

Capacity Development for Improvement of First Nations Drinking Water¹

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Abstract:

Tragically, in Canada, thousands of aboriginal people and their water utilities suffer from water poverty, that in addition to socio-economic poverty. The problem is not new and the means to resolve the inequity exists. Developing robust capacity that can support the operations of aboriginal drinking water systems is a critical piece in achieving water safety. Determining baseline information on capacity is crucial before developing any aboriginal capacity program. This paper discusses the recently developed analytical frameworks and methods used to evaluate aboriginal capacity gaps around water management and how to go forward to resolve these issues. The context of the situation is established, by presenting background information on the First Nation water crisis and an example of a training program, this is followed by a discussion about the case studies used. From the discussion, recommendations to the government to improve the ongoing water injustice are offered.

1. Introduction:

“To end the boil water advisories in First Nations, invest in people”, read the headline, in the May 6, 2016, article, in the Toronto Star media. The article, written by Geordi Kakepetum, Executive Director, Tribal Council of Chiefs, in Dryden, Ontario. He critically wrote, of how of the \$2 billion allotted in the 2016 Liberal budget, to help Canada’s aboriginal water problems, \$1.8 billion was dedicated to new infrastructure, with the rest going to monitoring (Kakepetum, 2016). No new money for capacity building to improve aboriginal personnel, utilities, nor institutions, despite knowing they are how important roles to improve access of potable water for First Nations communities. Disturbingly, as of September 25, 2016, there were 109 drinking water advisories for on-reserve First Nations, affecting the lives of thousands of people, risking health, and negative socio-economic stress (Health Canada, 2016), (BC First Nation Health Authority, 2016).

Ongoing national and even international media coverage about the Canadian aboriginal water calamity is unacceptable and clearly indicates that something is not right with aboriginal drinking water systems. The issue does beg the question as to why this tragedy persists? but further, what innovative methods are being used to better evaluate the water problems to help resolve this national embarrassment. The causes for this water tragedy are complex, uniquely challenging and highly contextualized and will require long-term integrated commitments to resolve.

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Justice O'Connor (2002), who headed the 2001 Walkerton Inquiry, made numerous recommendations for improvement in drinking water management, following the tragic 2000 incident in Walkerton, ON, where hundreds of people in the town became ill and several died from a strain of E-coli contaminated well water. O'Connor stressed the need for capacity development of water operators, administrations and certification of water operators through training and examination.

Broad-based capacity development initiatives can greatly improve water governance and assist towards providing safe water. However, there is little attention paid to what is exactly the capacity gap? how was it determined? what exactly needs to be improved or strengthened? Is the capacity development initiative even relevant? Defining broad-based capacity strengths and weaknesses of a water system is important as it provides a starting point to improve (Graham, 2006). This paper asserts that before aboriginal capacity development can begin; a baseline assessment is required to guide the capacity building programming. The paper also evaluates recent tools used for determining capacity and are described for their effectiveness and weakness in water management. A simple model for advancing the resolution of the known capacity gap is also presented. The paper further explores appropriate aboriginal capacity building initiatives that should be supported and expanded by government. A discussion of the literature findings is offered, followed by recommendations to government for suggested improvement in First Nation water management.

The commonly accepted UNDP (2008) definition of capacity building is used: “*Capacity is the ability of an individual, organization and society to perform functions, solve problems, set and achieve goals. It entails the sustainable creation, utilization and retention of that capacity in order to reduce poverty, enhance self-reliance and improve people’s lives.*” Note: capacity building also means different things to different people in a different context. Not all approaches are applicable, pre-conditions are required and there are always constraints.

2. The Aboriginal Capacity Deficit:

In Canada, while most citizens enjoy high quality and readily available drinking water, on many First Nations reserves this does not exist. In Ontario alone, there are 10 First Nations that have had boil water advisories for over 10 years, with the longest advisory being 21 years on the reserve of Neskantaga First Nation, in northern Ontario. This is seconded by the First Nation of Shoal Lake 40, at the border of Manitoba and Ontario, with an advisory of 16 years (Health Canada, 2016). First Nations water systems do share similar problems with many small and remote communities, namely, limited financial budgets, remoteness, high operating cost, difficulty in retaining qualified staff and weak management (Graham, 2006). These challenges were confirmed with the 2006 Expert Panel on Drinking Water for First Nations, who reported that that problem of the water issue was a lack of funding, a shortage of qualified people to operate and maintain water systems and the need for Chief and Council to understand governance (Swain, 2006).

