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ORIGINAL ARTICLE

Overcoming barriers to Indigenous-local water sharing agreements in Canada

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Abstract

Although water sharing agreements have emerged as an important tool for improving First Nations water security in Canada, some communities are reluctant to sign them. In this article, we review the concerns raised by First Nations leaders and examine the extent to which existing water sharing agreements include provisions that might mitigate their concerns. To do so, we analyze the contents of 40 water agreements between First Nations and local communities in Canada and find that while many agreements do include provisions that seem to mitigate First Nations concerns, some concerns are left unaddressed or are inadequately addressed.

Sommaire

Bien que des accords sur le partage des ressources en eau soient devenus un outil important pour améliorer la sécurité de l'eau des Premières Nations au Canada, certaines collectivités sont réticentes à les signer. Dans cet article, nous passons en revue les préoccupations soulevées par les dirigeants des Premières Nations et étudions dans quelle mesure les accords sur le partage des ressources en eau existants sont dotés de clauses susceptibles d'atténuer leurs inquiétudes. Pour ce faire, nous analysons les contenus de 40 accords sur l'eau entre les Premières Nations et des communautés locales au Canada. Bien que de nombreuses ententes comprennent des clauses susceptibles d'atténuer les préoccupations des Premières Nations, nous constatons que certaines craintes ne sont pas abordées ou ne sont pas traitées de manière adéquate.

INTRODUCTION

The provision of safe drinking water remains an ongoing problem for some First Nations communities in Canada. One effective yet underutilized solution is water sharing agreements, which involve connecting First Nations communities to neighbouring municipal or regional systems and establishing fee structures and service conditions for the provision of water and wastewater treatment. In their study of First Nations communities in Ontario, Lipka and Deaton (2015) found that the presence of a water sharing agreement reduced the likelihood of a boil water advisory by 11 percentage points relative to those communities without such an agreement. An additional benefit of these agreements is that they can sometimes help alleviate issues of scale, allowing smaller communities to pool their resources or to benefit from the resources of those communities that already own and maintain infrastructure that are costly to build, maintain and manage.[1] In the case of First Nations water, while the federal government does provide one-time funding to build and replace water treatment facilities, it does not provide sufficient long-term, targeted funding to help First Nations in capital planning and maintenance, leading some communities down a seemingly endless path of construction, rapid deterioration, and renewal (Alcantara et al., 2020). Water sharing agreements may be one potential solution for ending this cycle of water insecurity.

Despite these advantages, some First Nations communities have been reluctant to negotiate water sharing agreements with neighbouring municipal and regional bodies (Deaton & Lipka, 2021; 2).[2] Skeptics of these agreements cite concerns relating to the capacity of some First Nations communities to implement and monitor these agreements successfully (Heckathorn & Maser, 1987; Lubell et al., 2002). They point to significant legal, institutional and cultural differences between First Nations communities and municipalities in terms of how water is managed, regarded and valued (Longboat, 2013; McGregor, 2014) and they worry that signing a water sharing agreement may undermine efforts at Indigenous nation-building (Alcantara et al., 2020). Instead, many community leaders are focused on other, more pressing issues related to First Nations water security, such as the lack of adequate infrastructure, effective water regulations, and sustainable funding from the federal government to properly support communities to maintain, protect, and cultivate their political, social-cultural, and economic relationships with water (Arsenault et al., 2018; Longboat, 2013; McGregor, 2008).

In this article, we explore the extent to which water sharing agreements can be designed to mitigate some of the concerns raised by First Nations leaders. To do so, we engage in a content analysis of 40 water sharing agreements between Indigenous and municipal/regional bodies in Canada. These agreements were obtained by contacting two other research teams that had independently collected them for their own projects.[3] Using these agreements, we built a coding scheme based on the literature to assess whether existing agreements contained provisions that might assuage the concerns of skeptics and thus encourage Indigenous and local communities to explore them for increasing their community's water security. Our findings suggest that existing water agreements are only somewhat successful in terms of including provisions that address the concerns of First Nations leaders.

BARRIERS TO COOPERATION

Community leaders tend to mention three sets of reasons for why they and their communities are reluctant to explore, negotiate and sign water sharing agreements. They worry about not having sufficient financial resources to properly implement agreements (Black & McBean,

2017b; Landon, 2020). They are concerned that water sharing agreements commodify water in a way that is fundamentally inconsistent with community views about the nature and role of water (Collins et al., 2017). Finally, leaders worry that water sharing agreements undermine and threaten the goals of Indigenous nation-building and recognition of sovereignty (Hmood, 2019; Holmes, 2016; Landon, 2020; Morton, 2016). We explore each of these reasons and the ways agreements might be structured to address them in further detail below.

