EMPTY COMMITMENTS? THE INDIGENOUS WATER CRISIS IN CANADA AND THE COMMITMENT TO ENDING ALL DRINKING WATER ADVISORIES ON FIRST NATION RESERVES

by

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Dedication

I dedicate this to water and all those that protect water.

Respect water, appreciate water, and thank water for life.

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Abstract

In 2016 the Government of Canada (GoC) committed to ending all long-term drinking water advisories (DWAs) in First Nation communities by March 2021. By not fulfilling the 2016 commitment the GoC, fails to fulfill its promise of providing access to fundamental needs for First Nations. This thesis aims to evaluate this commitment and provide possible recommendations to satisfy the goal of ending long-term DWAs. A qualitative approach is used for data collection via a policy review and semi-structured interviews. Indigenous Two-Eyed Seeing model and a decolonial feminist approach make up the analytical framework. Data analysis reveals that degree of remoteness, capacity, budget, systemic racism, and miscommunications contribute to the persistence of DWAs and the failure of the commitment. Moving forward, a coordinated and holistic strategy is needed to improve the provision of safe drinking water to First Nations communities and eliminate all DWAs.

List of Abbreviations Used

AFN - Assembly of First Nations

AFNWA- Atlantic First Nations Water Authority

BWA - Boil Water Advisory

CBWM – Community-Based Water Monitor

CIRNA - Crown-Indigenous Relations and Northern Affairs

COO - Chief Operating Officer

DWAs - Drinking water advisories

ECCC - Environment and Climate Change Canada

GoC - Government of Canada

INAC - Indigenous and Northern Affairs Canada

IPK- Indigenous Peoples' Knowledge

ISC - Indigenous Services Canada

MMIWG - Missing and Murdered and Indigenous Women and Girls Final Report

O&M - Operation and Maintenance

PBO - Parliamentary Budget Officer

PWDO - Potable Water Dispensing Units

RCMP - Royal Canadian Mounted Police

SDW Act - Safe Drinking Water for First Nations Act (2013)

TRC - Truth and Reconciliation Commission's (TRC) Calls to Action

UNDRIP - United Nations Declaration on the Rights of Indigenous Peoples

W&WW Water and Wastewater

Glossary

A Note on Terminology

In this research I mainly used the term Indigenous or Indigenous community because it is the most inclusive when speaking broadly about Indigenous Peoples within the national boundaries of Canada. I prefer Indigenous to First Nations as legally First Nations excludes Inuit and Metis communities. However, I do use First Nations in the context of the 2016 commitment as the commitment directly focuses on First Nations. Additionally, I use Aboriginal in the legal and legislation sense as outlined in Canada's 1982 Constitution (Phare, 2009). The term Indian is avoided because it embodies the colonial relationship between Canada and Indigenous Peoples living in Canada. When referring to a particular Indigenous Nation, their preferred name will be employed (MMWIG, 2019).

The **1969 White Paper** was a proposed policy for the abolition of the Indian Act and was formally called the *Statement of the Government of Canada on Indian Policy*.

In the Canadian legislature, a policy paper is called a white paper. For many First Nations people, the term also ironically refers to the identity politics that is inherent to a white majority governing Indigenous life.

Aboriginal is the term used in Canadian legislation to refer to Indigenous Peoples and it will be used in this sense when necessary (MMWIG, 2019).

Aqua nullius refers to vacant or empty water and is used to dispossess Indigenous people of their water rights around the globe including Canada.

Colonialism is the

> attempt or actual imposition of policies, laws, mores, economies, cultures or systems and institutions put in place by settler governments to support and continue the occupation of Indigenous territories, the subjugation of Indigenous Nations, and the

> resulting internalized and externalized thought patterns that support this occupation and subjugation (MMWIG, 2019).

Gender refers to identity and the sociocultural understandings about the spectrum from masculinity to femininity. Gender refers to the social characteristics and culturally prescribed roles of men and women but are not bound to either men or women.

Gender roles are what a society or culture constructs and prescribes as proper roles, behaviour and personal identities, wherein that which is associated with women is femininity, and against men is masculinity, with the latter given more hierarchical value.

Indigenous is used to address Aboriginal communities generally as opposed to First Nations since that term only applies to individuals with legal recognition, excluding Metis and Inuit communities.

Settler Colonialism is a

> form of colonialism that functions through the replacement of Indigenous populations with an invasive settler society that over time develops a distinctive identity and sovereignty. Settler colonialism, like colonialism, is an ideology or structure, not an event. Settler colonialism persists in the ongoing elimination of Indigenous populations and the assertion of state sovereignty over Indigenous Peoples and lands (Ibid).

Terra nullius is legally deemed to be unoccupied or uninhabited, directly translating to vacant or empty land. This concept, derived from ancient Roman law, serves as the basis for devaluing Indigenous people and their governance systems to claim space for colonial sovereignty over land and resources (Pictou, 2020). While the interpretations of this legal concept vary, the legal and cultural dimensions of terra nullius all share the common purpose in eradicating Indigenous existence.

Treaty Truck House is references in Peace and Friendship Treaty of 1752 and their original intent was two-fold; to control trade with the Indians and to foster amicable relationship among

them. Thus, the colonial truck house policy can be viewed as both political and diplomatic ("What Is a Truckhouse?," 2016).

Water security is defined as

ensuring freshwater, coastal, and related ecosystems are protected and improved; that sustainable development and political stability are promoted; that every person has access to adequate safe water at an affordable cost to lead a healthy and productive life; and that the vulnerable are protected from the risks of water-related hazards (Hanrahan et al., 2016).

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Chapter 1 Introduction

1.1 Central Problem

Between 2004 and 2014, two thirds[1] of First Nations communities experienced at least one long-term drinking water advisory (DWA) (ISC, 2017; Palmater, 2019). A lack of adequate drinking water[2] is a reality that has plagued Indigenous people for decades and continues to afflict them today. In 1977, the Canadian federal government promised to provide all "reserves" with safe drinking water and sanitation services comparable to similarly situated non-Indigenous communities (Boyd, 2011, p. 81). Forty-three years later, this has not been achieved and thousands of Indigenous people still lack access to safe drinking water.

In 2016, the federal government committed to resolving all water advisories in Indigenous "reserves" by March 2021 and dedicated $1.8 billion over the following five years to improve monitoring, testing and to address DWAs (Alcantara et al., 2020, p. 158; Black & McBean, 2017a; ISC, 2017). Since November 2016, the government reports that they have lifted 128[3] long-term DWAs (G. of C. I. S. Canada, 2021a). Yet every couple of weeks or months, a new advisory is put in place. As of January 25, 2022, 36 long-term DWAs remain, meaning advisories less than one year are not included in this figure. Ultimately, the Liberal government announced that it did not achieve their goal to alleviate all DWAs by March 2021. Additionally, there are 500 non-public drinking water systems on reserves that are not considered a federal

[1] This source claims 400 of 630 communities' experiences at least one long term DWAs but other sources namely the David Suzuki Foundation show that government tracking has been insufficient and DWAs are not always reflective of the quality of the water and thus underestimating the true burden of this issue,

[2] Adequate drinking water means contaminates within the appropriate public health limits set by the Canadian Guidelines for Drinking Water

[3] This number is accurate as of February 24t^{h}, 2022.

responsibility either due to its classification as a private well water or its lack of water system completely. This places communities in the difficult position of negotiating other means to obtain water systems installations (Auditor General of Canada, 2018). By failing to reach their 2021 goal of alleviating all DWAs, the Canadian government not only fails to fulfill its commitment to Indigenous communities but also leaves hundreds of people without adequate access to water and more vulnerable to adverse health problems during an ongoing global pandemic. Despite not setting a new goal date, the Liberal government maintains its commitment to end all DWAs on First Nations (Taylor, 2021).

In Prime Minister Justin Trudeau's 2016 mandate letter to the Minister of Indigenous Services the following direction was provided:

> Ensure the successful delivery of the significant investments made in Indigenous services through Budget 2016 and Budget 2017. This includes new and repaired housing, ensuring First Nations children on reserve receive a quality education, and eliminating all long-term boil water advisories by 2021 as a key measure in ensuring First Nations people on reserve have access to clean drinking water (Colliers Project Leaders, 2021, p. 29).

In this context, the following research intends to understand the current policy on lifting DWAs to discover why the government fell short in meeting their 2021 goal. The issue of Indigenous water insecurity is perpetuated by complex intersections between available water resources, drinking water and sanitation, infrastructure and management, economic activities, and environmental impacts, as well as the decentralized and fragmented nature of water governance in Indigenous communities (Latchmore et al., 2018, p. 984; Schiff, 2016, p. 277). This context is necessary to understand the severe and prolonged nature of DWA and to determine possible solutions moving forward.

1.2 Research Questions

In order to realize the objectives outlined above, this research explores the following questions:

1. Did the 2016 commitment[4] to end all long-term DWAs result in improving the access to adequate drinking water of First Nations?
    a. What did the commitment aim to accomplish? What are the tangible outcomes of the 2016 commitment?
    b. Why was the 2021 goal not met?
    c. Did it make a meaningful difference?
    d. Why do new DWAs continue to occur?

1.3 Argument

This thesis will argue that the 2016 commitment is a step towards reconciliation as outlined in the Truth & Reconciliation Calls to Action (2015) however, its achievements are still insufficient and have yet to achieve reliable water quality in Indigenous communities.

1.4 Significance of Research

Water is a human right afforded to all humans and Indigenous access to clean water is specified by the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Consequently, the lack of universal clean drinking water in Indigenous communities is an important national issue. DWAs and inadequate water infrastructure are associated with adverse

[4] This 2016 commitment refers to the 2015 campaign promise as well as the follow up commitment in 2016 mandate letters and subsequent budgets. It is referred to as the 2016 commitment or the commitment throughout this thesis.

health effects such as gastrointestinal infections, skin problems, birth defects, among others which directly and indirectly impact social, economic and physical well-being (Bradford et al., 2016, p. 12). Access to safe drinking water is also emphasized through the Missing and Murdered and Indigenous Women and Girls (MMIWG) Final Report under the right to health, security, and through reviving traditional land-based and water-based cultural practices that existed long before colonization and will continue to exist long after (MMIWG, 2019a, pp. 78, 120, 121). Therefore, Indigenous water security on a national level is not only a political issue but a legal, and biomedical issue as well. Understanding it is a prerequisite to developing comprehensive and effective strategies to address these inequities.

To stay true to the Truth and Reconciliation Commission's (TRC) Calls to Action and the MMIWG Report recommendations, this research is guided by a decolonizing approach by using a Two-Eyed Seeing method which is the concept of "strong like two people" that offers the best of both western technologies, and Indigenous knowledge systems and gender perspectives (M'sit No'kmaq, Marshall, Beazley, Hum, Papadopoulos, et al., 2021, p. 847). Two-Eyed Seeing or Etuaptmumk in Mi'kmaw, is appropriate for this research as the technical knowledge for ensuring safe drinking water is embedded in western sciences, but those tasked with operating, maintaining, and living with the water systems are embedded in Indigenous knowledge systems. The emphasis on these approaches will contribute to the literature on water security by adding valuable information for policy reform by helping to understand and eliminate barriers for accessing safe drinking water faced by Indigenous communities, and particularly by Indigenous women.

