

Water Justice in the Arctic: Indigenous Rights, Legal Challenges, and the Future of Governance Amidst Climate Change

Nicholas Parlato^{a c} and Zia Madani (PhD)^{b c}

^aUniversity of Alaska Fairbanks njparlato@alaska.edu

^bUniversity of Tsukuba madani.ziaeddin.gp@u.tsukuba.ac.jp

^cCo-Lead, UArctic Thematic Network on Science Diplomacy

Introduction

The Arctic is at a pivotal moment, where ecological changes and geopolitical interests are converging to reshape its future. With climate change accelerating sea ice loss, permafrost thaw, and coastal erosion, the region's delicate marine and freshwater systems are transforming in ways that directly impact the lives, cultures, and livelihoods of its coastal and Indigenous communities. As the Arctic becomes more accessible and strategically significant on the global stage, pressures mount to govern its resources within frameworks that may not adequately reflect the region's socioecological particularities.

Water holds the Arctic together. Coastal communities, many Indigenous, rely on healthy and productive oceans, stable sea ice, and enduring permafrost to secure food resources, drinking water, and infrastructure. Arctic communities evince characteristics of *littoral societies*, having

more in common with one another internationally than with communities farther south in their own nations.¹ But Russia's war in Ukraine, deep in the continental heartland, has hardened transpolar borders and isolated Arctic communities and Peoples from one another, with notable consequences for water, food, and environmental security. The collapse of the "Polar Mediterranean" reasserts the reality of a *mare clausum* in Arctic EEZs and domestic waters, supported by the Ilulissat Declaration, which enshrines the *temperate norms*² of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) over the Arctic Ocean.

The complex materiality and traditional uses of Arctic waters and ice are obscured by such documents, but have been addressed by sociolegal scholars and legal geographers, with special attention paid to the role of sea ice in Indigenous and state practices of placemaking and

¹ Pearson, M. N. (2006). Littoral society: The concept and the problems. *Journal of World History*, 353-373.

² Smith, J. R. (2021). "Exceeding Beringia": Upending universal human events and wayward transits in Arctic spaces. *Environment and Planning D: Society and Space*, 39(1), 158-175.

territory formation.³ While ocean health has been targeted in multiple international charters, declarations, and agreements, many of the particularities of Arctic marine and coastal change elude the gaze of law. This paper aims to complicate regional water rights discourse by considering the sociolegal intersection of transforming saltwater and freshwater systems in the Arctic coastal zone, as well as the emergent practices of and rhetorical preparation for the enrollment of ecosystem functions in fostering multiscalar resilience.

What Shinnecock scholar Kelsey Leonard and colleagues describe⁴ as Indigenous Water Justice forms the basis of our argument that not only should the needs and self-determination of Arctic coastal and Indigenous communities take precedence in how water governance takes place, but that water is a complex living entity with social, political, and legal relations, reflecting the fundamental interconnectedness of natural and human systems. Furthermore, intricate interactions between water and other resources—such as land, ice, food, energy and marine ecosystems—necessitate a systems approach to its governance. These

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complexities should be integrated into regulatory and policymaking processes, ensuring that decisions reflect the dynamic relationships within ecosystems and honor the cultural and environmental priorities of sovereign Indigenous communities. Addressing water governance through this lens can help secure equitable, sustainable outcomes that respect Indigenous rights and recognize water's vital role in both human and ecological health. Though

³ Steinberg, P., Ferloni, G., Aporta, C., Bridge, G., Chircop, A., Coddington, K., ... Stammer-Gossmann, A. (2022). NAVIGATING THE STRUCTURAL COHERENCE OF SEA ICE. In *Laws of the Sea: Interdisciplinary Currents* (pp. 165–184). Taylor and Francis.

