government of Canada, last modified October 2023, https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/overview/lake-erie-algae.html.
[16] United Nations, World Water Development Report 2023.
[17] Ibid.
[18] United Nations Development Programme, “Water Scarcity,” UNDP, accessed May 2025, https://www.undp.org/water-governance/water-scarcity.
[19] Peter Yeung, “‘Forgotten’: How One Mexican City Struggles Against Big Industry for Water,” Al Jazeera, January 8, 2025, https://www.aljazeera.com/news/longform/2025/1/8/forgotten-how-one-mexican-city-struggles-against-big-industry-for-water.
[20] Peter Gleick, “As Water Becomes a Weapon of War, We Must Focus on Cooperation and Peace,” *The Guardian*, November 15, 2023, https://www.theguardian.com/environment/2023/nov/15/water-related-violence-war-peace.
[21] Craig Stewart, “Why Canada Must Accelerate Work to Establish a National Flood Insurance Program,” n.d., https://www.ibc.ca/news-insights/in-focus/why-canada-must-accelerate-work-to-establish-a-national-flood-insurance-program.

they also threaten critical infrastructure, displace communities and contaminate drinking water systems. On the other end of the spectrum, prolonged droughts in the Prairies and British Columbia have led to water restrictions, reduced agricultural output, and ecological stress[22] In 2023, over 70% of British Columbia experienced drought or abnormal dryness.[23]

Climate change not only impacts flooding and drought, but also has second order effects such as heightened risk of waterborne disease, invasive species, and wildfire intensity. Water systems serve as critical lifelines during emergencies, however aging infrastructure in many communities leaves them ill-prepared for climate extremes.[24] Indigenous communities are particularly vulnerable to the impact to water by climate change. Many of these communities lack adequate water treatment, flood defenses or emergency support given their remote locations.[25] These realities and challenges position water security as a direct component of national resilience. This pushed Canada to have to consider water strategically as part of the broader discussions of global competitiveness and stability.

S everal countries that are heavily impacted by climate change such as Australia and Netherlands have adopted national water security strategies that integrate investment, climate adaption and public health.[26] In the U.S., there was Bipartisan support for the 2021 Infrastructure Law that earmarked over $55 Billion for modernizing water systems.[27] Even as close neighbours, there is significant contrast between U.S.'s and Canada's approach to water security. Canda has yet to articulate water security as a formal strategic priority. This omission is increasingly untenable. Given Canada's geographic location, economic structure and ecological dependence on freshwater, make it uniquely exposed to transboundary water pressures and internal vulnerabilities. Without a coordinated national approach, the country risks being reactive rather than proactive in the face of growing water insecurity.

Section III: Domestic Governance and the Canada Water Agency

The one of the single most persistent obstacles for Canada to have effective water stewardship lies in its fragmented governance system. Under the Constitution Act, 1867, water is not explicitly assigned to either federal or provincial jurisdiction leaving a

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[22] James Lautens, "Clear Gold: The Role of Fresh Water in Canada's Global Strategy," NATO Association of Canada, February 15, 2025, https://natoassociation.ca/clear-gold-the-role-of-fresh-water-in-canadas-global-strategy/.
[23] Canadian Drought Monitor, "Canadian Drought Monitor Conditions as of May 31, 2023," May 31, 2023, https://publications.gc.ca/collections/collection_2023/aac-aafc/A27-39-2023-5-eng.pdf.
[24] Senate of Canada, "Impacts of Climate Change on Critical Infrastructure in the Transportation and Communications Sectors in Canada," report, 2023, https://sencanada.ca/content/sen/committee/441/TRCM/reports/TRCM_Climate-Infrastructure-Report_E.pdf.
[25] The Assembly of First Nations (AFN), "The Infrastructure Gap - Assembly of First Nations," Assembly of First Nations, April 22, 2025, https://afn.ca/economy-infrastructure/infrastructure/closing-the-infrastructure-gap/infrastructure.
[26] Australian Government, "National Water Initiative," https://www.dcceew.gov.au/water/policy/nwi ;
[27] The White House, "Guidebook to the Bipartisan Infrastructure Law | Build.gov | the White House," May 13, 2024, https://bidenwhitehouse.archives.gov/build/guidebook/.

substantial amount responsibility in a grey area.[28] This has led to provinces exercising primary authority over freshwater resources, issuing of permits and overseeing infrastructure. The federal government however still retains powers related to fisheries, navigation and international waters.[29] With this division and lack of clarity has created overlapping areas of responsibilities which has often led to inaction, redundancy or neglect by both government institutions.