1.5 Positionality

The scope of this research is informed by the federal government's responsibilities towards Indigenous People as well as the author's positionality. This research undertakes a national scope as it studies Canada's national drinking water policy and federal commitment to First Nations.

I am a white settler woman who is working to satisfy the requirements for my two-year Master of Arts Degree in International Development Studies at Dalhousie University in Halifax. I use this opportunity to strive towards the goal of ensuring all basic needs and rights of every human. For this research, I focus on the right and access to safe drinking water. I started this research during the Covid-19 pandemic, so I turned to my own country, Canada, and was inspired by the Mi'kmaq grandmothers fighting to protect the water from the Alton Gas Project (Pictou et al., 2021). The lack of clean, safe drinking water in Indigenous communities is one of the greatest violations of human rights to water and sanitation and one I wanted to understand, particularly since Canada seemingly has the fresh water and economic resources to overcome this obstacle.

As a researcher, I am also placed in a position of power. Thus, I intend to mitigate these power dynamics by inserting myself as a learner rather than a voice of authority on this topic. I want to learn from past mistakes and understand the colonial impacts on Indigenous Peoples and not re-inscribe colonialism therefore a decolonial approach (See Chapter 4) is necessary to dismantle biases and colonial structures that perpetuate DWAs. My lived experience is different from an Indigenous individual thus I do not claim to understand the Indigenous experiences. I work to centre Indigenous voices in this research to overcome the limitation of my positionality and to work towards allyship. I intend to use my platform of privilege to confront white-settler comfort and speak out against racism and the years of oppression Indigenous people have faced

at the hands of settlers and colonialism that I have personally benefited from. Due to my background while engaging with Etuaptmumk I rely on the perspective and knowledge of Indigenous individuals to guide me and this research. I attempt to follow Etuaptmumk and Indigenous teachings as much as possible however my settler bias may still influence my understandings as they are a part of me despite my best efforts to transform the way I see in the first place.

Concerning academic and technical limitations, I am a social scientist with a political studies background as well as experience in the study of drinking water regulations in the Atlantic Canadian context. My experience involved academic research to support the establishment of the AFNWA. As such, discussion concerning wastewater will be brief and limited to the perspectives enclosed in the collected documents and relayed to me during interviews. Lastly, this analysis will not be reviewing the technical aspects of drinking water quality as this exceeds my scope of knowledge.

Conclusion

Water security and access to safe drinking water remains an issue in many Indigenous communities in Canada. In response, this research seeks to understand the missteps of the 2016 commitment to end all DWAs on First Nation “reserves”. By doing so this thesis argues that with moderate success the commitment still failed to achieve reliable water quality for Indigenous communities.

Chapter 2 The Context of the Indigenous Water Crisis

2.1 Colonial Context

Understanding the Canadian colonial context is a precursor to understanding the physical and political landscape that influences water system management, and Indigenous and non-Indigenous communities' access to clean drinking water. This section explores the historical and present impacts of colonialism by unpacking how legal structures contribute to the lack of access to safe drinking water.

Canada has a long history of colonialism which results in long-standing power imbalances between Indigenous peoples residing on Turtle Island, the Government of Canada (GoC), and provincial governments. These power imbalances translate into different lived realities, as made evident by their sustained lack of drinking water. "White Paper Liberalism", the historical and contemporary use of political and juridical liberalism, is one of the current transmutations of colonial ideologies as it perpetuates Indigenous exclusion and marginalisation(MacLellan, 2018, p. 914). "White Paper Liberalism" stems from the 1969 White Paper which aimed to improve GoC-Indigenous relations by dispensing with the "old North American adage" that government policy must "kill the Indian to save the man," and instead declared that "to be an Indian is to be a man, with all a man's needs and abilities" (MacLellan, 2018, p. 920). The 1969 white paper announced by Prime Minister Pierre Trudeau and his Minister of Indian Affairs, Jean Chrétien stated that removing the unique legal status established

by the Indian Act would "enable the Indian people to be free—free to develop Indian cultures in an environment of legal, social and economic equality with other Canadians" (UBC, 2009). While the 1969 White Paper seems to demonstrate a step towards reconciliation, it is a prime example of why White Paper liberalism is still embedded within colonial attitudes. Firstly, the paper acknowledges the social inequality of Aboriginal peoples in Canada and engaged in consultation with Indigenous leaders. However, despite this methodology, the end product ignored their concerns and input. Thus, White Paper Liberalism presents as progress whilst in actuality it translates to status quo.

Many First Nation peoples viewed the new policy statement as the culmination of Canada's long-standing goal to assimilate Indians into Canadian society by trivializing Indigenous culture (UBC, 2009). Other academics and politicians viewed it as the federal government relinquishing its responsibilities to the provinces and the government of Canada was absolving itself of its responsibility for historical injustices and of its obligation to uphold treaty rights and maintain Canada's special relationship with First Nations (UBC, 2009). Additionally, the White Paper was criticized for erasing Indigenous culture and heritage, essentially using the guise of land ownership and multiculturalism to end the 'Indian problem' through cultural genocide (MacLellan, 2018, p. 921). While the White Paper was never implemented and withdrawn in 1970, it has led to "White Paper Liberalism' and the "de facto politico-philosophical framework" used by the Canadian government on matters of Indigenous relations (MacLellan, 2018, p. 921). All this to say that the Canadian government historically and presently uses political discourse to dispose of their '*Indian problem'* instead of actively engaging and collaborating with Indigenous communities.

Western systems of government are grounded in legal concepts of property and commodity with land ownership being the foundation for sovereignty. The concepts of property and commodity are foreign to Indigenous peoples because they view water as alive instead of as a commodity which is based in capitalism and western understandings. Therefore, many treaties were used as a way to impose this view and control land and land-use practices(Bernard, 2018; Hanrahan et al., 2016, p. 272). These concepts of ownership impacted Indigenous people through the imposition of a legal framework of *terra nullius* and *aqua nullius* to dispossess Indigenous people from their land and water rights (Pictou, 2020, p. 374). Western governance and its legal terminology thus "serve as a basis for devaluing Indigenous people and their governance systems to claim space for colonial sovereignty over land and resources" (Pictou, 2020, p. 374). This power over land led to Indigenous people becoming a responsibility of the federal government (White et al., 2012, p. 2). When Indigenous people are seen as only a responsibility of the government, they not only lose sovereignty over their lands, but they also lose their autonomy to make the decisions about their land and communities.

This loss of sovereignty and autonomy translates to a loss of control of socioeconomic structures that preserves the wellbeing of communities. Indigenous women and gender diverse persons are further negatively impacted through the patriarchal ideologies of colonialism. In pre-colonial Canada, Indigenous women were honoured and respected and often played a pivotal role in managing the household[5] and polity of the community. The Indian Act, introduced in 1876, dramatically changed the roles, rights and privileges of Indigenous people in Canada. Control over land is operationalized and normalised through the patriarchal underpinnings of the Indian Act, placing Indigenous women and gender diverse persons within this hierarchy at the very

[5] A household often involves more members than just the Western nuclear family, consisting of cousins, grandparents, aunts and uncles, etc.

bottom with the very least of rights among all First Nation people (Pictou, 2020, p. 375). The Indian Act also initiated patriarchal power relations that dehumanised Indigenous women and children by limiting the criteria for Indian status along patrilineal lines, disqualifying women who married non-Indigenous men (Pictou, 2020, p. 376). The denial of identity and status is not the only form of discrimination Indigenous women have faced (see Gehl vs Canada). Women were also excluded from participating in Indian Band Chief and Council elections until this restriction was removed in 1951. Despite amendments to include women, experts assert that the power relations manifesting gender discrimination remain unchanged (MMIWG, 2019b; Pictou, 2020). Gender discrimination that stems from colonial ideologies harms Indigenous women, reducing their autonomy and leads to a lack of agency over their selves, families, communities, land and water.

Indigenous people and more specifically Indigenous women have little to no agency when it comes to decision-making processes about resources and land use (Pictou, 2020). In the context of water politics, there is the 2013 Safe Drinking Water for First Nations Act (SDW Act) which was a federal law created to address the lack of clean water provision within Indigenous communities. The Act enables the GoC to develop enforceable federal regulations to ensure access to safe, clean and reliable drinking water; the effective treatment of wastewater; and the protection of sources of drinking water on First Nation lands (Turner, 2019; *Water Legislative Reform 2019-2020*, 2019). However, while the Act has come into effect, the regulations have yet to follow and still need to be developed. The SDW Act suggested federal legislations for access to safe drinking water, effective treatment of wastewater and the protection of source water on First Nations lands to be developed collaboratively between Indigenous communities and the GoC. However, First Nations indicated that GoC efforts to collaborate were inadequate as they

not only lacked meaningful consultation, and adequate resources but also failed to protect Aboriginal rights satisfactorily (Black & McBean, 2017a, p. 238). First Nations also highlighted that the financial and material resources required to satisfy regulations are the GoC's responsibility, and costs resulting from failure to do so also should be borne by the GoC (Turner, 2019). Therefore, despite the high hopes for the SDW Act, the lack of meaningful collaboration has left First Nations with the bulk of the responsibilities and without adequate resources and financial means to maintain and operate their water systems.

The Assembly of First Nations (AFN)—the national body representing First Nations governments and approximately one million people living on reserve and in urban and rural areas—is currently in the process of repealing the SDW Act and having it replaced with policies that reflect Indigenous needs. This has been an on-going process and the AFN passed resolutions in 2017/2018 reflecting the needed change in approach of the federal government on the SDW Act (*Water Legislative Reform 2019-2020*, 2019). First, Resolution 26 (2017) repeated the call for repeal of the SDW Act and called for the federal government to develop in partnership with First Nations the next steps. Second, Resolution 88 (2017) directed the AFN to establish a joint Working Group comprised of AFN Chiefs Committee on Housing and Infrastructure and their regional technicians, federal representatives, legal counsel for AFN and the federal government, and other experts, as necessary, to co-develop a draft framework for new legislation. Then, Resolution 01 (2018) took the process even further and mandated the AFN to communicate to the federal government and created a joint legislative co-development process with full partnership with First Nations, including the development of a Joint Working Group on Safe Drinking Water for First Nations. This working group is still working on creating regulations with the hopes of a new (and improved) SDW Act.

Colonial practices built the current racist system and this section has explored some of the current impacts in relation to drinking water. This historical colonial context grounds the rest of the research as the impacts of colonialism underpin safe drinking water.