⁴ Leonard, K., David-Chavez, D., Smiles, D., Jennings, L., Alegado, R.A., Tsinnajinnie, L., Maniwabi, J., Arsenault, R., Begay, R.L., Kagawa-Viviani, A. and Davis, D.D., 2023. Water back: A review centering rematriation and Indigenous Water research sovereignty.

bolstered by Articles 25⁵, 26⁶, and 32⁷ of UNDRIP, Indigenous water rights must be understood as inherent, preceding their recognition by colonial governments.⁸ Anishinaabe scholar Aimee Craft writes that, “while pragmatically useful to contest state control over water, Western legal mechanisms can fall short of the legal relationships that currently exist between Indigenous peoples and water. The danger is that... we may lose the spirit of the relationship itself.”⁹ Confronting the legal

concerns we address below must begin with this question of Indigenous participation in policy and decision-making spaces at multiple scales and the capacity of non-Indigenous institutions to welcome their approaches and laws.¹⁰ In the Arctic, Indigenous input into legal and policy processes is essential due to the unique needs of subsistence lifestyles and the intergenerational, place-based knowledge maintained by Indigenous peoples for millennia.¹¹ Understanding the

⁵ Article 25: “Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.”

⁶ Article 26: “Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired. 2- Indigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired. 3- States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.”

⁷ Article 32: “1- Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources. 2-States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources. 3- States shall provide effective mechanisms for just and fair redress for any such activities, and appropriate measures shall be taken to mitigate adverse environmental, economic, social, cultural or spiritual impact.

⁸ Wilson, N. J. (2014). Indigenous water governance: Insights from the hydrosocial relations of the Koyukon Athabaskan village of Ruby, Alaska. *Geoforum*, 57, 1-11.

⁹ Craft, A. (2019). Navigating Our Ongoing Sacred Legal Relationship with Nibi (Water). In Borrows, J., Chartrand, L., Fitzgerald, O., Schwartz, R. (eds.) *Braiding Legal Orders: Implementing the United Nations Declaration on the Rights of Indigenous Peoples*, Centre for International Governance Innovation, pp. 101-110.

¹⁰ Vierros, M.K., Harrison, A.L., Sloat, M.R., Crespo, G.O., Moore, J.W., Dunn, D.C., Ota, Y., Cisneros-Montemayor, A.M., Shillinger, G.L., Watson, T.K. and Govan, H., 2020. Considering Indigenous peoples and local communities in governance of the global ocean commons. *Marine Policy*, 119, p.104039.

¹¹ Raymond-Yakoubian, J., & Daniel, R. (2018). An Indigenous approach to ocean planning and policy in the Bering Strait region of Alaska. *Marine Policy*, 97, 101-108.

identities and transformations of water holistically and recognizing diverse water accountabilities among a web of human and nonhuman relations are thus vital for resolving social, legal, political, and conceptual barriers to achieving Indigenous Water Justice.¹² Water's connective and life-giving properties offer a common cause for cooperative Arctic governance.

The Human Right to Water, Legal Foundations and Emerging Threats to Freshwater Security in the Arctic

The human rights to safe drinking water are consistent with the spirit of articles 55 and 56 of the Charter of the United Nations (UN Charter)¹³, while being recognized in

General Assembly resolution 64/292, Human Rights Council resolution 15/9, General Comment 15 of the Committee on Economic, Social and Cultural Rights (CESCR) on the Right to Water, General Assembly resolution 70/169, and Human Rights Council resolution 33/10. In addition, Agenda 21 of U.N. Conference on Environment and Development (Agenda 21) states that all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs.¹⁴ This right also includes the right to a system of water supply and management that provides equality of opportunity for people to enjoy the right to water.¹⁵ As

Clogg, J., Askew, H., Kung, E., & Smith, G. (2016). Indigenous legal traditions and the future of environmental governance in Canada. *Journal of Environmental Law and Practice*, 29(227), 1-24.

¹² Butterfly, L. and Richardson, B. 2016. Indigenous Peoples and Saltwater/Freshwater Governance. *Indigenous Law Bulletin*, 8(26), pp. 1-8.