The lack of urgency for Canada to address water as a strategic resource has led to it lacking a binding national water strategy for decades. The 1987 Federal Water Policy promoted conservation and efficiency but was never legislated nor regularly updated.[30] Even as water challenges evolved dramatically due to climate change and population growth, federal leadership remained passive over the past 40 years. Many experts have highlighted that Canada's water governance remains "chronically under-institutionalized" despite the resource's strategic value.[31]

While at the federal level there is woeful inactivity, provincial approaches have varied widely. Alberta introduced the 1999 Water Act that brought in market-style allocation and watershed-based planning, while Ontario and Quebec have established Great Lakes protection programs. However, even with the proactive approaches there have been many hurdles to get a cohesive approach to strategic water governance. Inconsistent standards, limited data sharing and jurisdictional silos continue to hinder national coherence.[32] Most evident case of this hinderance is with over 275 separate indicators of freshwater health are tracked across different agencies; there is no unified framework that exists to monitor quantity, quality or resilience.[33]

As these gaps continue to be highlighted by analysts, the federal government announced the creation of the Canada Water Agency in 2023. Initially housed within Environment and Climate Change Canada, the agency is expected to evolve into an autonomous body headquartered in Winnipeg.[34]The agency's mandate includes addressing key areas that have been neglected sich as modernizing the Canada Water Act, facilitating federal-provincial coordination and improving national water data systems.[35]

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[28] Legislative Services Branch, "Consolidated Federal Laws of Canada, THE CONSTITUTION ACTS 1867 to 1982," April 9, 2024, https://laws-lois.justice.gc.ca/eng/const/page-3.html.
[29] Karen Bakker, "Water Security: Canada's Challenge," Policy Options, April 30, 2019, https://policyoptions.irpp.org/magazines/canadas-water-challenges/water-security-canadas-challenge/.
[30] Environment Canada, "Water Policy," 1987, https://publications.gc.ca/collections/collection_2014/ec/En4-247-1987-eng.pdf.
[31] Bakker, "Water security: Canada's challenge."
[32] Ibid.
[33] Gemma Dunn, and Karen Bakker. "Fresh Water-Related Indicators in Canada: An Inventory and Analysis." *Canadian Water Resources Journal / Revue Canadienne Des Ressources Hydriques* 36 (2): 135–48. https://doi.org/10.4296/cwrj3602815.
[34] Standing Committee on Environment and Sustainable Development, "News Release: Committee to Study Freshwater in Canada," Parliament of Canada, March 29, 2023, https://www.ourcommons.ca/DocumentViewer/en/44-1/ENVI/news-release/12309450.
[35] Ibid.

The establishment of a new entity and the push for institutional reform has been paired with significant investments. The 2023 Federal budget allocated $750 million for freshwater initiatives, including $650 million for restoring major watersheds and $85 million to operationalize the agency.[36] This represents a historic shift towards recognizing the true strategic nature of water at the federal level.

While this narrative shift at the federal level has given much needed funding to address some systemic issues with managing water within Canada, significant challenges remain. The Canada Water Agency lacks formal authority to enforce national standards, and its success will depend on voluntary collaboration from provinces. As well, Indigenous participation was declared as a priority mandate for the agency, the mechanisms for true co-governance remain under development.[37]

International best practices offer useful models. In New Zealand, the Ministry for the Environment's Freshwater Implementation Group works closely with Māori authorities through "Te Mana o te Wai," a legal principle placing the health of water bodies first.[38] Australia's National Water Initiative established market-based mechanisms and basin-wide coordination, backed by legislative authority.[39] Canada could draw on these examples to build stronger interjurisdictional tools, elevate Indigenous law, and ensure water is protected as a national trust.