2.2 Political Context

There are currently two departments overseeing Indigenous affairs. These were created in 2017, when the government of Justin Trudeau implemented a recommendation of the Royal Commission on Aboriginal Peoples (1996) by dissolving Indigenous and Northern Affairs Canada (INAC) and replacing it with two new departments: Crown-Indigenous Relations and Northern Affairs and Indigenous Services, Indigenous Services Canada (ISC). Crown-Indigenous Relations and Northern Affairs Canada oversees Indigenous-GoC relations, such as matters pertaining to treaty rights and self-government, and the concerns of Northern communities, while ISC is tasked with providing and supporting the delivery of services, including health care, childcare and education to Indigenous communities (Derworiz, 2020). The Ministers of both departments administer agreements between the Canadian Crown and Indigenous peoples.

ISC is the main department responsible for fulfilling the 2016 commitment and while progress was made, the government failed to live up to its commitment and there are still advisories on 36 First Nations communities. The federal government sites lockdowns related to COVID as the main reason for not reaching their March 2021 goal. The remote location of many First Nations means it is difficult to ship materials and construction teams to do the work. Supply chain issues were further impacted by COVID. COVID also exacerbated drinking water issues and rates of infection in First Nation communities as they had to face a global pandemic without

adequate access to clean water to sanitize and stop the spread of the disease. Also, due to COVID restrictions and to ensure everyone's safety, this research had to be modified from in-person interviews with Indigenous people to explore the impacts of DWAs on them and their communities, to focusing mostly on secondary data and virtual interviews. This led to a higher-level overview of policy and outcomes of selected open-ended interviews with experts on Indigenous drinking water and DWAs from a variety of backgrounds (see Chapter 5 Methodology).

Aside from COVID, one must take into account the political climate that impacts public opinion, voting rights and ultimately the rights of the Indigenous population. Even before the COVID-19 pandemic, protests across Canada were calling for an end to gas and/or oil pipelines. In February 2020 protests and blockades shut down Canada's rail system. Solidarity protests began after the Royal Canadian Mounted Police (RCMP) enforced an injunction against people in Wet'suwet'en territory who were allegedly impeding access to the pipeline construction site (which was in Wet'suwet'en territory). There was also the Fairy Creek blockade, the largest act of civil disobedience in Canada's history, action seeking a moratorium on the logging of old growth forests in British Columbia. The history, relationships and circumstances surrounding these blockades intersect with water security as they are about exercising Indigenous rights and protecting the environment, both of which directly relate to ensuring safe drinking water for First Nations. They also call into question the government's intentions towards truth and reconciliation.

The discovery of unmarked graves at a former residential school in the summer of 2021 has also distracted the government from work on water advisories. The landmark Truth and Reconciliation Report released in 2015 called Residential Schools "a system government-

sponsored attempt to destroy Aboriginal cultures and languages and to assimilate Aboriginal peoples so that they no longer exist as distinct people " (Truth and Reconciliation Commission of Canada, 2015, p. 153). Despite some meaningful speeches and calls for change, the national outcry and anger over these graves has highlighted the performative and pacifying efforts of the federal government and the public. Additionally, the public led by Indigenous persons have been criticizing the government for its lack of meaningful and sustainable change. However, despite continued awareness and demands for change, Indigenous communities are continually unrepresented in decision-making processes and deal with decades of insufficient funding and resources when it comes to basic needs like the access to safe drinking water.

While DWAs have been reduced, new ones continue to emerge. As recently as October 15th, 2021 there are ‘do not consume’ water advisories being placed. The water supply for the residents of Iqaluit, Nunavut has been contaminated by gasoline making the water unsafe to ingest even if it is filtered or boiled. While this is a state of emergency and dramatically impacting residents, Nunavut is not included in the commitment and has not received increased funding from the budget increases. Cases such as this are not isolated and need immediate resources as well as long term action and support.

While this research will focus on the commitment, these protests and historic events are relevant to include as they explain the larger context that affects this commitment. Protests, residential schools and other current problems and grievances faced by Indigenous peoples impact public perception, political attitudes and the time, money and awareness dedicated to each issue. These other events illustrate that providing access to safe drinking water does not exist in a ‘policy vacuum’ but has multiple factors affecting and influencing the government's ability to fulfill its commitments.

2.2.1 The Use and Boundaries of DWAs and the Commitment to End Them

To understand the GoC goal to end DWAs, we need to also understand what DWAs are, and when and why they are used. The drinking water advisory is used as a tool to communicate concerns with water quality safety both to consumers and government agencies that regulate drinking water systems. DWAs can be precautionary—related to operational challenges, treatment failures or adverse water quality results—or emergency advisories issued as a result of microbial contamination (Lane & Gagnon, 2020, p. 909). Thus, precautionary advisories signal a technical problem that could make the water unsafe and emergency advisories are issued when there is a confirmed water quality risk. The type of DWA depends on the nature of the problem, with advisories ranging from boiling tap water before consuming (Boil Water Advisory, BWA) to not consuming or using tap water under any circumstances (Do Not Consume Advisory) (Lucier et al., 2020, p. 2). Although the terms drinking water advisory and boil-water advisory are sometimes used interchangeably, they point to different types of contaminants. Boiling is effective for removing bacteria, viruses and parasites, but not for removing toxic metals, for example. Long-term advisories are those that are in place over 12 months. Therefore, based on the boundaries of the commitment the DWAs being focused on are those; over 1 year long and on First Nation reserves.

The commitment specifically mentions ending all long-term boil water advisories on First Nation reserves; therefore, intentionally excluding certain Indigenous communities and limiting the DWAs it will address. By solely focusing on First Nations, the commitment excludes other Indigenous populations mainly, Metis, Inuit, and those not living on reserve, resulting in more underserved communities that are struggling to access basic resources, such as water. First Nation reserves are under federal jurisdiction because they are on Crown Land placing the

responsibility for water treatment and management on Indigenous communities and ISC (Lucier et al., 2020, p. 2). Similarly, the boundary placed on the type of DWAs poses additional problems.

While the GoC uses DWAs as a measure for success, DWAs are not the best indicator of safe drinking water. Studies have shown a lack of a consistent and uniform DWA reporting method(Lane & Gagnon, 2020, p. 909). Each province or territory has a different agency in charge of reporting advisories and the information presented with each advisory lacks a uniform format. There is also a lack of evidence to know whether DWAs are being adhered to by the public. Furthermore, long-term advisory statistics are more of a policy performance measure than a true indicator of First Nations water security and well-being. While DWAs have problems in how they are issued and enforced, they are still a useful public health tool. The elimination of long-term DWAs on reserves should remain a priority for the GoC but needs to be expanded to include those who are not currently served by ISC and the federal commitment and take into account the limitations of DWAs.

2.3 Gender Context

Indigenous women's connection to water is sacred and deeply spiritual and the relationship is based on the fact that women and water, both create life (Alcantara et al., 2020, p. 170; Anderson et al., 2011, p. 12). Women are connected to water in three main ways; birth, death and Mother Earth. Women's relationship to water and birth is based on their ability to harbour and nurture new life and for welcoming new life. As Bernard states, "we are all water beings and we embrace our connection to Mother Earth and her lifeblood and care for water as it is precious and that all life depends on it to survive" (Bernard, 2018). Women are also the

"carriers of water" as the waters of the womb that sustain new life and transport it from the spirit world to our physical world, i.e. when your water breaks (Anderson et al., 2011). With respect to death, women are responsible for attending to the dead at the end of life, as they are in charge of washing and preparing the them for burial (Anderson et al., 2011, p. 13). Finally, women's relationship with water is represented by the feminine body of Mother Earth. Indigenous knowledge teaches us that the waters of the earth are the veins of this great Mother (Anderson et al., 2011, p. 13). The respect Indigenous communities have for water and the relationship women have fostered demonstrates how they care and respect for water and the environment as a whole, is something that is lacking in technical discourse.

More so than, men, women have greater responsibilities to respect, honour and care for water. Through their caretaker role, women care for and protect water in numerous ways: talking circles, water walks and protecting water sources through traditional protocols (Cave & McKay, 2016). Women also speak for the water and are often at the forefront of water-related resistance and mobilization such as the Wolastoqiyik and Mi'kmaq Women known as the "grandmothers" and defenders (Harris et al., 2013, p. 15; M'sit No'kmaq, Marshall, Beazley, Hum, Papadopoulos, et al., 2021, p. 2; Pictou et al., 2021). Led by these grandmothers, the Sipekne'katik Mi'kmaq First Nation, Millbrook First Nation, and other Mi'kmaq communities have been protesting the Alton Gas pipeline near the Shubenacadie River since 2014 by building a Treaty Truck House[6] (Waldron, 2018, p. 260). Led by Elder Dorene Bernard, the Truck House has become the site of planning, fundraising and educating about ecological, anticolonial, and

[6] Treaty Truck House is references in Peace and Friendship Treaty of 1752 and their original intent was two-fold; to control trade with the Indians and to foster amicable relationship among them. Thus, the colonial truck house policy can be viewed as both political and diplomatic (see glossary).

anti-capitalistic issues related to Alton Gas and other social and environmental justice struggles (Waldron, 2018, p. 260).

In addition to a spiritual connection, gender roles and the gendered division of labour affect how men and women use water. Women hold particular responsibilities to protect and nurture water in order to maintain a household. Women tend to be responsible for boiling water, a very time-consuming task, due to their roles in childcare and eldercare, food preparation, cleaning and other housekeeping tasks (Anderson et al., 2011, p. 12). Alternatively, men's role tends to be more physically intensive as they are the ones responsible for retrieving water, specifically in remote communities that have wells or potable water dispensing units (PWDU) (Hanrahan et al., 2016, p. 278). Due to the reliance on men to retrieve water, the number of men in a household is positively correlated to the amount of water consumed in a household (Hanrahan et al., 2016, p. 278). Therefore female-headed households are more vulnerable to water insecurity[7].

Women are also disproportionately negatively affected by DWAs and the socio-economic and health burdens that come with them. In female-headed households and single-income households in general, income and poverty impact water habits and access to water. For example, higher-income households can afford filtration systems and have the ability to buy bottled water in times of scarcity or contamination (Harris et al., 2013, p. 18). Research has shown that women are more vulnerable than men to environmental contaminants as a result of differences in physiology and anatomy (Anderson et al., 2011, p. 12). For example, in communities with high levels of air, water and soil pollution there are more reproductive health issues affecting women with high rates of miscarriages, stillbirths and birth defects (Anderson et

[7] While Indigenous scholarship on 2SLGBTQ+ is evolving, especially for youth (See (Sylliboy, 2021; Sylliboy et al., 2021)) specific roles in the household have yet to be explored. Also see (Lezard et al., 2021)

al., 2011, p. 12). Since women bear the brunt of burdens caused by DWAs, they require additional support and resources that are especially tailored to their needs.