¹³ While the UN Charter does not explicitly mention water, this interpretation aligns with the Charter's spirit of promoting fundamental rights and the conditions necessary for a life with dignity. This argument is further reinforced by later developments, including General Assembly Resolutions and international declarations recognizing access to safe drinking water as a human right, which clarify and build upon the Charter's principles. Article 55 obliges the United Nations to promote conditions of "economic and social progress and development" and "higher standards of living". Safe drinking water is essential for achieving such living standards, as it directly impacts health, economic productivity, and overall well-being. Moreover, access to water can be seen as foundational for advancing the general welfare and for fostering stable, peaceful conditions—core aims of Article 55. Moreover, according to article 56 of the UN Charter, member states pledge themselves to take "joint and separate action" to promote the objectives outlined in Article 55. By this commitment, states collectively agree to further these aims, which can be interpreted to include ensuring access to essential resources like safe drinking water. Ensuring such access is thus part of their collective responsibility to improve living standards and protect human rights.

¹⁴ United Nations Conference on Environment and Development, Agenda 21, Rio de Janeiro, Brazil, U.N. Doc. A/CONF.151/26/Rev.I, 3 to 14 June 1992.

¹⁵ General comment no. 15: The Right to Water (articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), adopted at the Twenty-ninth Session of the UN Committee on Economic, Social

stated in General Comment 15 of CESCR, the right to water comprises water for personal and domestic uses, including drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene drinking water and water for household.¹⁶ As to article 17 of the Berlin Rules¹⁷ every individual has a right of access to sufficient, safe, acceptable, physically accessible, and affordable water to meet that individual's vital human needs.¹⁸ In addition, Agenda 21 states that all peoples, whatever their stage of development and their social and

economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs.¹⁹ This right also includes the right to a system of water supply and management that provides equality of opportunity for people to enjoy the right to water.²⁰

Water is also necessary to ensure basic human needs and to ensure environmental hygiene (right to health).²¹ Likewise, water is essential for securing livelihoods (right to gain a living by work) and enjoying certain cultural practices

and Cultural Rights, 11-29 November 2002, Geneva. Last retrieved on 3 September 2023 from: <https://digitallibrary.un.org/record/486454?ln=en-record-files-collapse-header>

¹⁶ CESCR, 2002. General comment no. 15: The Right to Water (articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), adopted at the Twenty-ninth Session of the UN Committee on Economic, Social and Cultural Rights, 11-29 November 2002, Geneva. Last retrieved on 3 September 2023 from: <https://digitallibrary.un.org/record/486454?ln=en-record-files-collapse-header>

¹⁷ The Berlin Rules on Water Resources (2004) are a set of guidelines adopted by the International Law Association (ILA) to address international and national water resource management, incorporating principles relevant to the human right to water. These rules update earlier principles from the Helsinki Rules (1966) and the Seoul Rules (1986) on international watercourses, expanding to address broader aspects like water quality, sustainable use, and equitable allocation, as well as environmental considerations in water management. The Berlin Rules articulate principles on the governance of water resources, such as Equitable Utilization (Article 12), Human Right to Water (Article 17), and Environmental Protection (Articles 3 and 7). See: https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA_Berlin_Rules-2004.pdf

¹⁸ International Law Association, Berlin Rules on Water Resources, Berlin Conference (2004) Water Resources Law (ILA, 2004).

¹⁹ United Nations Conference on Environment and Development, Agenda 21, Rio de Janeiro, Brazil, U.N. Doc. A/CONF.151/26/Rev.I, 3 to 14 June 1992.

²⁰ General comment no. 15: The Right to Water (articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), adopted at the Twenty-ninth Session of the UN Committee on Economic, Social and Cultural Rights, 11-29 November 2002, Geneva. Last retrieved on 3 September 2023 from: <https://digitallibrary.un.org/record/486454?ln=en-record-files-collapse-header>

²¹ General comment no. 15: The Right to Water (articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), adopted at the Twenty-ninth Session of the UN Committee on Economic, Social and Cultural Rights, 11-29 November 2002, Geneva. Last retrieved on 3 September 2023 from: <https://digitallibrary.un.org/record/486454?ln=en-record-files-collapse-header>

(right to take part in cultural life).²² In the Arctic, access to clean, well-managed sources of freshwater is essential for human well-being, and a lack of access is correlated to poverty, poor hygiene, malnutrition, and environmental degradation.²³ Many communities lack basic in-home sanitation and water delivery systems and rely on untreated water sources on the land; community preferences and practices related to tap water, water treatment, and potability differ widely.²⁴ However, the Arctic's shallow aquifers and high ground ice content make it susceptible to multiple forms of contamination and alteration.