Section IV: International Dimensions and Canada–U.S. Water Politics

Canada's water security cannot be examined in isolation from its geopolitical context, especially its relationship with the United States. The two nations share vast freshwater systems, including the Great Lakes, the Columbia and Yukon Rivers, and several transboundary aquifers. These waters are governed primarily by the Boundary Waters Treaty of 1909, which established the International Joint Commission (IJC) to prevent and resolve disputes.[40] The treaty prohibits either country from polluting or diverting shared waters in ways that harm the other. This framework has been largely effective for over a century, serving as a model of transboundary cooperation.

However, the treaty was created in an era when water was not considered a strategic commodity. In recent decades, as American states have faced worsening drought, interest in accessing Canadian water has resurfaced—sometimes subtly, sometimes overtly. The most

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[36] Environment and Climate Change Canada, "Budget 2023: Federal Investments in Freshwater Protection and Canada Water Agency," March 28, 2023, https://sdgs.un.org/partnerships/support-major-investments-canadas-fresh-water.
[37] Standing Committee on Environment and Sustainable Development et al., "Standing Committee on Environment and Sustainable Development - Evidence - Number 113," June 11, 2024, https://www.ourcommons.ca/Content/Committee/441/ENVI/Evidence/EV13191353/ENVIEV113-E.PDF.
[38] New Zealand Ministry for the Environment, "Te Mana O Te Wai Implementation," December 21, 2021, https://environment.govt.nz/acts-and-regulations/freshwater-implementation-guidance/te-mana-o-te-wai-implementation/.
[39] Australian Government, "National Water Initiative."
[40] Environment and Climate Change Canada, "Canada-US Boundary Waters Treaty," Canada.ca, September 2, 2022, https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-countries-regions/north-america/canada-united-states-boundary-waters-treaty.html.

prominent historical example is the North American Water and Power Alliance (NAWAPA), a 1960s proposal to divert northern rivers to the U.S. Southwest through massive infrastructure.[41] Though dismissed as impractical, NAWAPA set a precedent for viewing Canada's water as an underutilized continental asset.

More recent trade agreements have triggered fears that water could become subject to commercial obligations. During the negotiation of NAFTA in the early 1990s, concerns arose that water might be treated as a tradable good under Chapter 11 investment protections.[42] In response, Canadian governments declared that water "in its natural state" was not a good or commodity, and in 1993 the NAFTA parties issued a joint declaration affirming this interpretation.[43] The Canada–United States–Mexico Agreement (CUSMA), which replaced NAFTA in 2020, includes a side letter reaffirming that water in its natural state is excluded from the agreement.[44]

Nonetheless, legal scholars warn that if Canada were ever to allow bulk water exports, such as through pipelines or tankers, that water might then be considered a commodity, potentially exposing Canada to trade challenges.[45] This is why the 2013 Transboundary Waters Protection Act was enacted to ban large-scale removal of water from boundary basins.[46] Most provinces have similar laws prohibiting bulk water exports from their territories. Together, these measures constitute Canada's de facto ban on water exports—a position summarized by policymakers as "water is not for sale."

Still, debate continues. Some policy analysts and economists argue that Canada should consider limited, environmentally sustainable water exports as part of its global engagement. Rhett Larson, for example, contends that water could be treated like timber or electricity—resources Canada exports responsibly.[47] Others emphasize the moral dimension and emphasize that in 2010, the United Nations recognized access to water as a human right, and Canada endorsed that resolution.[48] As global water crises worsen, Canada may face diplomatic pressure, or moral expectation, to assist water-stressed nations.

