

Developed or Disregarded? Indigenous Vulnerabilities to Water Insecurity in Canada and Australia.

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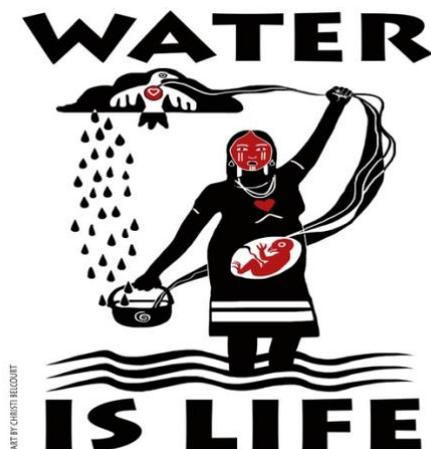


Image 1: Christi Belcourt, *Water is Life* (detail), 2016. Digital image, dimensions variable. Courtesy Onaman Collective.

Land Acknowledgement

The University of Waterloo occupies the traditional territory of the Neutral, Anishinaabeg, and the Haudenosaunee peoples and sits on the Haldimand Tract which is land granted to the Six Nations that comprises six miles on each side of the Grand River. We recognize and acknowledge that we have the privilege to be living, working, and researching as a collective of settlers on traditional, unceded, and stolen land.

“Water is the most life sustaining gift on Mother Earth and is the interconnection among all living beings. Water sustains us, flows between us, within us, and replenishes us. Water is the blood of Mother Earth and, as such, cleanses not only herself, but all living things. Water comes in many forms and all are needed for the health of Mother Earth and for our health.”

- *Assembly of First Nations, on ‘Honouring Water’*

Introduction

Access to safe, adequate, and potable water is essential to all aspects of human life. The United Nations Water Task Force (2013) defines water security as: “the capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability” (p. vi). The United Nations outlines the Sustainable Development Goals (SDGs) as a framework of interrelated targets and indicators with the goal of ‘leaving no one behind’ United Nations (UN), water is central to human development and a fundamental basic human right. The SDGs act as a call to action for countries to achieve a sustainable political, social, economic, and environmental future for all by 2030 whilst the globe navigates a warming climate (UN General Assembly, 2015). As UN member countries, both Canada and Australia have adopted the SDGs (Kindornay, 2018). However, despite receiving global accolades for SDG progress, Canada and Australia fail to be transparent about the reality of their advancements. For the purpose of this paper, SDG 6 is a central focus and evaluated in conjunction with targets 3, 10,13 as a framework to highlight intentionality's between gaps and inequalities pertaining to water security.

With similar socio-economic statuses, this paper seeks to investigate water insecurity in the settler colonial states of Canada and Australia. Indigenous populations in settler-colonial states disproportionately struggle to achieve water security in their communities, thus leading to significantly high health risks compared to the general population. Acute disparities are notably shaped by historical and ongoing processes of colonialism (Judd 2019; Knafla and Westra 2014; Wilson et al. 2021; Odulaja and Halseth 2018). Most Indigenous people in Canada and Australia reside in rural and remote areas, their communities are plagued by substandard living conditions, poor and unsupported infrastructure, high rates of poverty, lack of access to essential services, and political marginalization (Hall et al. 2020). Compounding issues of institutional intolerance, social and political marginalization, land and rights dispossession, and uneven power dynamics in water governance forcibly limit the ability of Indigenous communities in Canada and Australia to achieve water security (Knafla and Westra 2014; Wilson et al. 2021; Odulaja and Halseth 2018).

While recognizing our positionality as non-Indigenous researchers, we aim to promote transparency and accountability. Indeed, we are all graduate-level researchers with various socio-cultural backgrounds with secondary insights from numerous academic sources and some lived experience. However, despite our diversity and our intentions to amplify unheard voices, we recognize the limitations of our understanding of the multi-dimensional and complex challenges faced by Indigenous groups. Thus, this paper aims to structure insights through a decolonial lens. *Settler-colonial state(s)* refers to colonialism that threatens Indigenous populations by insisting on adopting settler values. *Colonial legacy and/or colonial mindsets* are terms used to describe the implications and outcomes that linger in the systemic structures of colonial states. The concept to *decolonize and/or decolonization* indicates efforts made by settlers to free themselves from