Sea ice loss, warming ocean temperatures, and increased wave and storm activity are the driving forces behind

the Arctic's rapid loss of coastline. Simultaneously, Arctic rivers and streams are undergoing dramatic changes such as warming, "rusting", and eroding²⁵, while countless Arctic freshwater lakes are draining into the groundwater due to permafrost thaw²⁶. Numerous Arctic communities have already attested to threats to their freshwater supplies: communities in Nunavik attribute declining water levels in the region to changes in precipitation²⁷; the Alaska Native Village of Shaktoolik's Tagoomenik River faces potential inundation by the ocean due to beach erosion²⁸ and numerous Alaska Native communities' water supplies (e.g., Selawik, Kobuk, Kaktovik) evince high vulnerability to multiple contaminants²⁹; many others,

²² General comment no. 15, cited above.

²³ Cassivi, A., Covey, A., Rodriguez, M. J., & Guilherme, S. (2023). Domestic water security in the Arctic: A scoping review. *International Journal of Hygiene and Environmental Health*, 247, 114060.

²⁴ For more on water, food and energy resource challenges in the Arctic and the standing of international law, see: Zia Madani and David Natcher, 2024. "Water, Energy, and Food (WEF) Nexus in the Changing Arctic: An International Law Review and Analysis", *Water*, 16(6), 835; special issue of "New Approaches in Water-Energy-Food-Environment-Climate (WEFEC) Nexus". Open Access, available at: <https://doi.org/10.3390/w16060835>

²⁵ O'Donnell, J. A., Carey, M. P., Koch, J. C., Baughman, C., Hill, K., Zimmerman, C. E., ... & Poulin, B. A. (2024). Metal mobilization from thawing permafrost to aquatic ecosystems is driving rusting of Arctic streams. *Communications Earth & Environment*, 5(1), 268.

²⁶ Vincent, W. F., Laurion, I., Pienitz, R., & Walter Anthony, K. M. (2013). Climate impacts on Arctic lake ecosystems. *Climatic change and global warming of inland waters: Impacts and mitigation for ecosystems and societies*, (2011), 27.

²⁷ Goldhar et al. 2013.

²⁸ Johnson, T., & Gray, G., 2014. Shaktoolik, Alaska: climate change adaptation for an at-risk community: adaptation plan. 14

²⁹ Alaska Division of Environmental Health Drinking Water Program (2019). Source Water Assessment Summaries.

particularly in Russia, struggle with basic access to potable water due to both infrastructural deficits and permafrost.³⁰ And in the Canadian parts of the Arctic, several recent studies attest to the unsettling rate of insecurity in water as well as in food and energy resources.³¹

The flooding of low-lying coastal freshwater systems with seawater is a recognized threat globally³² and for Arctic community well-being.³³ The risks of cross-contamination of seawater and freshwater, during storm surges or following years of erosion, increase when considering oceanic and atmospheric contaminant transport.³⁴ Any form of water contamination poses serious threats not only to drinking water but also to food security and energy resources, especially for Arctic Indigenous communities, as polluted water sources can degrade soil quality, impact fish

populations, and compromise the infrastructure and processes needed for energy production. Widespread reliance by Arctic communities on “natural” drinking water sources is not reflected in national regulations for water quality, nor adequately considered in national approaches to water security.³⁵

Permafrost thaw, in particular, is generating hazards for Arctic freshwater systems through the release of organic matter, industrial contaminants, and naturally-occurring heavy metals.³⁶ Domestically, government agencies dealing respectively with inland, estuarine, and marine waters will have to coordinate and widen information-sharing networks to assess safety and risks. Challenges stemming from jurisdictional and managerial bifurcations across marine-coastal-terrestrial freshwater

³⁰ Vyucheyanskaya, D.S., Noiskov, S.N., and Eremin, G.B. (2019). Problems of Water Availability and Transport in the Russian Arctic as per Analytic Results from Scientific-Practical Studies. *Health is the Basis of Human Potential: Problems and the Path to Solutions*, 14(1), 235-241.