Financial capacity

Research has found that the ability of First Nations communities to successfully implement and maintain water sharing agreements is contingent on having access to adequate financial resources (Hrudey, 2013; Willsie et al., 2009). A band council that signs such an agreement must have sufficient resources to pay the municipality or local water authority for all water supplied to the community. It must also be able to pay for the costs of physically connecting the community's water system to the municipal or regional water system. It is also responsible for any required repairs and general maintenance of the water infrastructure within its borders, which may include repairs to water lines, water meters and pumping stations, decommissioning older well systems, and various upgrades to meet municipal capacities for water provision and treatment.

First Nations communities have historically been underfunded by the federal government (Alcantara et al., 2020; Black & McBean, 2017a; 2017b; White et al., 2012), which has made it challenging for many of them to properly maintain critical infrastructure related to water (Black & McBean, 2017a; 253; White et al., 2012; 16). For example, from 2003-2004, First Nations received $7,200 per capita in federal funding, which was about half of what non-First Nations people received (Gerson, 2013). This money is supposed to cover all programs and services under the jurisdiction of the band council, including water system maintenance and upgrades. Yet the 2008 cost of operating and maintaining water and wastewater infrastructure ranged from $750 to $1250 per household per year (Office of the Parliamentary Budget Officer, 2017; 27), which represents 10%-17% of the federal funding received by band councils. Some First Nations have overcome these challenges and enjoy significant revenue-generating capacities (Williscraft, 2020); however, this is not the case for many communities, who continue to face considerable economic constraints.

These numbers are consistent with other research which has found that federal funding has long been insufficient for the long-term maintenance of First Nations water systems (Alcantara et al., 2020; 161; Auditor General of Canada, 2011). As a result, some First Nations are wary of signing water sharing agreements given that a municipality or water authority could cut off their water supply or charge them extra fees if they are unable to make payments on time. Will Landon, a member of Rat Portage First Nation, expresses these concerns in the context of a proposed water sharing agreement between Wauzhushk Onigum Nation (W.O.N.) and the city of Kenora, in Ontario. “A new federal government may vote to cancel payments or change the funding and [the W.O.N.] may not have the capacity to pay for it [them]selves, resulting in a new local crisis that leaves W.O.N. worse off than where it started” (Landon, 2020). The precariousness and limited funding that the federal government provides to band councils means that these communities may lack the capacity to fulfill their contractual obligations over the duration of a water sharing agreement.

While water sharing agreements cannot solve the fundamental problem of how band councils are funded, they can include provisions that mitigate some financial concerns, such as through bulk fee structures, negotiated rate increases, and making agreements contingent on other levels of government agreeing to subsidize or pay for the community's initial capital costs. In terms of the first provision, bulk fee structures involve the water provider billing the band council for all water services provided to the entire community. Water consumption is measured by one meter installed at the connection point between the municipal and First Nations water systems, or at a few locations around the community, and billing is determined by one of two ways: either for a pre-determined amount per billing period, or by having the municipality's water rate multiplied by the total volume of water consumed. In British Columbia, for example, one Band agreed to pay $2,057 per month for water before the installation of the water meter; after the meter's installation, the Band agreed to pay an amount per month equal to the volume of water consumed multiplied by the rate set by the city's bylaws. Other communities might choose different mechanisms for setting the water rate, depending on their financial situation. For both billing options, there is sometimes a maximum volume that the community can consume for the set price paid per period, with extra fees if the amount of water utilized exceeds that maximum. An alternative to having a water meter is for the First Nation to pay the municipality a set amount per user, per billing period, multiplied by the number of users.

This bulk billing model is different from individual metering, which involves billing each household based on its own discrete metered consumption. Depending on the agreement, it may be up to each household to pay for water provision themselves, or the band council may cover the costs incurred by members. A defining characteristic of an individual fee structure is the presence of a water meter at each individual household, as opposed to one or a few for the entire community. The municipality would bill each individual household an amount equal to the metered consumption per billing period multiplied by the agreed-upon water rate. Individual billing requires installing new infrastructure (e.g., water meters) to monitor and record individual water use, which many First Nations communities currently lack (Alcantara et al., 2020; 161). The federal government has full discretion over the amount of funding provided to First Nations and how it must be used (Government of Canada, 2017; 11). Currently, the federal government does not provide specific funding for water meters and so band councils must pay for installation out of their general revenues. In communities where unemployment and poverty levels are high, individual metering may also impose a significant financial burden on individual households who may not be able to afford paying for water.[4] A bulk fee structure, on the other hand, can help alleviate some of these issues because payments can be fixed and there are less meters that need to be purchased, installed, and maintained. Moreover, members do not have to worry about the effect of their water consumption levels on their ability to spend on other necessities.