This investment deficit into capacity building was evident in the work of Morrison, et al, (2015) who completed a comprehensive national public health assessment, over a 12-year period

(2001 – 2013). The author's focused on the quantifiable service gaps and capacity of First Nations administration to manage their own drinking water systems. The assessment also sought to evaluate the capacity of First Nations ability to comply with the numerous proposed conditions, in new draft of the *First Nations Drinking Water Regulations* contained in Bill S8. The study relied on data collection from extensive reviews of government documents, federal policy, engineering reports and other government indicators of progress. The results of the comprehensive study acknowledged that some improvements have been achieved, when compared to previous internal indicators, namely the number of high risk water systems have been decreased, the number of water operators being certified have increased and the number of individual maintenance management plans have increased. However, the author's stated, it was impossible to accurately conclude any quantifiable improvements made by the federal government over the 12 years (Morrison, 2015). This finding was primarily because there were not enough accurate indicator metrics to use and measure. Some government indicators were ad hoc and some criteria were irrelevant. Morrison (2015), stated, the government policy response on this issue, lacked vision and was essentially reactive gestures. The author's further stated, there was no long-term vision for any aboriginal capacity building to support improved water management. The author's recommended the need for better indicators of their national water data, improved efforts towards integrated water policy and meaningful consultation and engagement with First Nations, in all aspects of water management policy. The lack of capacity to manage First Nation drinking water systems is further complicated by a myriad of roles and responsibilities between layers of government.

3. Roles and Responsibilities for Providing Safe Drinking Water

First Nation governments are the owners and operators of their water systems, they are tasked with the daily responsibility of ensuring their community has access to safe and reliable water and wastewater infrastructure in accordance with federally established protocols and engineering standards. First Nations must also monitor water quality through sampling, testing, and reporting. In addition, they must undertake the role of system operators, purchase system supplies, and maintain the infrastructure's integrity (Mitchell, 2012).

The Federal government has a fiduciary responsibility to First Nations, to provide safe water and support their operations (Indian and Northern Affairs Canada, 2012). This overlap of jurisdiction creates confusion and likely contributes to the water problem. Roles and responsibilities for ensuring potable water in First Nation communities involves a shared (Morrison, 2015; Mitchell, 2012). Although First Nations are the owners and operators of their water and wastewater systems on reserves, the Government of Canada through three departments (Indigenous and Northern Affairs Canada (INAC), Health Canada, and Environment Canada) remain particularly influential over the operations and management of water systems (Mitchell, 2012). The primary responsible department is INAC which provides the total funding and guidance for water system design, and is also responsible for the construction, operation, maintenance, and training of the operators of these facilities. INAC (2016) also established guidelines through various national protocols. A *First Nations Drinking Water Quality Act*, with the intent of having enforceable regulations are forthcoming, but highly controversial (Morrison, 2015). Meanwhile, Health Canada's role is to undertake drinking water quality monitoring programs, south of 60-degrees latitude (north of the 60-degree latitudes, is the responsibility of the Territorial governments), and to set national guidelines for drinking water quality both on

and off reserve. Environment Canada has a role in source water protection planning for First Nations and the regulation of the treatment of wastewater discharged to receiving waters. Both Health Canada and INAC jointly contribute funding for training of aboriginal water operators.

4. Appropriate Training Approach:

Trained water operators in the First Nations community are essential for ensuring the prevention of risk to their drinking water supply. To assist aboriginal water operators across Canada the federal government spends over \$10 million per year into a unique national training program (Mitchell, 2012). To help mentor First Nation' directly, INAC established the *Circuit Riders Training Program* (CRTP) which is a capacity building initiative that provides training and mentoring services to aboriginal water operators of drinking water and wastewater systems (INAC, 2016). Qualified water utility professionals, usually non-aboriginal, are retained across Canada, and rotate through a regular circuit of First Nation communities, training the operators in the many technical and reporting requirements. These water experts are called 'Circuit Rider Trainers' whose roles are to mentor First Nation operators and provide general technical support to perform various functions such as obtaining and maintaining their required certification, increasing the reliability of their systems, ensuring efficient operations and maintenance, confirming standards for health and safety are met, and reducing the number of boil water advisories (INAC, 2016). The CRTP offers 24-hour access in case of emergencies. The CRTP is available for every First Nation community with a drinking water system or wastewater system at no expense. The benefits of the CRTP are numerous; for the federal government, the CRTP helps maintain the assets of which the government has invested billions. In addition, the program reduces maintenance costs, ensures minimal interruption of services, helps to retain operators thus reducing turnover, and promotes higher operator self-confidence, self-esteem and leadership skills (INAC, 2016). Every Province and Territory has their own regional version of a Circuit Rider Training program with all funding coming the federal government. No data could be found to indicate if this training program is quantifiably improving the capacity of water operators.