The important relationship between women and water has been ignored in water policy. Historical and contemporary forms of colonialism have created a disconnect between many women and water. This disconnect especially impacts Indigenous women as they have a recognized special role as "keepers of traditional knowledge and the messengers who "talk for the water" (Alcantara et al., 2020, p. 170). Since women play a central role in all decisions affecting how water is used, managed and protected, they need to be centred in water security discourse. Women's knowledge should be included in water politics and discourse about water security as it illustrates women's "socially embedded, justice-oriented, and intersectional appreciation of water" (Harris et al., 2013, p. 15). Unfortunately, Indigenous peoples and especially Indigenous women, have been excluded from decision-making processes based on historical and contemporary forms of colonialism. Exclusion has been based on "White Paper Liberalism", as well as through the favouring of Western knowledge, legal concepts of property and the Western tendency to discount traditional ways of knowing. Additionally, the patriarchal nature of western society conflicts with the matriarchal values of Indigenous societies furthering the divide and power imbalances between the two.

While water security impacts Indigenous people in general, especially those living in poverty, water security is a gendered issue with women facing the bulk of the negative impacts, calling for an intersectional approach (gender, poverty, race, etc.) to water security. Canada must learn to respect its land, resources and people, both Indigenous and non-Indigenous, in order to adequately protect our water sources. Therefore policy, water governance and academic

discourses need to follow and listen to Indigenous women to ensure Indigenous knowledge and traditions of protecting and respecting water are included in policy about water security.

Conclusion

This section explored the Canadian colonial, political and gender context necessary for understanding the discussion about DWAs. The colonial context focuses on the historical and continued impacts of settler colonialism and how it shapes the physical and political landscape of drinking water. The political context explained the GoC's roles and responsibilities in terms of Indigenous water and the current political climate in Canada. This context is necessary as the socio-political landscape shapes public attitudes and perceptions about Indigenous drinking water and the other priorities that occur simultaneously. Finally, a gender context is explored to emphasize the importance of Indigenous women's dual connection to water and to understand the added impacts of women and gender diverse persons.

Chapter 3 Literature Review

Indigenous water security has been researched extensively yet the research tends to focus on the same three themes: 1) impacts of settler colonialism, 2) the Canadian legislative framework and water governance and 3) the failure of infrastructure, training and maintenance. These themes are used to explain the causes and persistence of DWAs. This literature review will explore the limitations of relying on these three themes as the only causes of DWAs and discuss how these gaps can be addressed in future research. Additionally, climate change has increasingly become a concern and a focus in public and scholarly discourse and therefore, the impacts of climate change on access to water will also be explored. Exploring the current literature on Canada's limited legislative framework for the right to water will illustrate how Canada is failing Indigenous communities and provide possible solutions for resolving DWAs in Canada.

3.1 Impacts of Settler Colonialism on Canadian Legislative Framework

To fully understand the Canadian context of water insecurity, we need to understand the historical background that has led to the inequality and oppression faced by Indigenous peoples globally—settler colonialism. Settler colonialism is an extension of colonialism discussed in chapter 2 and "informs past and present processes of European colonization, global capitalism, liberal modernity and international governance" (Morgensen, 2011, p. 53). Settler colonialism is a distinct type of colonialism that works through the displacement of Indigenous populations by

settlers who over time develops a distinctive identity and sovereignty, replacing the original population[8]. Settler Colonialism and the Canadian legislative framework are inextricably linked as the legislation is the written results of colonial ideologies. Indigenous groups have resisted this imposed colonial rule and its subsequent policies. This continued persistence of Indigenous groups eventually led to the creation of the 1982 Working Group on Indigenous Populations. The working group submitted the first draft declaration on the rights of Indigenous peoples which was approved in 1994 and sent for consideration to the U.N. Commission on Human Rights (United Nations, 2015). However, the "right to self-determination of Indigenous peoples and the control over natural resources existing on indigenous peoples' traditional lands" was a contested provision which lengthened the acceptance process (United Nations, 2015). In the meantime, Indigenous activists, leaders, communities, and organizations have continually called for the recognition of Indigenous rights within the legal and political frameworks of the Canadian state (Coulthard, 2014, p. 2). This call for recognition led to the creation of core principles outlined in the 1996 Report of the Royal Commission on Aboriginal Peoples (RCAP) by the Assembly of First Nations that include the recognition of

> the nation-to-nation relationship between First Nations and the Crown; the equal right of First Nations to self-determination; the Crown's fiduciary obligation to protect Aboriginal treaty rights; First Nations' inherent right to self-government; the right of First Nations to economically benefit from the use and development of their lands and resources (Coulthard, 2014).

[8] There are complexities and varying definitions of settler colonialism, yet it must be emphasized that there has been no end to colonialism but rather it is on-going. For example, following Lorenzo Veracinni and Mahmoud Mamdami a defining aspect of settler colonialism is actually the settler's arrival, at which point they seek to recreate the world that they left. This is fundamentally different from a migrant, who arrives in a new place and instead tries to understand and integrate into local customs and ways of being (Leroy, 2016).

Similar principles are outlined in the final draft of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which was introduced and endorsed by a majority of states in September 2007, excluding Canada, the United States, New Zealand and Australia. Canada conditionally endorsed UNDRIP in 2010 and then unconditionally in 2015 (United Nations, 2015). While Canada, United States, New Zealand, and Australia eventually endorsed the UNDRIP, their initial reluctance is domestically and internationally viewed as a contemporary form of colonialism. While recognizing UNDRIP forces settler-colonies to re-examine their own actions and relationship to land and Indigenous people, the refusal of it is a colonial move in subjugating Indigenous self-determination to State Sovereignty. For example, even with its endorsement it appears that the non-veto remains a qualification for endorsement.

Moreover, while the Indian Act grants the GoC the "responsibility for 'Indians and lands reserved for Indians,' water and wastewater are the responsibility of provincial and territorial governments (White et al., 2012, p. 2). Federally, Canada has no legally binding framework on the right to water beyond its recognition of water and sanitation as fundamental human rights in 2012 with the United Nations General Assembly (Mitchell & Lui, 2015). This division of responsibilities has resulted in a limited legal framework for the right to water.

As water policies are a provincial responsibility, the federal government only provides guidelines and recommended standards. However, Indigenous "reserves" are considered federal lands and responsibility and therefore not bound by provincial standards. This is dangerous for Indigenous communities because without a federal framework for the protection of drinking water, Indigenous communities are not given the standards necessary to oversee and maintain safe drinking water on their own. This jurisdictional ambiguity is still problematic today as multiple government departments (Indigenous Services Canada, Health Canada, Crown-

Indigenous Relations and Northern Affairs Canada, First Nations Inuit Health Branch, Environment Climate Change Canada etc.) are directly involved in First Nations water and wastewater matters. This lack of a cohesive framework has resulted in pushing the responsibilities for water back and forth between provinces, the federal government and First Nations and ultimately failing to fulfill the human right to water for many Indigenous communities in Canada.

In addition to this limited legal framework, many high-risk communities are excluded from governmental responsibility for ensuring water security either because they have "no water system at all, or because an existing water treatment plant produced potable water, even if such plants were not connected to the majority of homes on a given reserve" (Boyd, 2011, p. 90). Yet, the Canadian government blames these flaws on the failure of Indigenous people to self-regulate and their 'alleged' inability to regulate water filtration systems indicating what some deem as a contemporary form of colonial violence (Murdocca, 2010, pp. 370–372). Thus, they are left vulnerable and dependent on the GoC to provide clean water, but they have yet to succeed. The GoC's failure to achieve universal safe drinking water in Indigenous communities, despite having the necessary financial and material resources, constitutes contemporary colonialism.

3.2 Infrastructure, Training and Maintenance

Though many authors state the First Nation water crisis is not just a technical problem (Baijius & Patrick, 2019; Galway, 2016) many of the physical causes of DWAs are due to operational concerns within a water system such as equipment malfunction or lack of proactive management measures for preventable issues (Galway, 2016, p. 9; Lane & Gagnon, 2020, p. 909). While socioeconomic factors need to be taken into account, many communities also need help with resolving technical problems, more specifically with operational concerns as 40% of

advisories are related to operational issues in these water systems (Lane & Gagnon, 2020, p. 909). There is the opinion that Indigenous people should just "figure out their own water problem" however this is indefensible because if settler-societies had the same level of industrial resources and scope of planning as Indigenous communities' urban areas would collapse due to lack of readily available water. Settler-colonialism and the attempted genocide of Indigenous people across this country has led to the forced and coerced transformation of the scale of life, and with that comes the demands of modernity, including water treatment and access at industrial levels to support services like permanent settlement.

Currently, water infrastructure design is imposed on communities by engineers and technical experts contracted by the GoC, leaving the Chief and Council to manage infrastructure based on priorities arising from federal programs (Bradford et al., 2018, p. 489). Additionally, communities are responsible for generating 20% of funds for their water systems and management with the remaining 80% provided by the Government of Canada. However, many communities struggle to generate income and it has been frequently highlighted as impossible to meet the 20% requirement (Black & McBean, 2017a, p. 239). So not only do communities struggle to find and retain operators, but often the communities do not have the physical or financial capacity to maintain the water infrastructure that is in place. In the past, government action aimed at resolving DWAs has focused solely on technical and infrastructural interventions, which while necessary, remains incomplete because a larger contextual understanding of DWAs on a federal level is required. Indigenous peoples' worldview looks ahead for the wellbeing of the next seven generations[9]: a future of clean land, air and water for

[9] The term 'Seven generations' is derived from the Haundonese Seven generations principle (and similar to other Indigenous groups). It has become a general principle that is considered in decision making processes especially about the use of natural resources. See: (Haley, 2021). Elder Dr. Albert Marshall also uses this concept as a

their children and their grandchildren. Thus, for technical fixes to result in meaningful changes, there needs to be an acknowledgement of the interconnectedness of "social, cultural, economic, political, and ecological factors and that the lack of access to safe and reliable drinking is a "multi-layered problem" (Galway, 2016, p. 9).

3.4 Climate Change

The effects of climate change have direct consequences on water security and are one of the reasons resolving DWAs should be a priority. Furthermore, extreme weather changes and climate crisis threaten the traditional Indigenous lifestyle, thus additional protections are necessary to sustain what is left. The mean annual global surface temperature continues to increase and these "rising temperatures will diminish the snowpack and increase evaporation, thereby affecting the seasonal availability of water" (Novotna et al., 2014, p. 82). The seasonal availability of water and increased pollution is decreasing resulting in a global decrease in water quantity and an increased risk of waterborne pathogens (Latchmore et al., 2018, p. 896). Further Baijius and Patrick (2019) argue, climate change and extreme weather events such as increased flooding can also mobilize contaminants into nearby water bodies or groundwater supplies (p. 11). This is evident in the risky methods used to manage water and wastewater. For instance, household sewage disposal systems known as "shoot-outs" are commonly used by remote Indigenous communities and consist of sewage being piped from the home and deposited in a backyard area. The method is risky as contaminants from these disposal sites, among others, can run off into water sources. The literature discusses climate change yet focuses on it in a technical

fundamental part of Two-Eyed Seeing (Institute for Integrative Science & Health, n.d.) Also see: (Prosper et al., 2011)

sense and fails to fully explore the socioeconomic implications climate change has on Indigenous communities' access to drinking water.