Another potential way that water agreements can be written to help mitigate concerns about financial capacity is to include a provision that allows band councils to negotiate future rate increases, rather than leaving those increases in the hands of the water provider. If rates are at the sole discretion of the municipality, band councils could find themselves in a situation where they are contractually obligated to increase their payments for water provision above a level that they can afford, which could result in defaults on payment and the cutting off of the water supply to the community. Being able to negotiate future rate increases would ensure that First Nations communities have continued and economically sustainable access to safe drinking water.

Finally, given that initial capital costs for these agreements may be high, and that acquiring stable federal funding and raising own source revenues are more difficult for many First Nations governments (Alcantara et al., 2020; 161; Black and McBean 2017b; 720; Collins et al., 2017; 15; White et al., 2012; 12), agreements can be written so that they are contingent upon receiving federal or provincial funding for initial capital costs, with no obligations or penalties for either signatory should that funding not be provided. Making agreements contingent in this way would be one way to help alleviate the financial capacity concerns of First Nations leaders.

Cultural recognition and protection

Another major concern raised by skeptics of water sharing agreements is rooted in a fundamental difference in how Indigenous and non-Indigenous communities understand and use water (Alcantara et al., 2020; Longboat, 2013; McGregor, 2014). The non-Indigenous conception of water is that it is "a resource, a commodity to be bought and sold" (McGregor, 2014; 496) and that its intrinsic value is based on its ability to address human, physical needs (Chiblow, 2019; 10). Although water may be valued as more than a commodity, an inherent component of colonial law is that it can be owned, and that its ownership can be traded in markets for economic gain; water is treated no different than any other physical resource, such as food, minerals and other natural resources, in that its commodification is necessary so it can be properly used and managed to benefit all (Alcantara et al., 2020; 168; Blackstock, 2001; 11; Chiblow, 2019; 5; Wilson & Inkster, 2018; 518).

Indigenous traditional knowledge, on the other hand, views water differently, with some variation across communities (Latchmore et al., 2018; McGregor, 2014; 494). Many Indigenous communities see water as something much more than a commodity; they see their relationship to water as spiritual and imbued with responsibilities towards its protection and conservation (Alcantara et al., 2020; 168; Arsenault et al., 2018; 2; McGregor, 2008; 27; McGregor, 2014; 501; Wilson & Inkster, 2018; 519). Rather than water being property owned by humans, Indigenous knowledge recognizes the rights of water itself and emphasizes its equality to that of people (Wilson & Inkster, 2018; 531). Traditional governance emphasizes the cultural relationship that Indigenous peoples have with nature and takes a holistic, collaborative approach in interacting with the environment that focuses on reciprocity and the maintenance of respectful relationships between Indigenous peoples and their environments (Arsenault et al., 2018; 8; Aseron et al., 2015; 334; Black & McBean, 2017c; 58; Perez & Longboat, 2019; 192). Some elders teach that "our bodies are made up of water; therefore, there is no separation between the water and human beings... we are the water, and the water is us; if we respect the water, we are respecting ourselves" (LaBoucane-Benson et al., 2012; 7). Further, Indigenous knowledge emphasizes the significance of water in the creation of life itself (Arsenault et al., 2018; 7) and "the element from which all else came: it is the primary substance within the interconnected web of life; it is the centre of the web, rather than being just one component" (Blackstock, 2001; 4). Water, then, is not a resource over which property rights are exercised, but instead a spiritual consciousness and sacred gift at the heart of the interconnectedness of all life to which Indigenous peoples have a responsibility to protect in a sustainable way (Arsenault et al., 2018; 2; Longboat, 2013; 9; Perez & Longboat, 2019; 194; Wilson & Mutter, Inkster, et al., 2018; 294).

Given these fundamental differences in how water is viewed, it is no wonder that some First Nations communities are reluctant to sign water sharing agreements with neighbouring municipalities and regional water authorities, as there is an inherent conflict between the

prevailing view of water as a resource and the Indigenous view of water as living entity with an important connection to communities (Walkem, 2007; 31; Yates et al., 2017; 803). The current system of water governance is dominated by Eurocentric understandings of the environment and does not take Indigenous traditional knowledge into account (Arsenault et al., 2018; 6; Black & McBean, 2017c; 57; Day et al., 2020; 12); some Indigenous communities worry that connecting their water systems to non-Indigenous systems will result in non-Indigenous understandings of water taking precedence over Indigenous ways of knowing and thus limit their ability to maintain their spiritual relationship with and responsibilities to water (Black & McBean, 2017c; 57; Wilson & Mutter, Inkster, et al., 2018; 290; Yates et al., 2017; 802-803). By prioritizing a colonial conception of water as a resource that can be owned, managed, and exploited, current water governance frameworks contribute to the marginalization and exclusion of Indigenous voices and fail to ensure the security of water systems in First Nations communities (Day et al., 2020; 12-13). Water sharing agreements can address these issues, at least partially, by including provisions that recognize and empower Indigenous views of water (Hoole, 2016) and by facilitating the ability of communities to incorporate Indigenous knowledge when they make water governance decisions (Water Policy and Governance Group, 2010; 11; Anderson et al., 2013; 17; McGregor, 2012; 12).