colonial thought processes and systems and strive to remove oppressive barriers imposed on certain social groups. *Drinking-Water Advisories (DWAs)* are used by any level of government to alert affected communities of unsafe and/or contaminated water sources, ranging from Boil Water Advisories to Do Not Consume. Groups indigenous to Australia are referred to as Aboriginal Australians, encompassing the hundreds of unique communities as well as Torres Strait Islanders. In Canada, these populations are referred to as *Indigenous peoples*. Altogether, Aboriginal Australians, Torres Strait Islanders and Indigenous people in Canada are referred collectively as Indigenous people. Thus, the perceived progress of global leaders towards advancing the SDGs disregards the harsh realities of a key demographic. In comparison to Canadian and Australian non-Indigenous populations, Indigenous populations in these countries are neglected and disproportionately vulnerable to health-related threats due to water insecurity.

Countries in Focus: Canada and Australia

Canada has an extensive land mass with low population density, a diverse climate, and geographic variability from coast to coast. Canada is well-known for its abundance of freshwater that makes the fundamental right to access safe, affordable drinking water and adequate sanitation easy for most Canadians. However, the historical legacies of settler-colonialism continue to shape the structure of natural resource access and usage that varies broadly between Indigenous and non-Indigenous populations across the country. For centuries, Indigenous peoples have nurtured a strong spiritual relationship with this landscape as a key element to not only their survival and livelihoods but also to their identity, health, and overall well-being. First Nations, Inuit, and Métis peoples make up approximately 5% of the Canadian population (OECD, 2020). The Indigenous population is comprised of hundreds of individual communities located across the country, each with their own unique culture, language, histories, beliefs, and traditional practices (Statistics Canada, 2017). Indigenous people are more likely than their non-Indigenous counterparts to live in rural and remote areas; approximately 60% of the total Indigenous population compared to 27% of the non-Indigenous population (OECD, 2020). As a settler-colonial state, Canada has a history of discriminatory policies and non-inclusive practices designed to marginalize, forcefully assimilate, and eradicate Indigenous people and their cultures (Knafla and Westra, 2010; McGregor, 2014). Historical policies such as the Indian Act (1876), treaty agreements, and the Residential School system were intentionally designed to undermine all aspects of traditional Indigenous life and force upon them a foreign system of discrimination (Knafla and Westra 2010). These policies attempt to strip them of their status, rights and land claims, limit access to necessary resources, and prevent their participation in society (McGregor, 2014; Odulaja and Halseth, 2018).

On the other hand, Australia is considered the driest inhabited country in the world (AUS Government). Despite its long island coastlines, Australia has the least amount of river water and surface run-off, and the most variable rainfall and streamflow in the world, thus heightening pressure on available resources and complicating water management, regulation, and distribution feasibility (Aboriginal and Torres Strait Islander Social Justice Commission (ATSISJC), 2009; AUS Government). Whereby the majority of Australia's population resides in and around major cities, Aboriginal Australians make up a much larger portion of rural and remote inhabitants. With remote living comes additional health challenges based on unique weather and environmental exposures of isolated areas, compounded by issues of historical and ongoing colonial systems that plague Aboriginal populations. Aboriginal Australians and Torres Strait Islanders are comprised of hundreds of unique groups Indigenous to the continent, with their own distinct set of languages, histories, cultural practices, and inseparable relationships with traditional territories

(AIHW, 2021). Aboriginal Australians (91%), Torres Strait Islanders (5%), and individuals with both heritages (4%) make up 3.3% of the total Australian population and are more widely dispersed across the country than their non-Indigenous counterparts (AIHW, 2021). Like the Canadian context, Indigenous Australians have also been subject to a long history of socio-political marginalization and land appropriation because of colonization which has led to reduced resource access and significant health disparities. Australia's colonial history is largely based on the concept of *terra nullius* and void of formal government treaties with any First Nation community, thereby denying Indigenous sovereignty and paving a complicated path for Aboriginal communities to regain their Native title and rights (Hartwig et al., 2021; Judd, 2019; Knafla and Westra, 2010).