Opponents of water exports caution that even within Canada, supply is uneven, and climate risks are growing. Commodifying water could jeopardize ecosystems, reduce flexibility during droughts, and expose Canada to international leverage. They point to the danger of "resource nationalism" and note that once trade in a resource begins, withdrawing

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[41] Rhett Larson, "The Case of Canadian Bulk Water Exports," University of Calgary School of Public Policy, August 2015, https://www.policyschool.ca/wp-content/uploads/2016/03/canadian-bulk-water-exports.pdf
[42] Aaida Peerani, "NAFTA vs. CUSMA: Is Canada's water a good or a right?" LawNow Magazine, March 1, 2021, https://www.lawnow.org/nafta-vs-uscma-is-canadas-water-a-good-or-a-right/.
[43] Ibid.
[44] Ibid.
[45] Larson, "The Case of Canadian Bulk Water Exports."
[46] Legislative Services Branch, "Consolidated Federal Laws of Canada, Transboundary Waters Protection Act," November 15, 2019, https://laws-lois.justice.gc.ca/eng/annualstatutes/2013_12/FullText.html.
[47] Larson, "The Case of Canadian Bulk Water Exports."
[48] UN. General Assembly (64th sess. : 2009-2010), "The Human Right to Water and Sanitation :: Resolution /: Adopted by the General Assembly," United Nations Digital Library System, August 3, 2010, https://digitallibrary.un.org/record/687002?ln=en&v=pdf.

from it can become legally and politically fraught.[49]

Canada's current posture balances domestic sovereignty with international cooperation. It maintains strong legal protections against forced export while supporting global water initiatives, capacity-building, and science diplomacy. For example, Canada shares water governance expertise with developing countries and supports transboundary cooperation through the Global Water Partnership.[50] Going forward, this dual strategy—guarding water at home while promoting water stability abroad—must remain central.

Section VI: Arctic Freshwater and Northern Sovereignty – Water at the Frontlines of Canada's Security Posture

As global attention shifts toward the rapidly changing Arctic, freshwater is emerging as a critical, yet underexamined, component of Canada's northern security. The Arctic holds vast reserves of freshwater in the form of glaciers, ice sheets, permafrost, rivers, and lakes. These systems are deeply intertwined with local ecosystems, Indigenous livelihoods, and Canada's broader sovereignty claims. As melting accelerates and international actors like Russia and China expand their Arctic presence, Canada's freshwater in the North has moved from the periphery of national discourse to the frontlines of security planning. This section argues that Canada must urgently incorporate Arctic freshwater into its sovereignty, defense, and infrastructure strategies.

Canada's Arctic contains enormous volumes of stored freshwater. Glaciers on Baffin and Ellesmere Islands, alongside extensive lake systems like Lake Hazen, comprise some of the largest freshwater stores north of the 60th parallel.[51] These systems play a key role in regulating global sea levels, freshwater discharge into the Arctic Ocean, and oceanic circulation patterns. Freshwater outflows from the Canadian Arctic Archipelago have increased significantly over the past two decades, driven by glacial melt and changing precipitation patterns.[52] This not only affects global ocean salinity and circulation (such as the Atlantic Meridional Overturning Circulation), but also alters local ecosystems that depend on freshwater balance.

Climate change is intensifying the thaw of permafrost and glacial systems, destabilizing both ecosystems and infrastructure.[53] As freshwater sources destabilize, communities face water quality issues due to sediment runoff, thawing contaminants, and

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[49] Peerani, "NAFTA vs. CUSMA."
[50] Global Water Partnership. "Transboundary Water Cooperation," n.d. https://www.gwp.org/en/we-act/themesprogrammes/Transboundary_Cooperation/.
[51] W. Tad Pfeffer et al., "The Randolph Glacier Inventory: A Globally Complete Inventory of Glaciers," *Journal of Glaciology* 60, no. 221 (January 1, 2014): 537–52, https://doi.org/10.3189/2014jog13j176.
[52] "Record-high Arctic Freshwater Will Flow Through Canadian Waters, Affecting Marine Environment and Atlantic Ocean Currents," NOAA Pacific Marine Environmental Laboratory (PMEL), March 2, 2021, https://www.pmel.noaa.gov/news-story/record-high-arctic-freshwater-will-flow-through-canadian-waters-affecting-marine.
[53] Merritt R. Turetsky et al., "Permafrost Collapse Is Accelerating Carbon Release," Nature 569, no. 7754 (2019): 32–34, https://doi.org/10.1038/d41586-019-01313-4.