Sovereignty

The United Nations Declaration on the Rights of Indigenous Peoples defines Indigenous self-determination as the ability of Indigenous communities to "freely determine their political status and freely pursue their economic, social, and cultural development... [and] have the right to autonomy or self-government in matters relating to their internal and local affairs, as well as ways and means for financing their autonomous functions" (UN General Assembly, 2007; 8). Within the context of this article, self-determination and sovereignty both refer to the recognition and respect of the rights of Indigenous peoples, which forms the core of Indigenous nation-building (McGregor, 2014; 500). Canada's history of colonialism has resulted in considerable challenges for First Nations pursuing these goals and so many see the recognition of Indigenous sovereignty as crucial to reconciliation efforts with the settler State.

Given this context, some communities believe that water sharing agreements are a threat to Indigenous nation-building. By allowing municipalities or local water authorities to provide them with water, First Nations would be giving up control over their water systems and making them dependent on other governments for their drinking water supply.[5] For instance, in response to a proposed water agreement between Wauzhushk Onigum First Nation (W.O.N.) and the city of Kenora, W.O.N. chief Chris Skead argued that the agreement would put "[his] community in a disadvantage, where the city would have a lot of power over Wauzhushk Onigum" (Hmood, 2019). Norman Jaehrling, the community consultant to the W.O.N., confirmed that the agreement could result in the nation being "entirely dependent on the city for its drinking water supply" (Hmood, 2019). Will Landon shared these concerns, arguing that "the cost to [their] sovereignty and environment [is] too great a price to pay to simply get a drink of water from the tap" (Landon, 2020). This dependency on an external body for water is not what fully sovereign nations do. Instead, they build and secure their own water supplies and water systems. As White et al. (2012: 18) argue, the aim of any Indigenous water governance system should be to ensure the best water quality, while "moving toward

independent, Aboriginal control, integrated into wider territorial protection... [C]onsultation leading to incorporation of best ideas and, eventually self-sufficiency, is the end goal".[6]

Some leaders worry that integrating First Nations water systems into municipal or regional ones reproduces the "top-down" colonialist approaches that communities have been subject to for decades (Black & McBean, 2017a; 252). Many communities are apprehensive about entering into agreements with municipalities because of a longstanding and deep distrust of provincial governments, who are ultimately responsible for municipal and regional bodies in Canada (Water Policy and Governance Group, 2010; 9). Instead, some Indigenous leaders believe that their communities should build and run their own water systems, as other governments do throughout the world. Doing so reinforces their self-governing status and allows them to fully incorporate Indigenous traditional knowledge into their water governance structures (McGregor, 2014; 498).

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How might water sharing agreements address these concerns about sovereignty and nation-building? Agreements might be written so as to recognize Indigenous nationhood and treaty rights to self-government and self-determination, prevent the municipality or local water authority from being able to unilaterally cut off the water supply, guarantee that the First Nations community has full and free usage of the water that comes into their water system, and include mechanisms for the joint governance of the water system. In terms of the first provision, agreements might include clauses that explicitly recognize Indigenous nationhood and sovereignty over their lands, resources, and community. It would acknowledge that First Nations are not clients of the municipality, nor are they merely stakeholders in the process, but rather are sovereign entities, with an inherent right to self-government and self-determination (Black & McBean, 2017a; 255; Black and McBean 2017b; 711; Von der Porten & de Loë, 2013; 154). A workshop bringing together First Nations members and water management organization representatives concluded that "decision making and negotiation must begin with respect for the fact First Nations are indeed nations... explicit recognition that nationhood and sovereignty exist must be present in all governance processes" (Water Policy and Governance Group, 2010; 10).

Another possible way of addressing concerns about the effect of water sharing agreements on Indigenous sovereignty is to ensure that the municipality or local water authority cannot unilaterally cut off the water supply to the community, which it usually can for reasons related to non-payment, to gain new "access to natural resources within the area" (Landon, 2020), or for some other reason. For instance, the Semiahmoo First Nation had been involved in an informal agreement for the provision of water services with the City of White Rock in British Columbia since 1970. In August of 2016, the First Nation was given an 18-month notice, without any explanation, that the city was planning to unilaterally shut off the community's water supply (Holmes, 2016; Morton, 2016). Including provisions that prevent this kind of scenario, or which call for negotiations or mediation, or at least set out very specific parameters under which water can legally be cut off, could help alleviate some concerns related to water sharing agreements and Indigenous nation-building.