A lack of adequate and up-to-date regulation for source water protection is causing the largest source of pollution for all Canadian bodies of water, with roughly 150 million litres of raw sewage dumped into our waterways every year (Barlow, 2016). Source water cannot be protected without ecosystem protection as source water is protected and purified by a complex ecosystem that includes wetlands and forests (Barlow, 2016). Therefore, due to the increased risk of climate change, it has become even more important to protect the human right to water, which can help reduce the impacts of climate change by providing ecosystem protection, source water protection and improve conservation of water and other natural resources (Benidickson, 2017, p. 90).

3.5 Gaps in the Literature

While the present research on Indigenous water security and DWAs is extensive, there are still gaps in the literature. There is minimal research on the gender implications of DWAs with gendered-based research focusing only on cultural uses of gender and Indigenous women. While the origin of Indigenous women as 'carriers and/or keepers' of water and their activism are important aspects of Indigenous feminism, they do not necessarily translate into decolonizing water governance. Furthermore, (at the time of writing) the only report to evaluate the 2016 commitment to resolving all long-term DWAs is the 2020 Auditor General report. Therefore, this thesis aims to provide an academic evaluation of the 2016 commitment with a focus on gender and Indigenous knowledge to determine whether the commitment resulted in meaningful change.

Chapter 4 Analytical Framework

The study of water has always been studied from various disciplines with a range of different approaches from technical engineering methods to Indigenous Peoples' Knowledge (IPK) and positioning it in terms of natural resource management (Armstrong, 2002, p. 11). However, with such diversity comes debates and conflicts over which paradigm best addresses water studies. The two main approaches, large-data-set-based research (positivism) versus case studies (interpretivism), have framed water studies in binary, dichotomous ways (Mollinga, 2020, p. 388). While this binary debate continues, Indigenous water security in Canada continues to worsen. Research has shown that both positivist large-data-set studies and interpretivist single case studies have failed to adequately answer the questions of how contextual water knowledge is, can and should be (Mollinga, 2020, p. 389). Therefore, my analytical framework focuses on a layered reality and critical realism, but first I will discuss the limitations of the positivism paradigm. The positivism paradigm is a methodological philosophy in quantitative research where methods of natural sciences are applied to discover the study of social science (Pham, 2018, p. 2). Positivist approaches look for generally valid theories. These generalized theories have mainly been applied in an international context with international policies on best practices, lessons learnt and 'toolboxes' resulting in a standardized framework (Mollinga, 2020, p. 390). Despite regular criticism and evidence that standardized policy approaches often produce neither desired nor regular outcomes, they continue to be attractive to decision-makers and are pursued with vigour. For example, the large variety of climates in Canada drastically impact the appropriate facility and treatment designs therefore standardized plans do not work for all locations and often result in continued problems. These claims of universality are power claims that place western knowledge creation at the forefront. Indigenous water security cannot be

solved with universal solutions, each community is impacted for different reasons therefore positivism's generalization tends to do more harm than good. For example, whether capitalist or socialist, approaches to rapid industrialisation and development remain firmly grounded in an ontology of land that renders it passive unless improved through human intervention (Parasram & Tilley, 2018, p. 308). But as Indigenous scholars have long argued, this ontological starting assumption is not universally held (Ibid.). Attempting to fold all of humanity into the same ideology ignores alternative ways of thinking.

Positivism denies the contextual nature of knowledge (through the notions of objectivity and neutrality) which also denies Indigenous knowledge systems and ignores the larger context and structures that influence knowledge creation (Mollinga, 2020, p. 389). Indigenous water knowledge is based on Indigenous women's connection to water which is sacred and deeply spiritual (Alcantara et al., 2020, p. 170; Anderson et al., 2011, p. 12). For Indigenous communities', water is seen as "biotic"- alive compared to as a commodity or an element in the Western view (Anderson et al., 2011, p. 16). Indigenous water governance calls for water "not be treated as a commodity to be exploited for the sole benefit of users, but instead treated with respect, wisdom, love, bravery, honesty, humility, and truth" (Alcantara et al., 2020, p. 171). Therefore, positivist approaches which Western scientific knowledge and technical solutions have favoured, discount traditional ways of knowing resulting in a focus on water as a commodity, and a lack of attention to the local context (Lawless et al., 2015, p. 85).

DWAs have been positioned as only hydrological or environmental problems to be fixed by technical and engineering solutions (Baijius & Patrick, 2019). This sole focus on western knowledge and technical solutions disregards the colonial history that has led to the power imbalances and the dispossession of Indigenous people from their land and resources, ignoring

the root cause of the water problem. Additionally, this western dominant discourse and favouring of technical fixes coupled with power held by governments and state policies contribute to the marginalization of Indigenous people and limit the ability for full and meaningful collaboration (Black & McBean, 2017b, p. 249). The power of knowledge and knowledge creation being held by western governments illustrates the need to understand the socio-economic and political context behind these DWAs impacting Indigenous communities.

Water studies have been regularly criticized for being too water-centric, focusing only on those things directly implicated in water resources use, management and governance. This exclusive focus has been questioned by the increasing attention to the environmental dimensions of water, the positing of water as a security issue, the identification of a food-water-land-energy nexus, the consideration of water as a key element in climate change, and several other perspectives (Mollinga, 2020, p. 390). Therefore, discourse needs to highlight the multiple water realities and ways of being- with water, not just different perceptions of or knowledge systems tied to water's material existence (Yates et al., 2017, p. 798). The current discourse has been controlled by the Western education systems which have interfered with Indigenous knowledge systems (Armstrong, 2002, p. 14). The government maintains that western produced knowledge is "superior" and has ignored or replaced Indigenous knowledge with technical solutions. However, the reliance on only one knowledge system is dangerous because knowledge becomes "compartmentalized and systemized", removing people from Traditional Knowledge systems and ways of knowing (Armstrong, 2002). Therefore, to fully understand Indigenous water security in Canada, we not only need to be critical of knowledge creation but also understand that there are layers and multiple realities.

Critical realism is the paradigm that actively critiques the power relations in the creation of knowledge and accepts that there are multiple truths and layers to reality (Benton & Craib, 2011). In spite of the harmful effects of Western positivism in environmental governance, Indigenous worldviews have persisted. Indigenous perspectives and knowledges are based on different ontological frameworks grounded in a deep spirituality and relationality with land and water. Positivism and western ontologies try to separate people from the land and water however as Bernard notes, "the life, culture, and strength of the Mi'kmaq (among other Indigenous groups) cannot be separated from the sacredness of water." (Bernard, 2018, p. 299). Alternatively, critical realism does not make any truth claims until it knows how something works independently from other variables. Truth claims cannot be made about any particular science at any particular time because there are always multiple variables influencing a perceived outcome and the context of the situation always plays a role. Therefore, the surface appearance of things is potentially misleading because unobservable things may be having an impact on the observed outcome. Furthermore, critical realism believes in reflexivity which argues that how we discuss a topic or situation impacts our understanding of a given situation. As we communicate and think, we change our world and our understanding of it. Ultimately, critical realism argues that there are multiple truths and realities to our world all of which exist independently from what we think or believe about it. Critical realism aims to uncover the underlying power structures that influence our world and the way we think about our realities (Benton & Craib, 2011). Based on this goal of uncovering power structures, critical realism is essential to studying Indigenous water rights and the Indigenous water crisis in Canada.

For post-structuralists who argue that critical realism does not force researchers to interrogate their own categories of analysis, I argue that it does by accepting the existences of

multiple truths and thus there could be multiple true categories of analysis. Critical realism only claims to make assumptions about an event based on a set of variables and is open to new conclusions when other variables or categories are consulted. In the context of this research the realities and truths are outlined by Two-Eyed Seeing which itself aims to combine the two truths; Western science and Indigenous knowledge. In defence of critical realism Stevens argues that ontologically oriented research, which he calls "radical constructionism", leads to political paralysis (Stevens, 2020, p. 2). In his view, the argument that "scientific processes produce their objects" provide a sound basis for analysis: "All it [radical constructionism] can do is throw up a 'multiplicity' of competing 'forms of reality' (Stevens, 2020, p. 2). Rather, Stevens (2020, 2) says, researchers have to embrace a "conceptual framework" that accepts an external reality as a backdrop to their analyses. Critical realism, he argues, provides such a framework (Bacchi, 2021). This underlying framework is necessary for knowledge creation that can be transferable[10] (Stevens, 2020, p. 3). Furthermore, there is the poststructuralism to notions "there are no general rules … and the general disappears, along with the universal"(Law, 2004, p. 155). While the idea of no rules is an "admirable rejecting of scientific reductionism," however when everything is individualized it cannot be used to inform policy. After all the whole point of having a policy is that it avoids treating each case as singular and provides a general procedure (Stevens, 2020, p. 3). Researchers always have their basic assumptions that have to true for the basis of their analysis therefore these base assumptions ground the research in the researcher's reality despite "radical constructionism's" attempt to not conform to one truth.

[10] Emphasis transferable as to avoid generalizable because critical realism also aims to avoid generalizing as it focuses on understanding each variable independently from other variables.

While I appreciate poststructuralism, it is more of a political stance as oppose to an epistemological theory and as this is an academic thesis, the analytical framework requires an epistemology. Also, I believe critical realism offers a helpful framework and adds a dimension of veracity and rigour to help the research be accepted in academic circles. Additionally, I believe critical realism fits with Two-Eyed Seeing because it accepts the truths outlined by western science and Indigenous knowledge and aims to construct a 'new reality' of their combination. Another critique of critical realism is that it views terms the terms we adopt as "explanatory" devices; instead, of central role in "world making" (Lancaster & Rhodes, 2020, p. 4). However, critical realism chooses its terms and definitions with intention and reason, often explaining the larger context and underlying meaning thus still contributing to framing the reality and "world making" of the research. Furthermore, there are firm realities about water quality that is safe for human consumption. Therefore, there cannot be multiple truths is water quality however there can be for water delivery, monitoring, testing and the overall process to ensure quality limits. Also, for the Canadian context there are set definitions because they have been legally outlined by the Indian Act and thus despite wanting to break out of the constructed reality, we are trapped by the external reality of the Indian Act and the current accepted scientific process. This research's use of Two-Eyed Seeing combats the limitations of critical realism by weaving between the realities of western science and Indigenous knowledge. Additionally, in adding a feminist perspective it adds a third reality and thus critical realism becomes a layered reality with an underling conceptual framework.