5. Case Studies in Capacity Analytical Frameworks:

5.1 Case Study #1. Montreal Lake First Nation, Saskatchewan

Lebel and Reed (2010), established the first analytical framework for assessing the capacity of an aboriginal community and their ability to provide potable water to its customers. The case study was completed in the relatively remote aboriginal reserve of Montreal Lake, Saskatchewan. The reserve population was 1,877 members with a large percentage of youth. The community was of low economic income resulting from the decline of forestry and fishing activity. There were two small drinking water systems using the surface water of Montreal lake. A majority of the community was connected to a piped water system within the community, while the remaining customers outside the community were on trucked water service.

The Lebel framework investigated five primary dimensions of capacity building (Financial, Human Resources, Institutional, Socio-politico and Technical) and used 38 indicators to assess the variation of capacity associated with management of the water systems. Qualitative data was obtained through standardized question interviews and workshops in the community

and document analysis, over one year. A rating table (Fig 1.) was created listing the indicators and then rated the capacity ‘ability’ and ‘presence’ as either positive or negative or partially. The authors gave a caveat that the scope of the study had been narrowed, by leaving out aboriginal traditional belief systems, attitudes, knowledge and issues of aboriginal rights and title

Indicator	Rating			
	Capacity Absent		Capacity Present	
Legend	-	+/-	+	->*
(-) indicator does not meet standard				
(+/-) indicator partially meets standard				
(+) indicator meets standard				
(->) indicator meets standard and is expected to in the future				
Financial Capacity				
Funding is available for operation and maintenance				*
Funding is sufficient for operation and maintenance				*
Funding is available for infrastructure and water system projects				*
Funding for water system is stable				*
Funds are generated within the community	*			
Funds are generated outside the community				*
Water rates for customers reflect the cost of providing drinking water (treatment, distribution, maintenance)	*			
Funding surpluses are saved for future water system requirements		*		

Fig 1. Example of rating tables, Montreal Lake First Nation, Saskatchewan

The results of framework analysis (Fig 2) indicated that the trucked water distribution system was the highest risk (weakest link) in the entire system. The water was at risk of contamination from improper handling procedures and poor communication between internal departments. In addition, the storage tanks in private residences were not being routine cleaned or sampled for water quality analysis.

Dimension	Total Indicators	Capacity		Ratio of Capacity Present to Total Indicators
		Present	Absent	
Financial Capacity	8	5	3	5/8
Human Resources Capacity	7	6	1	6/7
Institutional Capacity	7	4	3	4/7
Social/Political Capacity	7	3	4	3/7
Technical Capacity (Piped Distribution System)	9	7	2	7/9
Technical Capacity (Truck Haul System)	9	4	5	4/9
Total (Piped Distribution System)	38	25	13	25/38
Total (Truck Haul System)	38	22	15	22/38

Fig. 2. Summary of Results, Analytical Framework for Capacity-building. Montreal Lake First Nation, Sk. (Lebel and Reed, 2010).

5.2 Case Study #2, Two First Nations in Quebec

Rizvi & Adamowski (2013) also developed and carried out a similar case study using an analytical framework to assess the capacity of 2 First Nations in Quebec, to implement IWRM. The First Nation communities were, Kitigan Zibi, 130 km of North of Gatineau, and Kahnawa:ke, 10 km south of Montreal. The framework assessed similar key dimensions of capacity building, found in the 2010 Label and Reed study, but added two indicators, “Actor Network” and “Information Management”. Their assessment used 79 indicators around the six dimension, that were taken from literature associated with accepted norms for drinking water management. The methods of qualitative data collection were through structured interviews and workshops from the selected stakeholders, who’s responses were recorded as either ‘yes’ or ‘no’, as shown in Figure 3. Each of the six dimensions of capacity had an individual table completed as in the example.