A further strategy for addressing Indigenous concerns about sovereignty would be for water sharing agreements to specifically allow for the free usage of water. Free usage refers to First Nations having the freedom to choose how they use the water they are provided by the municipality. For example, water could be used for domestic purposes by individual households, such as for drinking or

cleaning, or for commercial, agricultural, or industrial purposes. Water can also be sold or transported to other entities unconnected to the reserve. Provisions in agreements that restrict a community's free usage of water can be seen as an unacceptable infringement on a First Nations sovereign right to their land, which include the right to control how they use their resources. For example, a clause that states that the water provided can only be used for domestic purposes effectively gives the municipality a voice in the governance of the community, allowing it to dictate what members can and cannot do with their water. If some members were to use water in a non-domestic manner, they would risk the municipality unilaterally cutting off supply to the entire community. As such, provisions in agreements that restrict free usage could be viewed as a significant threat to Indigenous sovereignty.

Finally, First Nations leaders might negotiate agreements that allow the signatories to jointly draft, implement, and execute bylaws and regulations that affect water use and services in both communities. Black and McBean (2017a) interviewed Indigenous and non-Indigenous experts across Canada on the problem of Indigenous water insecurity and found that Indigenous participation in the development of water strategies was imperative to successfully address water issues. They concluded that "Indigenous communities should be part of the discussion and given a seat at the table in the drafting of legislation that directly affects their communities. If legislation is going to be successful, it requires full participation of Indigenous communities, and, more important, Indigenous leadership and presence" (Black & McBean, 2017a; 250-252). A good example of full participation is the collaborative effort between the Assembly of First Nations (AFN) and the Canadian government in co-developing new water legislation to address concerns with the 2013 *Safe Drinking Water for First Nations Act* (Auditor General of Canada, 2021; 17).

In the context of water sharing agreements, full participation could mean provisions that require the creation or use of joint governance structures and processes for issues such as negotiating future water and wastewater rates, resolving overdue accounts, reviewing proposed developments, providing insurance, and negotiating proposed expansions to the water system. These kinds of provisions can be powerful tools for enhancing Indigenous nation-building by ensuring that the water relationship is an equal partnership between the signatories. On the other hand, provisions that only guarantee an opportunity to provide feedback are not sufficient for protecting Indigenous nation-building, which some describe as nothing more than a "box ticking exercise" (Black & McBean, 2017b; 716). Instead, the key to creating effective joint governance provisions is to ensure that the negotiation of clauses is co-produced by the First Nation and municipality (Alcantara & Nelles, 2014).

DATA AND METHODOLOGY

To examine the extent to which existing water sharing agreements contain provisions that address and mitigate the concerns raised by skeptics, we analyzed 40 First Nations-municipal agreements obtained from two different research teams: Brady Deaton and Sheri Longboat at the University of Guelph, who are studying water sharing agreements in Ontario, and Jen Nelles and Christopher Alcantara, who collected agreements for their 2016 book (Alcantara & Nelles, 2016). These agreements, signed between 1964 and 2013, were found in most provinces and territories in Canada, with the majority located in British Columbia and Ontario (see Table 1). The mean population size was 551 for the First Nations signatories and 40270 for the municipal signatories, based on 2016 census data. The agreements average 17 pages in length but varied from 2 to 82 pages, with extensive appendices. Many of them have the same headings and sections, such as definitions, term and termination, terms of payment and default,

TABLE 1 Indigenous-local agreements by region and decade

Categories	Number of agreements	% of Total agreements
By Province or Territory		
British Columbia	17	42.5%
Ontario	10	25.0%
New Brunswick	7	17.5%
Nova Scotia	1	2.5%
Saskatchewan	2	5.0%
Quebec	1	2.5%
Northwest Territories	1	2.5%
Yukon	1	2.5%
By Time Period		
Prior to 1990	7	17.5%
1990s	4	10.0%
2000s	14	35.0%
2010s	15	37.5%

services and responsibilities, dispute mechanisms, indemnity, rights and duties, and extensions. Unfortunately, due to confidentiality concerns, we are unable to directly quote from or even name the agreements, and so the following analysis is constrained to providing high-level summaries of the agreements. As a starting point, Table 1 summarizes the distribution of agreements by province/territory and decade.

To analyze these agreements in more depth, we draw upon a methodology used by others who have analyzed the contents of similar intergovernmental agreements at this scale (Feiock, 2007; Nelles, 2012; Nelles & Alcantara, 2014). Drawing upon the existing literature reviewed above, we developed a coding scheme that two of the authors of this article used to code the agreements in terms of whether they contained provisions addressing three broad categories: *financial capacity, cultural recognition,* and *sovereignty.* These authors then read and coded the agreements independently, with an intercoder reliability score of 83%, before meeting afterwards to reconcile the remaining 17%. In terms of the actual coding scheme, Figure 1 summarizes the questions that were developed to tap into whether the agreements contained clauses related to the three categories of Indigenous concerns described above. An agreement was given a score of 1 if it contained a relevant provision and a 0 if it did not. This method is consistent with Lyons (2014) and Spicer (2017), who used a similar framework in their studies of public sector partnerships.