4.1 Feminist Decolonial Approach

For my research to truly evaluate the federal government policy of resolving all DWAs by 2021, my analytical framework will be grounded in critical realism, more specifically in a feminist decolonial approach with an emphasis on the Two-Eyed Seeing model (further explained in the following section). By using a decolonizing approach, my research aims to critically examine the creation of Western knowledge about Indigenous Peoples, and the extent to which Indigenous peoples have been marginalized within Western research processes (MMIWG, 2019b, p. 17). This approach will help to reveal the experiences and complexities of conducting research in colonial sites (such as universities or governments) by articulating strategies for exposing how settler colonialism, in both its' historic and contemporary forms, impacts Indigenous people within settler states like Canada (Pictou, 2020, p. 372). A decolonizing approach further ensures that methodologies place Indigenous knowledge at the centre of the research framework. A decolonial approach is valuable in understanding environmental racism and 'de-linking' from western knowledge and its ontological assumptions about human and nature/water relations and debunking the western universal truth predicated on the representation of other-than European systems of knowledge as 'non-thinkers', 'pre-historical', or otherwise unqualified to enter into the business of knowledge (Parasram & Tilley, 2018, p. 308). Therefore, a decolonial approach goes beyond merely identifying the colonial impact but also seeks change. As a result, research using a decolonizing lens gives power back to the participants and the participant's community in ways that are useful to them (MMIWG, 2019a, p. 17).

A feminist perspective is added to the current decolonizing framework due to the overlapping systems of patriarchy and settler-state colonialism imposed on Indigenous communities. These systems are often internalized in Indigenous politics and Indigenous women

and gender diverse persons are left struggling to navigate through patriarchal colonialism not only from the state but also within their own communities and related political organizations (Pictou, 2020, p. 373). Indigenous women are constantly excluded from research and the decision-making and governance processes (Alcantara et al., 2020, p. 170; Anderson et al., 2011, p. 12). This is especially problematic for DWAs since women and men have their own gender roles when it comes to water. Indigenous women are further impacted because of their spiritual connection to water (see gender context 2.2). Thus, men and women's gender roles differ both in practical and spiritual roles. And where in must Indigenous societies women have an additional spiritual connection to water, this female connection to demonstrates women's "socially embedded, justice-oriented, and intersectional appreciation of water" (Harris et al., 2013, p. 15). Practical roles are based on gender roles with men being responsible for the more physically intensive tasks and women being responsible for household tasks such as child-care, cooking and cleaning. The reliance on men to retrieve water also implies that female-headed households are especially vulnerable to water insecurity (Hanrahan et al., 2016). Additionally, there is evidence of reproductive health issues affecting women which can be seen by the high rates of miscarriages, stillbirths and birth defects (Anderson et al., 2011, p. 12).

Also, women are often at the forefront of water-related resistance and mobilization, such as the 'grassroot grandmothers' despite their exclusion from water policy and governance debates (Harris et al., 2013, p. 13; Page, 2019). Women need to be integrated through decision-making and governance processes and not just "extracted of their traditional knowledge about water" (Alcantara et al., 2020; MMIWG, 2019b). Feminism and postcolonialism form the theoretical basis of critical realism as I attempt to break down the power relations and structures behind Indigenous DWAs in Canada. Research has shown the historical exclusion of women in

decision-making processes despite the practical and spiritual connections Indigenous women have with water. Therefore, the analytical framework of this research focuses on a decolonial feminist perspective to ensure that a feminist perspective be included when studying Indigenous water security. Additionally, a feminist perspective on water security can help address other problems such as violence against women as referenced in the recommendations in the *Final Report on the Missing and Murdered Indigenous Women and Girls*.

As per the MMIWG Final Report recommendations, increased water security can contribute to; ending discrimination, and violence against women, providing healthy learning environments, addressing and improving social determinants of health, engaging women within environmental stewardship issues and fostering government and organization collaboration in carrying out comprehensive action plans on Aboriginal health and social conditions (see recommendations; theme 8, theme 9, etc.) (*National Inquiry Master List of Report Recommendations*, 2018). Furthermore, since women and land/water are connected, resource extraction has been linked to violence against land, water and Indigenous women's bodies (KAIROS, 2014; Laboucan-Massimo et al., 2018). Despite this acknowledged special perspective and/or connection women have with water there is a denial of women's social ownership of land and resources removing them from decisions making processes and their power to manage resources (Dalal, 2019, p. 146). Therefore, adequate water security can improve the standard of living for Indigenous communities who currently do not have access to safe drinking water and help reduce violence against women among other recommendations outlined by MMIWG Final Report. The fact that adequate access to water is highlighted through the Final report on Inquiry into MMIWG illustrates the importance of not only water security,

but also women's involvement in decision-making processes about water-related issues and the importance of a feminist perspective when studying Indigenous water security.

Women need to be integrated through decision-making and governance processes and not "extracted of their traditional knowledge about water". It is because of women's practical and spiritual connections to water that women assume primary responsibility for overseeing the wellbeing of community water supplies. However, colonization, including residential schools and imposed (male-dominated) systems of governance, have resulted in a significant disconnect between many women and their water stewardship roles (Latchmore et al., 2018, p. 896). Even with continued advocacy and calls for protection of Indigenous women and their right to water, Indigenous women face more inequities when compared to their Canadian peers, due to the process of colonization and patriarchal governance resulting in the current culture of discrimination and disenfranchisement (Cave & McKay, 2016).

4.2 Two-Eyed Seeing Model

Framing DWAs as solely technical problems has been criticized for ignoring the root cause of First Nation water problems (Baijius & Patrick, 2019). Therefore, with a decolonizing research approach, my research will seek to engage with the Two-Eyed Seeing model, developed by Mi'kmaw Elders/Drs. Albert and Murdena Marshall, in order to combine technical-scientific knowledge and solutions with Indigenous knowledge and experience (Martin, 2012, p. 22). The Two-Eyed Seeing model refers to "learning to see from one eye with the strengths of Indigenous knowledges and ways of knowing and from the other eye with the strengths of Western knowledges and ways of knowing and to using both these eyes together, for the benefit of all" (Bartlett et al., 2015, p. 295). Two-Eyed Seeing seeks to avoid clashing of knowledges and instead requires a "weaving back and forth" between knowledges in order to have meaningful

and respectful collaboration (Bartlett et al., 2015, p. 299). My research uses the scientific objectivity of western positivism to understand the technical reasons for DWAs and the "Tribal Consciousnesses" and history of Indigenous knowledge to understand historic, political and socio-economic reasons for DWAs (Bartlett et al., 2015, p. 299). Indigenous water stewardship principles guide the Indigenous side and ensure Indigenous ideologies guide projects and the work to remove DWAs. For example, Indigenous perspectives focus ensuring projects account for seven generations in the future and viewing water as biotic and spiritual as opposed to the Western commodity understanding of water. Western systems of government are grounded in legal concepts of property and commodity and thus often ignore or do not understand Indigenous knowledges. Canada's knowledge system is defined by its political and academic institutions which are steeped in colonial structures and ideologies which threatened to put IK at risk of being absorbed into western academic knowledge systems. Centring Indigenous perspectives and voices is necessary to ensure western systems do not "extract and claim ownership of our [Indigenous] ways of knowing, our imagery, the things we create and produce, and then simultaneously reject the people who created and developed those ideas and seek to deny them further opportunities to be creators of their own culture and own nations" (Smith, 2012, p. 13).

Conclusion

Water security has far-reaching impacts and needs to be studied in a broader context, moving beyond the historical technical focus and instead follow a feminist decolonial approach. Critical realism is not only complementary to a feminist decolonial approach but also necessary when studying Indigenous water rights and the Indigenous water crisis in Canada because it is the paradigm that actively critiques the power relations in the creation of knowledge and accepts that there are multiple truths and layers to reality. Positivist approaches to Indigenous water

security fall short as they only focus on statistical analysis and the technical engineering side which ignores the larger contexts of colonialism, racism and sexism in Canada. While statistical analysis can help understand the total number of DWAs and these technical solutions are necessary, they cannot be the only focus in understanding why DWAs continue to occur. Interpretivism improves upon positivism by addressing the larger context of time and space but is still limited by its lack of focus on power, agency and critical analysis of the creation of knowledge. Additionally, interpretivism is marred by its subjectivity and the high likelihood of bias based on the dominance of western knowledge in academia and environmental and water discourses. Based on the inadequacy of positivism and interpretivism, critical realism becomes one of the superior paradigms to truly understand the Indigenous water crisis in Canada. Critical realism's ability to critique itself and constantly evolve based on new understandings is why I chose it as the framework for my thesis research. It is important to undertake a feminist decolonial approach and emphasize Two-Eyed Seeing to combine the best elements of western science and Indigenous knowledge and to learn from past mistakes and understand the colonial impacts on Indigenous Peoples.

Chapter 5 Methodology

This chapter discusses the methodologies used throughout the data collection, analysis, and interpretation phases of this thesis. A qualitative approach is adopted as per the analytical framework (Ch.4) and policy review and semi structured interviews were selected for data collection. This approach was selected because it "provide[s] a great deal of descriptive details…emphasizes process…[and] is concerned with explanations" (Bryman, 2004, pp. 280–281), which is essential to examine the outcomes of the 2016 Federal commitment to end all DWAs on First Nations "reserves". Data collected from government and legal documents is the main data source. Interviews with key representatives from different Indigenous communities and levels of government play a supporting role and provide expert insight into the creation of the policies resulting from the commitment and its impacts. Just as important the interviews offer key recommendations for moving forward (see Ch. 8).

5.1 Collecting Secondary data

The secondary data collected is through data analysis in the form of a policy review. Secondary data plays a pivotal role in the research in that it helps to vary and strengthen the arguments and provide additional evidence to answer research questions.

5.1.1 Policy Review

The first category of secondary data includes legal documents and reports. Legal documents refer to the texts of laws and regulations announced by both the provincial and federal governments of Canada. They are public policies in textual format (Ball, 1994). Legal documents were collected from the internet, library archives and local governments based on how they were related to the 2016 commitment. Documents were retrieved from government

websites, including using the 'way back machine' to find archived webpages, the Dalhousie university library and databases and the Queen's university library database. These documents were then downloaded and curated into a databased on Mendeley, and Zotero. The documents were then selected based on the following criteria; 1) Did the document relate to First Nation drinking water in Canada? 2) Does the act/legal document impact the 2016 commitment?, 3) Did it mention the 2016 commitment?, 4) Did it result from the commitment?

Since the commitment resulted in a number of new policies, programs, and projects all had to be included in the analysis to gain a full picture of the commitment. This was completed in order to provide insight and lay the foundation for what is stipulated in the policy for First Nation drinking water. Meanwhile, by examining these legal documents in detail, I was able to assess the clarity and feasibility of the 2016 commitment. Finally, legal documents provide information on how the government system in Canada is designed and how much discretionary power policy implementers have within such a system and how past legal documents impact the current political sphere and power dynamics. This historical impact is particularly important for Indigenous communities in Canada as explained in Chapter 2. This historical context and the legacy that follows it will be included through the analysis of the Indian Act which will be included in the list of documents analyzed.