increased variability in supply.[54] Many northern Indigenous communities rely on surface water for drinking and subsistence and have reported rising incidences of contamination and unpredictable flows. Yet little investment has been made in hardening or adapting water infrastructure in the North. In 2023, the Assembly of First Nations warned that northern drinking water systems remained among the most vulnerable in Canada.[55]

The Arctic's growing geostrategic significance further elevates the role of freshwater. As ice recedes and shipping lanes like the Northwest Passage open, new transit routes cross Canadian freshwater discharge zones and environmentally sensitive areas. Russia has vastly expanded its Arctic military infrastructure, deploying icebreakers, long-range radar systems, and surveillance capabilities along its northern coast.[56] China has declared itself a "near-Arctic state" and has funded scientific expeditions and investments in Arctic research infrastructure.[57] Both countries have demonstrated growing interest in Arctic freshwater science, resource mapping, and polar governance forums. While not directly aggressive toward Canada, these interests suggest a future where Arctic water access, scientific data, and even extraction may become competitive geopolitical issues.

Canada's defense posture has not fully caught up with this emerging reality. Though "Strong, Secure, Engaged" identifies the Arctic as a region of renewed interest, its references to water focus narrowly on sea lanes and maritime defense.[58] Further the new iteration of Canada's defence policy, Our North, Strong and Free (2024) positions the Arctic as a central theater in global geopolitical competition.[59] The role of freshwater systems, both in terms of physical security and ecological monitoring, remains largely absent from strategic planning. This is a missed opportunity. Freshwater resources in the Arctic are potential points of vulnerability (e.g., through contamination or sabotage), as well as assets to be protected under sovereignty claims.

Canada should also expand its Arctic water research capabilities. Current hydrological and glaciological monitoring is patchy and underfunded. Satellite observations and on-the-ground data collection must be expanded, especially in areas seeing the most dramatic change. The Canadian Ice Service and Polar Knowledge Canada could play

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[54] E. Bush and D.S. Lemmen, eds., Canada's Changing Climate Report (Ottawa: Government of Canada, 2019), 6 https://natural-resources.canada.ca/sites/www.nrcan.gc.ca/files/energy/Climate-change/pdf/CCCR_FULLREPORT-EN-FINAL.pdf

[55] Assembly of First Nations (AFN), "ECONOMIC DEVELOPMENT & INFRASTRUCTURE BRANCH INFRASTRUCTURE SECTOR ISSUE: CLEAN DRINKING WATER "2022 , https://www.afn.ca/policy-sectors/water/.

[56] Katarzyna Zysk, "Russia's Arctic Strategy: Ambitions and Constraints," Joint Force Quarterly 57 (2010): 103–110, https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-57.pdf.

[57] Matthew P. Funaiole Brian Hart Powers-Riggs Joseph S. Bermudez Jr., Aidan, "Frozen Frontiers: China's Great Power Ambitions in the Polar Regions," April 18, 2023, https://features.csis.org/hiddenreach/china-polar-research-facility.

[58] Department of National Defence, "Strong, Secure, Engaged: Canada's Defence Policy," 2017, https://www.canada.ca/en/department-national-defence/corporate/policies-standards/canada-defence-policy.html.

[59] Department of National Defence, "Our North, Strong and Free: A Renewed Vision for Canada's Defence," Canada.ca, May 3, 2024, https://www.canada.ca/en/department-national-defence/corporate/reports-publications/north-strong-free-2024.html.

greater roles in freshwater intelligence, supporting both scientific and strategic objectives.[60] Investments in Arctic water science would yield dividends for climate adaptation, biodiversity protection, and security foresight.