RESULTS

Table 2 summarizes our findings. Overall, the results suggest that existing water sharing agreements include provisions that address at least some of the concerns of Indigenous leaders, especially with respect to financial capacity and Indigenous sovereignty. Notably absent,

Agreement Assessment Criteria

A. *Financial Capacity*
1. Does the agreement include bulk water fee structures that better align with Indigenous economies?
2. Does the agreement include provisions for the negotiation of any future rate increases?
3. Does the agreement include funding provisions for initial capital costs associated with the implementation of the agreement?
4. Does the agreement include other factors which impact the capacity of First Nations to implement the agreement?

B. *Cultural Protection*
1. Does the agreement include wording which recognizes the spiritual relationship of First Nations to water as something more than a commodity?

C. *Sovereignty*
1. Does the agreement include provisions which recognize Indigenous nationhood, treaties, rights, and other forms of Indigenous sovereignty?
2. Can the municipality, for any reason outside routine maintenance and repair, unilaterally cut off the supply of water to the First Nation?
3. Does the agreement allow for the free usage of water, for any purpose, by the First Nation?
4. Does the agreement include mechanisms of joint governance of the agreement?
5. Does the agreement include other factors which impact the sovereignty of the First Nation?

FIGURE 1 Agreement assessment criteria

however, are clauses that recognize Indigenous conceptions of water, with only 5% of the agreements containing clauses that address this issue.

Within the three categories, there are some interesting trends. Ninety percent of the agreements contained a bulk fee structure, which aligns well with Indigenous economies that are oriented towards community cost sharing or are worried about having sufficient financial capacity to implement a water sharing agreement. These fee structures appeared in two forms in the studied agreements. The first is a fixed rate bulk fee structure in which the fee is negotiated and set in the agreement itself. For example, a 2006 agreement from Ontario included a fixed rate of $1.46 per cubic meter of water supplied to the partnering Indigenous community. The second is where the bulk fee structure is tied to municipal rates, which we found in one agreement from British Columbia.

Less common were clauses that allowed for the negotiation of future water rates (25%) and capital costs (32.5%). For example, an agreement from British Columbia committed the signatories to cooperate and harmonize their approaches to the overall development and expansion of the region, which included a commitment to cost share for the expansion of the regional water supply and distribution system. This agreement also stipulated that all costs related to future rate increases or capital expenditures were to be negotiated by the two signatories.

A different approach to these issues is to establish a joint liaison board to oversee and consider all rate increases and capital costs, something negotiated by some communities in Ontario. Indigenous input with respect to rate increases and capital costs are institutionalized in a joint decision-making body, which ensures that water-related costs are reflective of the

TABLE 2 Agreements by category

Categories	Number of agreements	% of Total agreements
A. Financial Capacity		
1. Bulk Fees	36	90.0%
2. Rate Negotiation	10	25.0%
3. Capital Costs	13	32.5%
B. Cultural Protection		
1. Spiritual Relationship	2	5.0%
C. Sovereignty		
1. Recognize Indigenous Rights	19	47.5%
2. Unilaterally Cut-off Water	19	47.5%
3. Free Usage of Water	28	70.0%
4. Joint Governance	6	15.0%

community's financial capacity to bear them. Regarding initial capital costs specifically, we found some agreements addressed financial capacity concerns through the direct or indirect involvement of other levels of government. For example, some agreements signed in Nova Scotia and New Brunswick involved the Department of Indigenous Affairs and Northern Development[7] as an additional signatory, while another agreement from Ontario had provisions that made the agreement conditional on the First Nation acquiring funding, likely from other orders of government. These examples illustrate how agreements have been designed to engage with additional government partners to ease financial capacity concerns.

With respect to sovereignty, a little less than half of the agreements had clauses that recognized Indigenous rights and treaties. Agreements in British Columbia and Ontario, for instance, explicitly recognized historic land allocations and treaty territories by name and date. In contrast, nearly half of the agreements empowered the municipality to unilaterally shut off water services to the Indigenous community. In many agreements with these provisions, termination of service occurs if the Indigenous partner defaults on payments. For example, one agreement from Ontario states that the water supply will be shut off if payments are two quarters or more in arrears and that the municipality may terminate the agreement in its entirety, without negotiation or mediation, after 6 months of default. Similar wording was found in another agreement from British Columbia, which stated that unaddressed defaults not rectified within a period set by the municipality may result in the city suspending all water services. If the suspension continues for more than 6 months, then the city can unilaterally terminate the agreement. By not including measures for negotiation or mediation, provisions such as these reinforce a service provider-client power dynamic and potentially undermine Indigenous community efforts regarding nation-building and self-determination.