This policy review includes an evaluation of historic documents, such as the Indian Act and the 2006 Expert Panel Report on Safe Drinking Water for First Nations as they have shaped the current government and political frameworks. As no implementation plan was created alongside the commitment, a policy review of current policies, initiatives and projects resulting from the commitment is necessary to evaluate the commitment itself. This consists of documents such as budget reports, individual project plans, and programs receiving federal funding and

progress updates provided by ISC and the GoC and all will be accessed on their respective websites.

5.2 Collecting First-hand data (Interviews)

Because of the pandemic, virtual interviews were used to collect data in this research. Interviews were conducted with five (5) experts on Indigenous drinking water and DWAs from a variety of backgrounds. Five (5) key expert interviews were conducted with individuals from the following fields: federal government, independent environment research non-profit organization, Indigenous grandmother, water operator[11], and an Indigenous water authority. These interviews aim to understand the perspectives of certain individuals and government agencies, specifically Indigenous individuals and agencies as a way to complement the policy review while at the same time ensuring the voices involved in accessing safe water are heard.

5.2.1 Sampling Method

The ideal sample includes a variety of participants from a variety of perspectives to broaden the range of expertise and to gain a better understanding of the outcomes of the 2016 commitment. The inclusion criteria focused on Indigenous individuals and government officials working with drinking water.

A combination of purposive and snowball (a participant recommending another) sampling was used to identify individuals for virtual interviews. Purposive sampling allowed me to select participants on the basis of their expertise on a specific topic or field. These participants

[11]Water operators are essential to ensuring communities have access to clean drinking water and reliable infrastructure. On a daily basis, they; monitor the operation of the plant, adjust treatment processes, conduct routine maintenance, ensure the water quality meets or exceeds guidelines (ISC, 2021c).

were located based on their position or title within the government or related organization as evident on a website. My supervisor, Sherry Pictou, who is Mi'kmaq, was able to assist in identifying potential key persons within her network of contacts who were willing to be interviewed. Once the primary participants were identified, additional participants were recruited using the snowball sampling technique. Initial participants were asked to identify other people who could provide a different perspective. I then emailed these potential participants and those who were willing to participate were interviewed. This method led to a list of (15) potential interviews that resulted in 5 participants.

Due to the nature of expert interviews, participants are picked based on their level of expertise and availability. Also, as interviews are supplementary to main the policy review, they will be based on level of expertise and level of government or relevant community. Not all experts interviewed are Indigenous as I would like to include a government perspective as well. As for the Indigenous experts I aimed to recruit water protectors and grassroot grandmothers. As for government representatives I aimed to recruit politicians and other government servants related to water and DWAs. I created a list of potential interviewees which range from Indigenous elders to government MP and representatives. This list was created based on each individual's area of expertise and background.

5.2. 2 Interviewees and Open-ended semi-structured questions

Once participants were identified, a list of semi-structured interview questions was compiled. Interviews were semi-structured with guiding questions that were the basis of each interview. This allowed participants to supplement information as they saw fit. (See **Appendix A** for the list of questions).

5.3 Data Analysis

Thematic analysis was used to further analyze qualitative data collected via virtual semi-structured interviews and documents collected from the governments and schools. Thematic analysis, according to Boyatzis (1998), is "a process for encoding qualitative information", where "a theme is a pattern found in the information that at minimum describes and organizes the possible observations and at maximum interprets aspects of the phenomenon" (Boyatzis, 1998, p. 4). Guest et al. (2012) summarized the general procedure of thematic analysis:

> Thematic analyses…focus on identification and describing both implicit and explicit ideas within the data, that is, themes. Codes are then typically developed to represent the identified themes and applied or linked to raw data as summary markers for later analysis (2012, p. 10).

The thematic analysis consisted of two stages. The first stage was to transcribe in-depth interview recordings into written texts. The second stage was coding the transcribed interviews, and documents included in the policy review. The analysis was done in two steps. First, creating a codebook and then coding using Nvivo software and while looking for deductive codes by hand on Mendeley.

A codebook of inductive codes was created based on themes gained from existing literature and research as seen in Chapter 3. I categorized the different ideas into the following six themes; colonialism, climate change, budget, gender, Indigenous knowledge, and infrastructure. Infrastructure is included because it was mentioned as one of the key reasons for DWAs as discussed in Section 2.2.1. These themes correspond to the issues in the main research question and included important keywords and phrases according to feminist and decolonial approaches.

Deductive codes were generated from the analysis to ensure there minimize gaps in the overall coding codes. Documents were scanned for word frequency and searched for any deductive codes using NVivo. Second, I read the interview texts and documents line by line and encoded every theme that was relevant to First Nations' drinking water, DWAs. I also encoded every theme that aligned with feminist and decolonial theoretical frameworks.

5.4 Ethical Considerations

Before collecting data for my research, ethics approval was received from the Social Science and Humanities Research Ethics Board of Dalhousie University reviewed in accordance with the Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans (REB # 2021-5635), covering the period of September 15, 2021, to September 15, 2022. As this research focuses on Mi'kmaw/Indigenous people, I also received ethics approval from the Mi'kmaw Ethics Watch board October 28, 2021. These ethic research guidelines were followed in the recruitment of participants, data collection and analysis. I informed all participants of the research process and offered anonymity by ensuring that their names would be omitted from the data. However, three out of the five participants, Indigenous grandmother, Dorene Bernard, Indigenous water operator, Deon Hassler and James MacKinnon did not request anonymity and consent to have their names included (see 6.2 Interview Results).

5.5 Limitations

The main limitations of the research stem from the Covid-19 pandemic and the inability to travel or have in-person interactions. All data collection, interview recruitment, and interviews had to be conducted virtually. Therefore, without in person interactions body language and facial

reactions could not be included resulting in a) possibly missing minute details; and b) a disconnect between myself as the researcher, and participants. However, virtual meetings allowed for additional transboundary interactions within Canada allowing for a greater diversity of perspectives.

The majority of the data for this research stems from the policy review, which relied completely on secondary data. Secondary data has limitations due to the fact that the researcher did not collect the data, and thus I had no control over what is contained in the data set. Another major disadvantage to using secondary data is that the researcher does not know exactly how the data collection process was done and how well it was done. The researcher is therefore not usually privy to information about how seriously the data are affected by problems such as low response rate or respondent misunderstanding of specific survey questions. However, this information is available, in this research context as the data sets are were documented by the federal government. However, as this research is evaluating how well the federal government is fulfilling its commitment it does run the risk of a conflict of interest in using federal data to evaluate federal policies. Therefore, I address this problem by including key participant interviews (Covid-19 limitations aside) as supplementary data for the policy review.

Chapter 6 Results

The commitment to end DWAs in Indigenous communities was originally part of the 2015/2016 election campaign for the Trudeau Liberal government. After Justin Trudeau was elected, the commitment later appeared in the 2016-2017 Budget *Growing the Middle Class* with $1.8 billion dollars allocated over the subsequent five years starting in 2016 “to address health and safety needs, ensure proper facility operation and maintenance and end long-term boil water advisories on reserves" (Zamai et al., 2016, p. 143). The commitment was reiterated in the mandate letter from Trudeau to the Minister of Indigenous services, Marc Miller. The commitment in the mandate letter by Minister to his cabinet to:

> Establish legislative, regulatory and Cabinet processes to deliver your top priorities:
>
> 1. Identify the best models for delivering improved services to Indigenous Peoples and improve accountability to Indigenous Peoples for the quality of services delivered
> 2. Ensure the successful delivery of the significant investments made in Indigenous services through Budget 2016 and Budget 2017. This includes new and repaired housing, ensuring First Nation children on reserve receive a quality education and **eliminating all long-term boil water advisories by 2021** as a key measure in ensuring First Nations people on reserve have access to clean drinking water (emphasis mine (Trudeau, 2017, p. 4)).

This thesis focuses on the commitment made in this mandate letter along with its associated budgets to determine what the commitment accomplished. Unlike a law or policy, this commitment is not contained within a single work. Therefore, to analyze the commitment, I have reviewed and coded common themes throughout all associated policies that led to the commitment as well as all resulting policies and programs.

Included documents

Documents that make up the policy consist of 36 documents and range from budget reports to progress updates and new projects. The inclusion criteria were based on whether it met one or more of the following: 1) "Did the document relate to First Nation drinking water in Canada? 2) Does the document impact the 2016 commitment? 3) Did it mention the 2016 commitment? 4) Was it a result of the commitment?" Budget reports from 2016-2021, are also included as they outline the financing of the commitment and show the resulting investment made due to the commitment. Speech and mandate letters from Prime Minister Justin Trudeau are included because they outline the goals of the commitment. Current guidelines and program manuals for drinking water "on reserves" and federal lands are included to show the current legal framework policies. Progress update reports on infrastructure and investments including the 2021 auditor general's report on access to safe drinking water in First Nations communities are included to see the progress of the commitment. Documents on new projects such as the creation of a Canada Water Agency are included because these new projects have gained traction and support due to the increased investment and public awareness of the commitment. Associated policies were gathered from federal websites, mainly the ISC website as it is the main department in charge of fulfilling the commitment.

Of the 36 included documents, there were nine (9) budget documents:

1-4. Budget Highlights Indigenous and Northern Investments for 2016-2019, (Government of Canada, 2016, 2017a, 2018, 2019a)

5. Budget Sufficiency for First Nations Water and Wastewater Infrastructure by the PBO, (Ammar, 2017)
6. the 2016 Growing the Middle Class federal budget (Zamai et al., 2016)

7. 2018-2019 supplementary estimates (Stanton, 2018)
8. Budge Sufficiency Ammar (Ammar, 2017)
9. Federal Spending on Fist Nation Health Care (Behrend, 2021)

There were five (5) progress updates written by the federal government reviewed:

1. Government of Canada progress update on improving access to clean water in First Nations communities 2021,
2. Follow-up Audit of Infrastructure on reserves 2017,
3. Ending long-term drinking water advisories 2021,
4. Report 3 Auditor General Report,
5. Key priority-reliable infrastructure (Government of Canada, 2017b; O. of the A. G. of C. Government of Canada, 2021; ISC, 2017, 2021a, 2021b).