In terms of water rights and governance, many of the legislative, regulatory and management injustices related to water are distinctly shaped by antithetical perspectives of the value, benefits, and appropriate management of water (Wilson et al., 2021). For Indigenous peoples, water is viewed as a living and spiritual entity that plays an inseparable role in culture, identity, well-being, and sovereignty, and is to be treated with the utmost respect (ATSISJC, 2009; McGregor, 2014; Wilson et al., 2021). In contrast, non-Indigenous populations use a capitalist lens, viewing water as a quantifiable commodity with significant economic and commercial value that is available for unlimited human gain. Indigenous rights and access to clean and protected water sources are not adequately reflected in neither Canadian or Australian policies which routinely prioritize privatization, commercial development and industry resource allocation over ecological preservation and basic Indigenous needs (ATSISJC, 2009; Knafla and Westra, 2014; Odulaja and Halseth, 2018). Water insecurity for Indigenous people has been perpetuated by decades of exclusion from water governance, denial of riparian rights, and poor determinants of health, and because of this colonialism is considered the root cause of disproportionate health vulnerabilities among Indigenous populations (Clifford et al., 2015; Hartwig et al., 2021; Odulaja and Halseth, 2018; Wilson et al., 2021).

Indigenous Water Access and the Sustainable Development Goals

Water access is paramount to achieving the SDGs because it ensures inclusive growth and directly impacts health. In Melbourne, Australia, there have been great strides in water efficiency. Almost 30% of homes in Melbourne have installed rainwater tanks and plans have been published to increase the use of stormwater (Kularathna et al., 2011). Their supply system boasts of low leakages and their reservoirs have a combined storage capacity of 1810 million cubic meters. Catchment is the traditional source of water supply for the city due to its lesser need for treatment whilst recycled wastewater is used for irrigation and toilet flushing (Van Leeuwen, 2017). In Canada, there exists the narrative that because the country holds a significant percentage of freshwater and there has been no major water-borne disease outbreaks since 2001, it is positioned as a water supply leader (Bakker and Cameron, 2005). Canada's drinking water management is multi-tiered because provincial governments are responsible for water distribution and water source monitoring in many regions. However, First Nations reserves fall under federal jurisdiction which impacts interjurisdictional coordination.

A different reality holds for indigenous communities, as of April 12, 2022, there are a total of 54 total long-term and 33 short-term DWAs in place in First Nations communities across Canada, ranging from water quality advisories to do not consume (Indigenous Services Canada, 2022). A study by Ratelle et al. (2022) showed Inuit people did not trust tap water because of the taste and smell, relying instead on untreated sources of water and bottled water. However, bottled

water is an expensive option as some reports showed that the price of bottled water could be up to 60% higher in remote communities compared to supermarkets in urban areas (Ferguson et al., 2016). In Australia, studies show that remote Aboriginal communities also struggle to access safe water (Hall, 2019). Specifically, Aboriginal people in the Menindee district, as in Canada, have had to rely on bottled water because the salt content in sources of fresh-water was too high. Community members expressed their low income but high monthly expenses because they had to spend an average of \$50 per month on bottled water (Hartwig et al, 2022).

Water impacts other facets of human development. There is a relationship between water and SDG 3 which aims to achieve good health and wellbeing. Water insecurity is associated with psychological traumas as seen in some Aboriginal Australian communities. Members of the community have described their relationship with water, on a spiritual level, with grief to low levels of river waters (Hartwig et al, 2022). Indigenous water access is also tied to decent work and economic growth (SDG 8) because water-related health issues affect human labor productivity and income management, further preventing progress towards achieving inclusive growth (Sakar 2015). SDG 2 aimed at ending hunger also has another link with water security as seen in the case of the Borroloola community in Australia where fishing practice had to cease due to contaminated water thus affecting food security and social welfare (Hartwig et al, 2022). Similarly with SDG 1, aimed at ending poverty, water access for many Indigenous communities in settler states requires imbalanced expenditures as they cannot afford safe bottled water and thus choose to buy cheaper alternative beverages which are high in sugar (Sakar et al, 2015). A study conducted by Hartwig et al., (2022) within Aboriginal Australian communities had some respondents in the community explicitly state that lack of water increased crimes in their territories thus hindering progress towards SDG 16 on peace, justice, and strong institutions. These interlinkages show how access to water is the bedrock of human development as well as its role in paving opportunities for growth in other SDGs.