³¹ See, *inter alia*, Ingram, S.; Bogdan, A.-M.; Shah, T.; Lu, X.; Li, M.; Sidloski, M.; Natcher, D. 2021. Unpacking the WEF Nexus Index: A Regional And Sub-regional Analysis Of Northern Canada. *Sustainability* **2021**, 13, 13338; and Madani & Natcher, cited above.

³² Lassiter, A. (2021, June 1). Rising seas, changing salt lines, and drinking water salinization. *Current Opinion in Environmental Sustainability*.

³³ Evengard, B., Berner, J., Brubaker, M., Mulvad, G., & Revich, B. (2011). Climate change and water security with a focus on the Arctic. *Global Health Action*, 4

³⁴ Berner, J., Brubaker, M., Revitch, B., Kreummel, E., Tcheripanoff, M., & Bell, J. (2016). Adaptation in Arctic circumpolar communities: Food and water security in a changing climate. *International Journal of Circumpolar Health*, 75.

³⁵ Cassivi et al. 2023.

³⁶ Miner, K. R., D'Andrilli, J., Mackelprang, R., Edwards, A., Malaska, M. J., Waldrop, M. P., & Miller, C. E., 2021. Emergent biogeochemical risks from Arctic permafrost degradation. *Nature Climate Change*, 11(10), 809-819.

systems along with fee simple property rights and limited riparian rights must be addressed to achieve socioenvironmentally just outcomes.³⁷ Other efforts both internationally and subnationally will be required to develop multi-jurisdictional, multi-system watershed management that recognizes the changing relationship between salt and freshwater systems.³⁸

Climate Interventions in Sovereign Arctic Seas

The Arctic region has become a central focus of multiple “climate intervention” initiatives, also known as geoengineering. These initiatives propose a range of technologies and materials, including the introduction of hollow silica microspheres onto the sea ice surface, the “injection” of radiation-repelling aerosols into the upper atmosphere, the pumping of vast quantities of seawater onto the sea ice surface, and the deployment of any of several marine carbon dioxide removal strategies.³⁹ Each of these interventions

constitutes significant alterations of large-scale hydrologic and cryological systems and so also their extended webs of relationships. They constitute potential health risks and sources of contamination to both human and animal communities. They rely on largely unvalidated and poorly understood science based on computer simulations that have yet to rigorously incorporate multiple sources of socioenvironmental complexity.⁴⁰ The objectivity of field studies is in many cases compromised by the economic interests involved. For example, the conceit of sea ice albedo modification through deployment of microspheres receives large amounts of venture capital despite having been invalidated by independent research.⁴¹

Critically, climate intervention proponents situate the Arctic as a *terra/aqua nullius* and dismiss Indigenous Peoples’ inherent and formalized rights as recognized in UNDRIP, asserting a “state of exception”⁴² under the extenuating circumstances of climate change. For these

³⁷ Butterfly and Richardson 2016.

³⁸ Lassiter 2021.

³⁹ Bennett et al. 2023.

⁴⁰ Sovacool, B. K. (2021). Reckless or righteous? Reviewing the sociotechnical benefits and risks of climate change geoengineering. *Energy Strategy Reviews*, 35, 100656.

⁴¹ Webster, M. A., & Warren, S. G. (2022). Regional geoengineering using tiny glass bubbles would accelerate the loss of Arctic sea ice. *Earth’s Future*, 10(10), e2022EF002815.

⁴² Lindsay, B. (2010). Climate of Exception: What Might a ‘Climate Emergency’ Mean in Law? *Federal Law Review*, 38(2), 255-281.

reasons, Arctic and other geoengineering efforts provoke an unprecedented challenge for international law, which would not only need to support mechanisms for cooperation and accountability across national borders, but also prevent unjust and inequitable distribution of costs and benefits across global populations and communities.⁴³ Arctic climate intervention proponents frame the Arctic as both a vital component of the total Earth system and a sacrifice zone for the maintenance of that system.