Finally, water diplomacy in the Arctic should become a proactive component of Canada's foreign policy. Canada should lead efforts within the Arctic Council to establish norms on freshwater sharing, pollution control, and emergency response. It could also support the creation of a circumpolar freshwater observatory, modeled on initiatives like the Global Water Partnership, to coordinate research and governance.[61] As the Arctic becomes more accessible, Canada must ensure that its freshwater resources are shielded from exploitation, while contributing constructively to regional stability.

Section VII: Conclusion and Recommendations — Toward a Strategic Water Doctrine

As Canada confronts significant uncertainties of this century its approach to freshwater must evolve quickly. Rapid climate change and dynamic geopolitical landscape have added more complexities to how Canada must steward its natural resources. Freshwater is still discussed as an infinite resource, but it's become more evident that it is deeply entangled with national resilience, and security policy. Canada's water systems are increasingly stressed by climate change, infrastructure neglect, and external interest reaching every corner of the country from Indigenous communities in the North to dense urban centres in the South.

Evidence has shown that the long-standing belief in Canada's limitless water supply masks serious vulnerabilities in security and national resiliency. With increase in flooding events and droughts in the Prairies, climate change continues to stress our water infrastructure. At the same time, international water scarcity is triggering conflict and competition abroad and driving cross-border tensions with the United States reflect the growing strategic importance of shared water resources.

Federal initiatives such as the creation of the Canada Water Agency represent a crucial step forward, but significant gaps remain. Without a national water strategy enshrined in legislation, and with fragmented governance across provinces and territories, Canada lacks the tools to effectively manage this essential resource with consistency or authority.

To further complicate Canada's precarious position, the Arctic adds another layer of deep complexity. As glaciers melt and permafrost shifts, northern water systems are changing rapidly. With resources becoming more scarce, foreign interest in Arctic access and resources is rising. Canada's sovereignty in the region increasingly depends not only on its military footprint, but also on the stewardship of Arctic freshwater and meaningful

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[60] Polar Knowledge Canada, "Behind the Scenes at Polar Knowledge Canada," Canada.ca, September 6, 2023, https://www.canada.ca/en/polar-knowledge/behindthescenes.html.

[61] Annual Report 2023 - Global Water Partnership. "GWP in Action | Annual Report 2023 - Global Water Partnership," June 18, 2024. https://www.gwp.org/annualreport2023/.

partnership with Indigenous governments.

Thus, Canada's water strategy must evolve into a whole-of-nation framework, integrating domestic, international, and Arctic dimensions. The following policy recommendations are essential:

- Legally establish a National Water Security Strategy led by the Canada Water Agency, with a focus on conservation, quality, and emergency preparedness.
- Prioritize infrastructure investment for Indigenous and northern communities, upholding co-governance and legal water rights.
- Modernize water legislation, like the Canada Water Act, to clarify federal powers and roles in data collection, cross-border cooperation, and national coordination.
- Develop Arctic-specific monitoring and water protection programs in collaboration with territorial and Indigenous partners. Recognizing Arctic freshwater systems as strategic and geopolitical assets.
- Strengthen Canada's international water diplomacy posture by maintaining its prohibition on bulk water exports, while expanding global contributions through aid, science, and cooperative governance forums.
- The Canadian Armed Forces, Public Safety Canada, and Global Affairs Canada must plan for scenarios where water insecurity exacerbates domestic emergencies, Arctic incursions, or foreign humanitarian crises.

In short, Canada's future prosperity and sovereignty depend on how it manages its water resources today. The legacy of abundant lakes and rivers is no longer sufficient. Canada must not only address its own water issues but also take on a global role in defining freshwater strategies and alliances in the Arctic. As freshwater becomes the defining strategic resource of this century, Canada must ensure its policies, institutions, and citizens are prepared, not only to protect this inheritance, but to lead the world in safeguarding it.

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