Water Quality, Indigenous Health and the Sustainable Development Goals

Poor water quality and contaminated drinking water have direct negative impacts on the determinants of health and hygiene of its consumers. Indigenous communities in both Canada and Australia have higher risks of water source contamination compared to non-Indigenous people leading to poor health (Clifford et al. 2015; Odulaja and Halseth 2018; Wilson et al. 2021). Subsequently, SDG target 6.2, which aims to achieve adequate sanitation and hygiene for all, is not achieved by settler-colonial states. As a result, SDG targets 3.3, 3.4, and 3.9 which aim to end water-borne diseases and reduce the number of deaths from non-communicable diseases, water pollution, water quality, infrastructure and contamination cannot be achieved.

Indigenous people are more likely to die prematurely from avoidable causes than non-Indigenous people (Australian Indigenous HealthInfoNet 2022; Park 2021). In Canada, over half of community water systems pose a medium or high health risk to consumers (Indigenous Services Canada, 2021). Compared to the non-Indigenous population, First Nations homes are 90 times more likely to be without piped water, and waterborne infection rates are 26 times the national average (Morrison et al. 2015). The rural and remote location of Indigenous communities, coupled with colonial practices of environmental degradation and government prioritization of commercial resource projects exacerbates vulnerability to industrial and naturally occurring contaminants as well as a chronic lack of adequate resources and infrastructure (Clifford et al. 2015; Latchmore 2018). Numerous studies show that Indigenous people experience disproportionately high rates of chronic and infectious diseases such as cardiovascular disease,

respiratory diseases, kidney disease, cancer, skin and eye infections, gastrointestinal disorders and diarrheal diseases resulting from exposure to contaminated water and the associated consequences of poor sanitation (Bradford et al. 2016; Clifford et al. 2015; Hall et al. 2020; Human Rights Watch 2016; Rajapakse 2018). Persistent water shortages, poor water quality and sanitation infrastructure, overcrowded housing, and inadequate wastewater systems also exacerbate Indigenous vulnerability to health crises like COVID-19 (Trafazoli, 2020). As a result, public health advice to wash our hands frequently, maintain social distancing, and stay home are especially difficult for First Nations communities to follow. As of April 4, 2022, the COVID-19 fatality rate among First Nations people on reserve is 66% of the case fatality rate in the general population (Indigenous Services Canada, 2022).

For example, dangerous concentrations of lead, nickel, uranium, nitrates, cadmium, and arsenic have been identified in rural and remote First Nations and Aboriginal Australian communities (Clifford et al. 2015; Hall et al. 2020; Rajapakse 2018). This is especially prominent in Western, Northern and Tasmanian Aboriginal Australian communities that are located near mining activities and rely on poorly monitored, self-supplied drinking water. Similarly, First Nation communities in the Canadian Prairies struggle to trust their drinking water sources following detections of above average levels of iron, manganese, and contaminants like E. coli (Swampy and Black 2021). Canada and Australia, fail to prioritize the remedy of sub-standard water quality in rural and remote Indigenous communities, allowing these longstanding issues to be overlooked amidst the illusionary SDG progress of these countries. As a result, these challenges pose overwhelming health burdens on Indigenous people.

Indigenous Inequality, Water Governance and the Sustainable Development Goals

SDG target 10.3 seeks to ensure equal opportunities and equality regarding racist laws and policies, which is not extended to Indigenous communities in settler states. For example, the Neskantaga First Nation reserve has suffered under a DWA dating back to 1995, exhibiting slow governance and lack of Indigenous prioritization in policymaking (Wilson et al., 2021). Irrefutably, governance issues occur because colonial states reinforce intentional settler narratives in state legal systems, treaties, and policies.

Trans Mountain Pipeline

The mental model for governance structures in settler-colonial states equates good governance with economic gain. Justin Trudeau considers Canada a global leader, spearheading the climate action movement, however Canada's policy and decision-making say otherwise (Kraushaar-Friesen & Busch, 2020). Stewart Phillip, Grand Chief of the Union of British Columbia (BC) Indian Chiefs asserts: "We are here because we are so deeply concerned about our future generations, we are so deeply concerned about the land and the waters, but rest assured there will never ever be a Kinder Morgan Trans Mountain project" (Macleans, 2018).