<i>Elements of capacity</i>	<i>Capacity met</i>							
	<i>Kitigan Zibi</i>				<i>Kahnawà:ke</i>			
	<i>No</i>	<i>In part</i>	<i>Yes</i>	<i>Yes + future</i>	<i>No</i>	<i>In part</i>	<i>Yes</i>	<i>Yes + future</i>
<i>Cross-Sectoral Cooperation</i>								
• Partnerships with different communities & stakeholders	•						•	
• Conflicts with other parties (communities, stakeholders) dealt with constructively, resulting in inclusive agreements to which the parties are committed	•					•		
• Use of cross-sectoral analysis to identify emergent problems and for policy implementation	•					•		

Fig. 3. Example of analytical framework rating tables, First Nations of Kitigan Zibi and Kahnawa:ke, Quebec (Rizvi & Adamowski (2013).

The results of this framework assessment (Fig. 4) revealed that overall, both aboriginal communities had only ‘moderate’ capacity to deliver potable water, with Kahnawa:ke – 48% and Kitigan Zibi – 43% capacity respectively. The research pointed to a lack of financial funding, both in terms of receiving from the federal government and in the ability to generate income. The lack of finances negatively impacted on the other dimensions of capacity. In this study, the dimension of ‘actor network’ scored very low, indicating a lack of social linkages with

community, institutions and partnerships. Once the capacity weakness has been identified using this analytical framework method, it is possible to begin a strategy for resolving the capacity problem.

Table 1 Summary of capacity results for Kitigan Zibi and Kahnawà:ke First Nations

<i>Capacity type</i>	<i>Total indices</i>	<i>Capacity indicators (Present:total)</i>	
		<i>Kitigan Zibi</i>	<i>Kahnawà:ke</i>
Actor network	18	2:18	6:18
Information management	10	4:6	4:6
Human resources	4	2:4	3:4
Technical	26	14:26	12:26
Financial	12	4:12	3:12
Institutional	9	6:9	8:9

Fig. 4. Summary of analytical framework results, First Nations of Kitigan Zibi and Kahnawà:ke, Quebec (Rizvi & Adamowski (2013)).

5.3 Case Study #3, Institute of Governance

The Institute on Governance, a Canadian non-profit think tank, developed a simple and broad-based model that fits well for this paper, as it is a method that can be used to close to identified gap(s). The model recognized that capacity building needs be expanded wide within a targeted system. The capacity development model is aimed at individuals, organizations and societal systems, as all three of these targets need to be supported in capacity building initiatives. The simple model presents: Where do we want to be?, for capacity capability? Where are we now? From those responses, it's possible to then Identity the Gap, in capacity. Then the next question is How do we get there? (what are the strategies, priorities and techniques?) and finally, How to stay there? (achieving sustainability) (Graham, 2006). Once capacity is defined, the implementation and monitoring of the plan can begin. By targeting the three levels for building capacity; individuals, organizations and societal systems, the process becomes robust, integrated and there is likely a more improved process.

6. Discussion:

From the literature and the evaluation of the case studies, points of discussion are presented. As the Federal government has a fiduciary responsibility to First Nations, while at the same time First Nation governments own and operate their own community drinking water

systems, there can be misunderstandings over the roles and responsibilities. The government exerts significant influence over the First Nation administrations, especially over funding allowance, approvals, and engineering oversight for infrastructure designs. This overlap may be contributing to additional problems because too much government meddling into a communities' water management can backfire when trying to build capacity because there is no incentive by the community to take on the required responsibilities, nor to build leadership within.

An example of the need for leadership for capacity development was highlighted from Biswas (1996), who argued that too much finger pointing of blame went to institutions for not developing capacity building opportunities for improved water management. Instead of blaming institutions for performing badly for not building capacity in water management, Biswas stated, that it was more likely to be because the wrong people were positions of leadership and influence. He suggested, that even the best policies and available funding can be managed badly by the wrong people. However, by having the right people with the right qualities in decision-making positions, those with leadership skills, motivation, vision, strategic thinkers and risk takers, almost any initiative can be implemented. In addition, Biswas (1996) asserted that many capacity building initiatives in water fail to establish a good baseline understanding of the client's level of knowledge and skills, which then runs the risk of developing programing that is not relevant to the audience.

The two analytical framework presented here were compared and several differences noted. The 2010 Lebel framework focused on only one remote aboriginal community that had two water systems. The intent of the study was to assess the availability of capacity in the First Nation, to deliver potable water to the community. The framework used five dimensions of capacity to assess 38 narrow indicators, without any aboriginal context. So already, there was a weakness in the method, but nonetheless it remains a good framework for revealing weakness in the systems and ideal for a baseline method for future studies. The Lebel approach also effectively highlighted how multidimensional capacity development can be.