Recognizing the sovereign rights of Arctic Indigenous peoples over their lands and waters, such interventions must require free, prior, and informed consent even before field tests or experiments.⁴⁴ Pending the creation of international rules, institutions, or standards for the conduct of marine climate interventions, they should be controlled under the legal regime of the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.⁴⁵ Developing appropriate legal and governance

mechanisms for the assessment and regulation of such activities would help avert major risks such as the inequitable distribution of costs and benefits in ecosystem services and maladaptation to changing ocean conditions.⁴⁶ Like with the issue of coastal erosion and flooding, the reliability of legal categories and borders diminishes under the pressing social and environmental dilemmas posed by climate change. The escalation of conflict and division in the Arctic drives the hardening of such borders at a time when environmental pressures demand a more fluid understanding and cooperative posture around issues of mitigation and adaptation. In the absence of pan-Arctic cooperation and with colonial governance

... interventions must require free, prior, and informed consent even before field tests or experiments

⁴³ Smit, E. C. (2014). Geoengineering: issues of accountability in international law. *Nev. LJ*, 15, 1060.

⁴⁴ Cooper, A. FPIC and Geoengineering in the Future of Scandinavia.

⁴⁵ The 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, in short called the “*London Convention*”, is amongst the first international regulatory frameworks to protect the marine environment from human activities. This Convention, which came into force in 1975, holds the objective of promoting the effective control of all sources of marine pollution and taking all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. There are currently 87 States Parties to this Convention. See the text of the London Convention here:

<https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/LC1972.pdf>

⁴⁶ Haas et al. 2021. Future of Ocean Governance.

trends in full force, large-scale climate intervention ought to remain far down the list of international priorities.

Temperate Water Scarcity and the Prospective Demand for Arctic Freshwater

Drought already afflicts many parts of the planet,⁴⁷ and research has shown that human decision-making across modeled Shared Socioeconomic Pathways will be the primary driver of water scarcity in climate change-affected futures.⁴⁸ In the United States, major aquifers supplying water to agricultural enterprises are already depleted beyond sustainable levels⁴⁹ and nearly one sixth of US rivers are currently unable to reliably meet both human and environmental water needs.⁵⁰ Though it is not the primary or most efficient strategy for mitigating water scarcity in the continental US, both scientists and policy makers have, since Alaska Governor Walter Hickel proposed

it in the 1990s, considered Alaska's freshwater as an exportable natural resource.⁵¹

Alaska holds around 40% of the United States' total surface freshwater resources, which could be subjected to environmental economic calculation and declared sufficiently abundant for commodification and sale. Considering factors such as *over*-abundance resulting from, for example, increased precipitation, the export of water could produce both economic and socio-environmental benefits. Considering, on the other hand, the above-mentioned risks to regional potable water sources resulting from permafrost thaw, salination, and flooding, the appropriation and exportation of Alaskan water may lead to further disenfranchisement, marginalization, and deprivation regionally. Because Alaska has, since colonization, been treated as a

⁴⁷ Vicente-Serrano, S. M., Peña-Angulo, D., Beguería, S., Domínguez-Castro, F., Tomás-Burguera, M., Noguera, I., & El Kenawy, A. (2022). Global drought trends and future projections. *Philosophical Transactions of the Royal Society A*, 380(2238), 20210285.

⁴⁸ Graham, N. T., Hejazi, M. I., Chen, M., Davies, E. G., Edmonds, J. A., Kim, S. H., ... & Wise, M. A. (2020). Humans drive future water scarcity changes across all Shared Socioeconomic Pathways. *Environmental Research Letters*, 15(1), 014007.

⁴⁹ Scanlon, B. R., Faunt, C. C., Longuevergne, L., Reedy, R. C., Alley, W. M., McGuire, V. L., & McMahon, P. B. (2012). Groundwater depletion and sustainability of irrigation in the US High Plains and Central Valley. *Proceedings of the national academy of sciences*, 109(24), 9320-9325.

⁵⁰ Marston, L. T., Lamsal, G., Ancona, Z. H., Caldwell, P., Richter, B. D., Ruddell, B. L., ... & Davis, K. F. (2020). Reducing water scarcity by improving water productivity in the United States. *Environmental research letters*, 15(9), 094033.