Established in 1953, the Trans Mountain Pipeline (TMP) project is arguably one of the most controversial water projects in Canada. The TMP aims to transport crude and refined oil between BC and Alberta. In 2016, the Trudeau government approved the expansion of the TMP whilst disregarding the substantial risk of water contamination affecting Indigenous communities. The project poses a major health and environmental risk for Indigenous communities if oil spills occur. The Canadian government has not conducted the appropriate and necessary evaluations to calculate the impact on health for local communities, most notably the Tsleil-Waututh Nation (TWN). The TWN have never ceded control of their land to the Canadian government (Jonasson

et al., 2019); the TWN have been resisting the TMP since its genesis. Furthermore, water contamination causes food insecurity due to loss of ecological diversity in at-risk lakes for First Nations people (Jonasson et al., 2019). Curran (2019) illustrates that the settler-colonial narrative deems decision-making frameworks, such as environmental impact assessments, enough to arrive at an informed decision on policy. However, the government avoids using evaluative frameworks that appropriately articulate Indigenous beliefs and values with the intention of re-politicizing governance structures, by utilizing the three key criteria of 'free, prior and informed consent' (p. 3).

Following the expansion of the TMP, Indigenous communities expressed that they were not sufficiently engaged or consulted (Horne & Masoud, 2020). In 2018, the Supreme Court of Canada ruled that the project must cease because the actions of the BC government were deemed unconstitutional. Following this decision, the government was required to develop a framework that allocates funds to impacted Indigenous communities, as well as reroute the entirety of the project to minimize risk. This case is an egregious example of the extent to which settler-colonial governments are willing to sacrifice Indigenous needs and ecological conservation for economic gain. Currently, as of July 19th, 2021, 86% of the Trans Mountain expansion route has been approved by the Commission of the Canada Energy Regulator (Canada Energy Regulator, 2021), and Indigenous leaders have expressed that the government is continuously failing to do their due diligence in consultation (Horne & Masoud, 2020).

Murray Darling Basin

Like the TMP, the case of the Murray Darling Basin (MDB) calls for immediate water governance reform. Deemed as Australia's 'national food bowl', the basin is home to a vast biological ecosystem. With a population of approx. two million (Grafton et al., 2020), the MDB is home to about 40 self-ruling Aboriginal communities (Lynch, Adler & Howard, 2014), which comprises around 4% of the region's total population (Grafton et al., 2020). With rapidly depleting water levels, periods of drought and abnormally heavy rainfall (Lynch, Adler & Howard, 2014), the main issue with the basin pertains to the threat of water insecurity for Aboriginal communities and the surrounding ecosystem due to poor water governance. There is a dire need for a policy framework to strike a balance between Aboriginal communities that rely on the basin and corporate interests, particularly surrounding water ownership. For example, Australian water policy has allowed for corporations to build water-intensive irrigation systems that account for over 50% of surface water (Colloff & Pittock, 2022). Thus, the freedom of large corporations to buy copious amounts of the water supply for economic gain perpetuates water inequality for Aboriginal Australians. For instance, industrial agribusiness chains such as almond manufacturing control a sizable portion of water rights. Due to this economic gain, the focus on Aboriginal water rights is not prioritized (Alexandra & Richards, 2021). The Australian government allows corporations to use irrigation methods if they abide by water policy and pay the price; this, however, is not a barrier for multi-million-dollar corporations with high purchasing power. Experts suggest Indigenous people to be placed at the centre of water governance, as opposed to being considered a 'special interest group' under Australian water law (Grafton et al., 2020). Much like the TMP case, policy should reflect ontological well-being, health, and connection to water experienced by Aboriginal people in the basin.

Indigenous Community Resilience

Resilience in this section will be discussed in two directions, which is how these communities have adapted to and 'coped' with water insecurity, as well as how they have

continued to resist oppression and advocate for their water rights. In this section too, using the systems thinking approach to discuss resilience, there will be an analysis of social responses from Indigenous communities in response to policy decisions and the level of resistance these communities are able to display in the face of adversity. Whilst generally, community resilience is viewed as a positive concept, the purpose of this paper does not seek to glamourize the difficult and devastating coping measures Indigenous people continue to endure.