The other framework by Rizvi & Adamowski 2013, was applied three years later on two very different aboriginal communities. The Rizvi framework was developed and applied to assess capacity on the ability to implement integrated water resource management, thus making this framework evaluation significantly more robust. The framework used 6 dimensions of capacity, with 79 indicators (twice as many as Lebel). The indicators included an aboriginal context within the questions. Of the 6 dimensions used there were two new categories, namely the dimensions of "Actor Linkage" and "Information Management". Actor networks are valuable agencies for the First Nation community and their participation needs to be encouraged. Such networks are important venues for collaboration, leadership, communication, cooperation, relationship building among other like-minded people.

The simple model offered by the Institute of Governance can then be applied as a guiding method to strategically identify the capacity gap and begin work to resolve it. The use of the broad-based tripartite approach for individuals, organizations and societal systems is key to prevent capacity development occurring in a vacuum. Further, targeting individuals for capacity building is certainly critical to enhance their skills, knowledge and values related to water management. At this level, there are opportunities to ensure that training is relevant and appropriate, meaning, there should recognition that aboriginal people learn differently and holistically, using the heart, spirit, body and the mind, thus all efforts to accommodate this fact should be made to improve comprehension and retention of the training messages and processes.

Examples include: Experiential learning techniques focusing on hands-on experimentation, collaboration opportunities and encouraging leadership skills. Training individuals is relevantly inexpensive, measurable and short. However, capacity development cannot be limited to just the individual. The organization also needs attention to help establish institutional strength for its visions, goals, policy, roles and responsibilities. Examples include support for certification bodies, associations, conferences and workshops. Targeting at this level is more expensive and more of a risk. Not everyone may buy into the plan for improvement. Beyond the organization, civil society and governments also need support, yet more challenging to achieve and may well represent the weak link of the tripartite approach. At this higher level, it is key to have skilled people and leaders. Examples of capacity development can include partnerships, treaties, conventions and regulations. Such initiatives are expensive, high risk and heavily influenced by political decisions.

7. Recommendations for federal government:

Based on the findings of this paper, it's clear to the author, that the federal government needs to dramatically improve its efforts in building stronger relationships with First Nations across Canada. This includes creating spaces for dialogue, collaboration and understanding as this would go a long way. There is a strong need for long term funding formulas so that First Nations can be engaged in longer term strategic planning. This funding should not be dedicated just for large and often over-engineered water infrastructure project, but into soft path programs that funds the development of improving the skills, knowledge and values of frontline water operators, managers and the institutions that support them. However, before this training begins, an initial capacity assessment for First Nation administrations is required to structure the approach of the training program. Additionally, the government needs to encourage individuals to participate in professional associations, and net-working opportunities, partnerships, team building, rewards and recognition initiatives and seek out culturally appropriate tools for learning, with examples being, experiential education approaches, collaboration and mentoring. Another recommendation would be to support the establishment of aboriginal watershed councils.

Another recommendation to government is the need to establish a single federal department that deals with all the important issues around water and First Nations communities. This consolidation approach may help to avoid confusions, better streamline operations, improve communications and have less bureaucratic burden on First Nations. A one stop window approach could greatly streamline operations and relations and perhaps even improve the effectiveness of government and First Nation administrations.

8. Conclusion:

Geordi Kakepetum's words about investing into aboriginal people as a way forward to improve access to safe drinking water are golden. As this paper revealed, poor governance (funding, management, capacity) and ongoing poverty in aboriginal communities are the primary problems. This omission then impacts the capacity and capability of First Nations. Too often federal policies are aim to only address the immediate water problems and are short-term. This

piecemeal approach by government was contrary to the recommendations of the expert panel, academics and aboriginal leaders, who called for consultation, participation, capacity building and long term investments. (reference). Agreed, the literature suggests that there have been improvements with the contribution of significant federal funding investments over the years. The number of high risk system first identified in 2002 have dropped (Reed, 2010). However, many challenges remain for hundreds of First Nations communities in providing a potable water to their community members. Going forward though, capacity building programs cannot occur in isolation, both individuals and institutions need support that is based on the results of crucial initial baseline assessments, of which two models were presented. Without improved capacity building of aboriginal operators, administrations and institutions, water systems can become higher risk of problems. There is clearly still a long way to go to improve access to safe water for First Nations, the tools, methods and technology to get there exist, there now needs to be leadership, vision and political will from the federal government.

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