⁵¹ <https://www.gi.alaska.edu/alaska-science-forum/alaskas-water-crop-natural-resource>

colonial resource frontier,⁵² it is essential to consider how law, territory, and sovereignty will shape future use of Alaska's freshwater.

Around the world, corporations have already privatized many sources of freshwater with disastrous consequences for local communities.⁵³ Despite the 2010 UN declaration that water is a human right, water privatization has continued largely unchallenged, and bottled water continues to serve essential humanitarian needs in conflict and environmental disaster zones. If the Arctic is already being recast as a planetary resource for climate stabilization, warranting locally-controversial interventions, then it is not farfetched to see how Arctic freshwater may be similarly appropriated. Indeed, the idea of hauling icebergs to arid regions of the planet has been around since the 1970s and is seeing renewed, if speculative interest today.⁵⁴ Any such efforts require a reckoning with already-established

international rules around salt and freshwater ecosystem health and both human and Indigenous sovereign rights,⁵⁵ but also a reevaluation of taken-for-granted norms in ocean and water governance.⁵⁶

Key Takeaways

The Arctic stands as a profound reminder of our global interdependence, and the rapid transformations it faces underscore the urgent need for a governance approach that is resilient, just, and inclusive. The Indigenous Peoples of the Arctic, who have managed and sustained their lands and waters through relational laws and a deep sense of stewardship, bring invaluable insights to this challenge. As climate change alters Arctic ice and water systems at an unprecedented rate, Indigenous knowledge systems and legal orders offer principles of sustainability, kinship, and adaptability that are essential for addressing these profound shifts.

⁵² Hanaček, K., Kröger, M., Scheidel, A., Rojas, F., & Martinez-Alier, J. (2022). On thin ice—The Arctic commodity extraction frontier and environmental conflicts. *Ecological Economics*, 191, 107247.

⁵³ Jaffee, Daniel. 2020. "Enclosing Water: Privatization, Commodification, and Access." 303-323 in Katherine Legun, Julie Keller, Michael Bell, and Michael Carolan (eds.), *The Cambridge Handbook of Environmental Sociology* (Vol. 2). Cambridge: Cambridge University Press.

⁵⁴ <https://www.whoi.edu/oceanus/feature/can-icebergs-be-towed-to-water-starved-cities/>, Condron, A. (2023). Towing icebergs to arid regions to reduce water scarcity. *Scientific Reports*, 13(1), 365.

⁵⁵ Leonard et al. 2023.

⁵⁶ Carver, R., Gavenus, E., & Manson, J. J. (2024). Stealing the seabed. *The Canadian State and the question of Rights and Title over submerged lands*. *Geoforum*, 156, 104108.

Burns, V. (2023). Analysis of ocean ontologies in three frameworks: A study of law of the sea discourse. *Environment and Planning E: Nature and Space*, 6(2), 1138-1163.

In this paper we argued that the inclusion of Indigenous legal perspectives in Arctic governance is not only an ethical necessity but also a practical one. Conventional legal frameworks like UNCLOS, while instrumental in defining territorial jurisdiction, often overlook the unique materiality and cultural significance of Arctic waters. As pressures grow for resource extraction, increased shipping, climate change mitigation, and even water privatization, an Arctic governance model that respects the rights of Indigenous communities and incorporates their participatory rights and knowledge is essential for creating equitable and effective solutions.

The principles of Indigenous Water Justice—including Free, Prior, and Informed Consent, intergenerational responsibility, and the intrinsic value of water—challenge us to reconsider the way we frame water rights and resource governance on a global scale. By

embracing these principles, international and domestic legal systems can better respond to the Arctic's evolving challenges and promote resilient, multiscale governance frameworks. As such, the integration of Indigenous legal perspectives offers a pathway to not only sustain Arctic ecosystems but to protect the human rights, cultural practices, and future livelihoods of Arctic communities.

In envisioning a cooperative future for Arctic governance, we find in Indigenous laws a profound commitment to water's unifying role. Just as water binds the Arctic's ecosystems, Indigenous knowledge and Western legal systems must come together to construct a framework that respects both ecological and cultural integrity. This holistic approach is not only vital for the Arctic but also for addressing the broader, planetary challenges posed by climate change and environmental degradation.