Community resilience can be seen as the proactive or positive expression of community engagement with hazard reduction. It is the sustained ability of a community to use available resources to respond to, withstand, and recover from adverse situations (Patel et al, 2017). Sarkar et al. (2015) conducted a study on water insecurity in Indigenous communities in Canada. The findings showed that the Black Tickle-Domino members had problems accessing water due to high transportation costs associated with reaching the drinking water unit located about 2km from the furthest house in the community. Transportation in this remote community was easiest in the winter because community members could use komatiks (Inuit sleds) or snow mobiles to retrieve water. Additionally, some households did not own snowmobiles and for vulnerable people within the community, the journey was difficult by foot. This situation resulted in many households choosing to share their snowmobiles and sleds. This culturally reinforced sharing practice is a way of giving some protection to the vulnerable people within the community. This is an element of community resilience that is called 'community networks and relationships,' which is defined as the act of members forming a cohesive whole through linkages and relationships enabling them to face adversity because of said relationships (Patel et al, 2017). The people of Black Tickle-Domino also focused on water conservation during seasons when they knew transportation would be an issue. For example, they recycled water used for bathing to wash out plates and although they were trying their best to cope and show resilience amid water issues, they still face health adversities (Sarkar et al, 2015).

The TMP is an example of Indigenous communities resisting government project proposals because of potentially detrimental effects oil spills (Hoberg, 2016). This element of resilience is termed 'Local Knowledge', where the short-term and long-term effects of a disaster are known by a community and how it shapes their knowledge of existing vulnerabilities (Patel et al, 2017). The Indigenous groups have stated that they were not integrated in the decision-making process for the pipelines, and they have challenged these developments in court. They have taken a stance to protect their territories and their sources of drinking water through these continued resistance and protest (Jonasson et al, 2019).

Hartwig et al. (2021) state that the pursuit of water rights by Aboriginal people in Australia has resulted in alliances within the Murray-Lower Darling Rivers Indigenous Nations and the Northern Basin Aboriginal Nations. These alliances have resulted in coordination and advocacy that have produced Aboriginal-First Nations led policies, programs and initiatives. One of them being 'cultural flows,' which emphasizes Aboriginal control and self-determination in water management processes and decision-making. However, this concept still struggles to be adopted nationally because of historic colonial relations and the failure to recognize Indigenous peoples' rights to control water resources. Their alliances have resulted in some state recognition as well as external coalitions to support their right to water governance (Hartwig et al., 2021). This principle of community resilience is 'Managing Connectivity' where human social networks can improve governance opportunities (Dakos et al, 2015).

Indigenous communities continue to show some elements of resilience and have found ways to cope through these adversities, however this is not sustainable. Their system is not equipped to withstand adversities without significant detrimental effects, and it is because of these inequalities discussed in previous sections that they are merely coping.

Discussion and Conclusion

The intention of this paper is to draw attention to disparities and vulnerabilities among Indigenous peoples and communities in settler-colonial states. It serves to highlight systemic inequalities related to water and overall community well-being, despite physically residing in developed countries. Canada and Australia are perceived as global frontrunners for achieving SDG progress. However, the reality of conditions plaguing their Indigenous populations is overlooked and highly representative of the ongoing effects of colonialism. The findings of this paper show that indigenous communi-ties disproportionately struggle to access safe drinking water and are excluded from dominant structures of water governance. Forcibly marginalized from society, these populations significantly lack access to the infrastructure and resources necessary to live healthy lives and participate fully in society.

Most water programs and policies in Indigenous communities are designed and implemented by non-Indigenous people to suit their own needs without adequate consid-eration of the unique needs of Indigenous communities (Latchmore et al., 2018). Reflecting on our positionality as settlers, it would be beyond our purview to provide recommendations because we cannot fully capture the Indigenous experience. Rather, we issue a Call to Action to decision-making bodies of colonial states including govern-ments, and private sector entities, specifically large corporations.

This Call to Action includes an urgent need for culturally appropriate and significant Indigenous inclusion in decision-making processes and consultation at every level of water projects where they are both directly and indirectly affected. Integrated community approaches to consultation must be central to decision making, rather than presented as a passive afterthought. Whereas SDG progress is measured by statistical data, that of Indigenous populations in settler-colonial states is incomplete; therefore, representing significant gaps in transparency and overall data democracy that must be remedied. We call governments to build better relationships with Indigenous peoples to deconstruct the generations of government distrust and remedy the longstanding issues of marginalization. Above all, the systemic structure of settler-colonial states must work to decolonize their governance practices, otherwise verifiable progress cannot be made.

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