In terms of usage rights, 70% of the agreements allowed for the free usage of water by the Indigenous signatory whereas the remainder of the agreements placed restrictions on who could use the water and for what purposes. One agreement in British Columbia defined water usage as for domestic use only and explicitly called for the cessation of all non-domestic uses. A similar clause appears in an Ontario agreement which limited usage to "Authorized Users" and

makes the supply of water to non-authorized users subject to the sole discretion of the city.[8] Provisions that limit the free usage of water are infringements on First Nations sovereign rights to their land and replicate top-down paternalistic approaches, hinder Indigenous nation-building and contribute to wariness towards forming water service partnerships with neighbouring municipalities.

In regard to joint governance as a means of respecting Indigenous sovereignty, only 15% of agreements included provisions addressing this issue. As noted previously, one agreement from Ontario established a joint liaison board to oversee the hiring of contractors, rate increases, expansions of service, and to address concerns and complaints from either party and their residents. Other agreements had more limited forms of joint decision making targeting specific aspects of the agreement. For example, a different agreement from Ontario only provided for joint governance during the initial construction phase, while another agreement from British Columbia included joint governance for all future infrastructure and planning but not the ongoing management of the agreement itself. Joint governance arrangements such as these represent a positive step towards a more partnership-type relationship, which is central to respecting Indigenous sovereignty. They also provide more opportunities for Indigenous leadership in water governance, which could introduce more economic opportunities for those living on reserve and allow for the implementation of traditional water knowledge into existing systems (McGregor, 2014; 498).

Overall, these findings suggest that concerns related to financial capacity and Indigenous sovereignty were only partially mitigated by existing agreements. Specifically, fee structures and the free use of water were the most common concerns addressed in the agreements we collected. One area of concern almost left unaddressed by Indigenous-local water service agreements was any mention of cultural protection or recognition of Indigenous conceptions of water, as only 5% of the agreements included such a clause. In one agreement in B.C., for instance, the signatories recognized the importance of the First Nation having access to water and water rights to meet its various duties and goals, including social and cultural ones. However, it is important to note that the agreements that recognized the cultural importance of water to Indigenous communities are relatively recent, which is promising with respect to improving them for the future.

One area of concern almost left unaddressed by Indigenous-local water service agreements was any mention of cultural protection or recognition of Indigenous conceptions of water, as only 5% of the agreements included such a clause.

Our analysis of the agreements also uncovered other interesting findings that were not captured by our coding scheme. With respect to financial capacity, some agreements included provisions noting Indigenous responsibility for the maintenance and repair of water system infrastructure on First Nations territory. For example, one agreement from British Columbia included wording which specifically noted that the First Nation was responsible for all maintenance and repair outside of the municipality's boundaries. Other agreements also recognized the need for ongoing maintenance and repair, such as another agreement from British Columbia, but in this example the municipality agreed to provide maintenance and repair services, with the First Nation responsible for paying all maintenance services provided on Indigenous territory. Overall, 32.5% of agreements in our sample included these kinds of

provisions, which may discourage communities whose main concerns are financial from seeking water sharing partnerships with municipalities.

Another interesting set of findings not captured by our coding scheme relates to the concerns around Indigenous sovereignty and nation-building. About 40% of agreements gave the municipality unrestricted access to First Nations territory, often without need of notice, for the maintenance, repair and inspection of the water system as well as the reading of meters. Some agreements allowed municipal employees to enter Indigenous homes and buildings, or to install barriers and fences on First Nations territory to limit access to water service equipment. One agreement from British Columbia went so far as to empower agents of the municipality, at their discretion, to have unrestricted access to the Reserve area and the right to construct barriers to prevent tampering at the cost of the Indigenous partner. An additional related finding revealed paternalistic and colonialist provisions (to varying degrees) regarding water quality. Many agreements did not allow for Indigenous sovereignty over water quality but instead set water quality to match what is provided to municipal residents. Some agreements did not set any specific quality standards for the water to be provided by the municipality to the First Nation while others explicitly stated that the municipality was not bound to any sort of standard in terms of the volume, pressure, quality or potability of the water it provided to the First Nation.

CONCLUSION

The empirical findings of this research indicate mixed results with respect to how well existing water sharing agreements address the concerns of skeptics. There are some clear areas of strength: bulk fee structures were present in the large majority of agreements, which help to address capacity differences between First Nations communities and municipalities. In response to sovereignty concerns, we found that a majority of agreements allowed for the free usage of water and almost half included provisions that recognized Indigenous nationhood, treaties, rights, and other forms of Indigenous sovereignty. However, our analysis also found major deficiencies in how well water sharing agreements addressed barriers to cooperation. The agreements examined tended to lack funding stability and were inflexible with rate negotiations, which may be an issue for First Nations communities concerned about their financial capacity. Additionally, almost half of the agreements allowed the municipality to unilaterally discontinue water services to the First Nation and only a small minority included mechanisms for joint governance.

Another major finding of our analysis is that First Nations concerns relating to cultural protection were inadequately addressed, as only two of the agreements included provisions that recognized Indigenous understandings of water. We suggest that this conceptual incongruence could be resolved through a rethinking of the relationship between municipalities and First Nations. Currently, interactions between them seem to be on a service provider-customer basis, rather than a collaborative partnership of equals working towards a common goal (Alcantara & Kalman, 2019; Alcantara & Nelles, 2016; Von der Porten & de Loë, 2014). The latter is an approach advocated by some Elders, who see Indigenous leadership in decisions relating to water as a way for communities to properly fulfill their responsibilities to it (McGregor, 2014; 501). Respect for Indigenous ways of knowing and doing and the integration of Indigenous traditional knowledge into water governance frameworks can allow for more meaningful engagement in the governance process, which can also contribute to water security improvement for First Nations communities (Arsenault et al., 2018; 13; Day et al., 2020;

Walkem, 2007; 28; Wilson & Inkster, 2018; Wilson & Mutter, Inkster, et al., 2018; 296; Yates et al., 2017; 807). How water sharing agreements might be constructed to allow for joint governance mechanisms that incorporate both Indigenous and Western conceptions of water and that conceptualize Indigenous peoples as rights-holders rather than "stakeholders" is an important area for future research (Von der Porten & de Loë, 2014; Wilson, 2019).

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Overall, our results suggest that water sharing agreements can be designed in a way to mitigate most of the concerns of Indigenous communities if those communities think that water sharing is a useful way to address their water security concerns. The key is to find the right set of provisions that meet the needs of both signatories.[9] Senior levels of government and other organizations, like the Federation of Canadian Municipalities and the Assembly of First Nations, might support communities by working together to develop model agreements based on input from and lessons learned by First Nations and municipal actors. Indigenous leadership should be central to these activities (Wilson & Inkster, 2018; 531). Although many communities prefer to keep these and other kinds of agreements secretive (Alcantara & Morden, 2019), it would also be useful if communities made these agreements public, posting them on government websites, so that other jurisdictions can develop best practices for developing their own agreements. We hope scholars and practitioners will draw on our findings to improve current agreements and to find ways of helping interested actors design new agreements that satisfy their water-related and non-water related objectives and concerns.

ENDNOTES

[1] Lipka and Deaton (2015) and Deaton and Lipka (2021) also found that remote communities and those with higher population densities were more likely to enter into water sharing partnerships with their neighbours.

[2] Municipalities and other regional bodies may also have concerns about entering into these agreements: for example, they may be hesitant about incurring financial losses if the First Nation defaults on payments, and may be concerned about the possible implications of an incongruence between municipal laws on water quality, training, and engineering standards, and Indigenous legal concepts. As well, municipalities may not aspire to form any sort of political or administrative relationships with nearby First Nations communities due to asymmetric ideas of sovereignty (Bouvier & Walker, 2018; 133; Jacob et al., 2008). An analysis of these concerns is beyond the scope of this article.

[3] These 40 agreements do not represent the entirety of existing agreements; rather, they are a sample of the agreements that we were able to obtain.

[4] Some might argue that these households simply need to reduce their water consumption to match what they can afford but for some households, it is not possible to reduce water consumption any further given their financial circumstances (Benning, 2020).

[5] A related objection might be that a water sharing agreement means potentially less jobs for First Nations members and therefore fewer opportunities for First Nations input into the water system. We thank an anonymous reviewer for pointing out this issue.

[6] Indeed, it is ironic that First Nations are put in a position to purchase water that is theirs under international and domestic law. On the other hand, it seems reasonable for First Nations members to pay for the delivery of water to their homes. We thank an anonymous reviewer for pointing this out to us.

[7] At the time that the agreement was signed, the Department of Indigenous Affairs had not yet been dissolved and replaced by two new departments, Crown-Indigenous Relations and Northern Affairs Canada and Indigenous Services Canada (https://www.canada.ca/en/indigenous-northern-affairs.html).

[8] Further analysis of these two agreements found that the First Nations in question were not large (populations of 386 and 375 as of 2016, respectively) but we are unsure whether they contain businesses on reserve that use a lot of water.

[9] For instance, provisions providing for basic standards of potability could be made standard in future agreements. In addition, the singular focus on Indigenous-municipal service agreements can be complemented by a consideration of multi-jurisdictional service agencies such as the Ontario Clean Water Agency, as well as agreements among First Nations, such as those found in the Red Lake area in northwestern Ontario.

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