There were two (2) documents that made up the commitment directly;

1. Mandate letter
2. Prime Minister Trudeau's Speech to the AFN (Trudeau, 2015, 2017).

There were twelve (12) federal manuals and guidelines pertaining to drinking water quality. These included:

1. Canada Water Act (Canada Water Act, 1970)
2. Community-Based Drinking Water Quality Monitors Training Manual (Health Canada, 2013)
3. Design guidelines for First Nations water works (INAC, 2006)
4. Drinking Water Program Manual (Health Canada, 2014)
5. Procedural Guidelines for Waterborne Disease Events in First Nations Communities South of 60^{o} (P. S. and P. C. Government of Canada et al., 2002)

6. Procedure Manual for Safe Drinking Water in First Nations Communities South of 60 (Canada et al., 2007)
7. Water governance federal policy and legislation (ECCC, 2007)
8. Safe drinking water for First Nations legislation included: First Nation led-engagement (Government of Canada, 2019b)
9. Safe drinking water for first nations act (Safe Drinking Water for First Nations Act, 2013)
10. Guidance for Providing Safe Drinking Water in Areas of Federal Jurisdiction (Interdepartmental Working Group on Drinking Water (Canada) et al., 2013)
11. From Source to Tap: Guidance on the Multi-Barrier Approach to Safe Drinking Water (CCME & FPTC, 2004)
12. Guidance for Issuing and Rescinding Boil Water Advisories in Canadian Drinking Water Supplies (Health Canada, 2015)

There were three (3) documents outlining future plans and creation of a national water agency.

1. ISC 2021 action plan (Fox, 2021)
2. Towards the Creation of Canada Water Agency engagement (ECCC, 2021)
3. Canada water agency discussion paper (ECCC, 2020)

There were three (3) First Nation produced documents

1. (Shared perspectives (Behn & Thornton, 2019)
2. AFN annual report (Assembly of First Nations, 2019)
3. (AWWAO, 2019)

Finally, two (2) documents were included for their historical significance. The 2006 expert panel was included in the policy review because even though it is dated it is still held up by the government and Indigenous communities as the most reflective of Indigenous needs and opinions as well as seen as an excellent example of genuine Indigenous engagement (Canada et al., 2006). Finally, the Indian Act was included as a historic document as it impacts most First Nation legislation (Indian Act, 1876).

6.1 Policy Review Results

Based on the review of all policy documents, the following outlines analysis of the commitment outcomes. As of January 25, 2022, 127 long-term drinking water advisories have been lifted and 205 short term advisories have been prevented from becoming long-term. Those short-term advisories are ones that would have been in effect for 2 to 12 months where long-term is over 12 months. As of September 30, 2021, ISC has invested more than $2.16 billion of targeted funds (of $3.91B committed, excluding operations and maintenance funding and internal operating expenses) to support 796 water and wastewater projects, of which 437 are complete. These projects will benefit 583 communities serving approximately 464,000 people in First Nations communities. Of 796 water and wastewater projects, a total of 611 projects are new water and wastewater treatment plants or lagoons, or renovations and upgrades to existing water and wastewater systems, 357 of which are completed. Within the above-noted spending and total number of projects, since fiscal year 2016–2017, and as of September 30, 2021, approximately $598.4 million has been spent on 134 projects to address long-term drinking water advisories in First Nations communities. This includes targeted funding spent on infrastructure repairs, upgrades and new construction projects. It does not include operations and maintenance funding,

or funding spent on operator support and capacity building to address long-term drinking water advisories.

Specific details on projects are not available as the information belongs to the First Nations involved. The only details available by the federal government are on-going initiatives but not the projects that make up those initiatives and public projects such as the new water treatment system in Shoal Lake 40, Ontario.

As part of the commitment ISC was also dedicated to improving tracking and reporting of DWAs and whether there was a project underway to address them. This led to the development of an online map. Later in 2021 the tracking website was updated to include new information and webpages for the work underway in each community and where there are long-term DWAs in effect (G. of C. I. S. Canada, 2021b).

Additional investments were made after the original commitment in order to support the goal. These investments are outlined in Table 1. Table 1 (see below) outlines the investment amount; in which budget it was committed and how the money was invested. Also, the capital investments required are outlined in Table 2 (see below) as calculated by Budget Sufficiency for First Nations Water and Wastewater Infrastructure by the Parliamentary Budget Officer (Ammar, 2017). In 2021, the PBO updated its report on federal investments in First Nations water and Table 3 outlines the estimated costs and the amounts of the new investments (Giswold, 2021).

Table 1. Amounts Invest as a Result of the Commitment and Follow-Up Budgets

Budget	**Amount**	**Area of Investment**
Original 2016 budget associated with the commitment:	1. $1.8 billion over five years 2. $141.7 million to the ISC department	1. $1.8 billion for First Nation communities to significantly improve on-reserve water and wastewater infrastructure, ensure proper facility operation and maintenance, and strengthen capacity by enhancing the training of water system operators 2. $141.7 million to the ISC department to improve water monitoring and testing on reserve.
Budget 2017	$49 million over 3 years	To address advisories as part of the expanded scope which added 24 long-term drinking water advisories to the Government's commitment.
Budget 2018	$172.6 million over three years	To support initiatives to accelerate the pace of construction and renovation of affected water systems, support repairs to high-risk water systems and assist efforts to recruit, train and retain water operators. This amount also went towards supporting efforts to establish innovative First Nations-led service delivery models.
Budget 2019	$739 million over five years, beginning in 2019-20, with $184.9 million per year ongoing.	This investment will support ongoing efforts to eliminate and prevent long-term drinking water advisories by funding urgent repairs to vulnerable water systems and the operation and maintenance of water systems so that First Nations communities can effectively operate and maintain their public drinking water systems.

Budget	**Amount**	**Area of Investment**
2020 Fall Economic Statement	1. $1.5 billion total Funding includes: a) $616.3 million over six years, and $114.1 million per year ongoing thereafter b) $553.4 million, c) $309.8 million	1. to help meet the Government's commitment to clean drinking water in First Nations communities, including increased support for operations and maintenance of water and wastewater infrastructure on reserves, funding for water and wastewater infrastructure construction, repairs and other initiatives, and funding to continue work to lift all long-term drinking water advisories on public systems on reserves as soon as possible a) to increase the support provided for operations and maintenance of water and wastewater infrastructure on reserve b) to continue funding water and wastewater infrastructure on reserve to prevent future drinking water advisories from occurring c) to support and accelerate on-going work to lift all long-term drinking water advisories on public systems on reserves by helping to respond to project delays including those due to COVID-19.
Budget 2021	1. Committed an additional $1.043 billion over 2 years, starting in 2022-23, to support water and wastewater projects 2. $125.2 million over four years, beginning in 2022-23, and $31.3 million on-going thereafter	1. The funding will enable ISC to continue to support the planning, procurement, construction, and commissioning of water and wastewater minor and major capital projects for both new builds, as well as system repairs and upgrades in First Nations communities 2. To continue to support First Nations communities' reliable access to clean water and help ensure the safe delivery of health and social services on reserve.
Total amount (2016-2024)	$5.57 billion	Invested as a result of commitment: to build and repair water and wastewater infrastructure and support management and maintenance of water systems on reserves.

Table 2 Total Needed Capital Investments as calculated by (2017) PBO report

Amount Needed (2017 Report)	**Area (2017)**
$1.2 billion drinking water accounts for 73% ($846 million), the rest goes to wastewater.	To upgrade existing W&WW systems such that they meet existing W&WW safety protocol as defined by INAC.
$2 billion drinking water accounts for 48% ($962 million) of the future cost, with the remainder going to the wastewater infrastructure.	For the future capital investment required to accommodate replacement of systems as they near the end of life, and to accommodate projected population growth on reserves
$361 million $218 million to drinking water, rest for wastewater	Annual operating and maintenance (O&M) needs

Table 3 Estimated Costs and 2021 Investments calculated by 2021 PBO report

Amount needed	**Amount Invested**	**Area (2021)**
$1.1 billion	$6.4 billion	to cover immediate needs
$1.9 billion		for future capital investment
$429 million	$291 million	O&M needs

Other Actions and Initiatives since 2015 related to First Nation drinking water

Actions and initiatives undertaken or ongoing, in partnership with First Nations, since 2015 related to safe drinking water are outlined in Table 4:

Table 4 Other First Nation Water Projects Since 2015

Initiative / Program	**Reason/Goal of Initiative**

Circuit Rider Training Program	Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs
W/WW Hubs in Ontario	Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs
Ontario First Nations Technical Services Corporation's Technical Youth Career Outreach Project	Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs
Res'eau's immersive training platform	Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs
Water Movement's online training	Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs
Creation of Atlantic First Nation Water Authority (AFNWA)	Stabilization of funding for First Nations and their water operators (training, certification, salaries)

Initiative / Program	Reason/Goal of Initiative
Increasing financial support for Operations and Maintenance	O&M funding support from the government increased from 80% to 100% due to the additional funds announced on November 30, 2020. This change in the formula-based funding for operations and maintenance will support First Nations to better sustain the approximately 1,200 water and wastewater systems across the country.
Support of the AFN-led engagement process for the review of the 2013 Safe Drinking Water for First Nations Act	Co-development a legislative framework through a Joint Working Group on Safe Drinking Water that will develop a new legislative framework based on the results of engagement
ISC is working with First Nations partners to co-develop a long-term strategy that is expected to chart a path for water and wastewater infrastructure on reserve beyond 2021. The strategy is anticipated to underpin a new approach to service delivery with a focus on transitioning services to First Nation care and control.	Support of the AFN–led engagement process for the co-development of a long-term strategy to ensure that drinking water systems are sustainable
The development of a National Canadian Water Agency	Discussions have started to take place for the creation of the Canada Water Agency

6.1.1 Codes Results

Gender Codes

In order to evaluate whether the commitment included gender implications of DWAs the documents were coded to see if specific feminist codes were present. Out of the 36 documents coded there were 8 mentions of gender, 26 mentions of girls, 112 mentions of women, and 60 mentions of men. There was zero mention of 2spirit.

The documents that mention gender are the AFN annual report, the Canada Water Agency Discussion Paper, the 2016 budget and the mandate letter to the Minister of ISC. Gender is mentioned in the AFN report and the 2016 budget in sections not related to drinking water but rather their organizations and their goals for gender equality. In the 2016 budget gender is only mentioned twice both under the goal of increasing the capacity and status of women in Canada but is never mentioned at all in the section relating to Indigenous drinking water (ch.3-a better future for Indigenous Peoples). The Canada Water Agency Discussion Paper mentions gender as it pertains to identity and their goal to engage a diverse group of Canadians. Finally, the mention of gender in the Mandate later is in the expectation "to help ensure gender parity". While gender is discussed, it remains within the context of gender equality and not in relation to the gendered aspects of DWAs and water. Women and girls are mentioned multiple times but the majority of those are in the context of MMIWG or referring to the additional risk pregnant women face with contaminated drinking water. There was one mention of Indigenous women's spiritual connection to water; "During a public session of the 1999 Quebec Commission on Water Management, Nicole O'Bomsawin, from the Abenaki Nation, discussed the strong bond that aboriginal people maintain with water. "[…] women were the drinking-water guardians while men were the fire guardians…" (Health Canada, 2013, p. xviii).

Colonial and Indigenous Knowledge Codes

To evaluate whether Indigenous knowledge was considered and/or whether the GoC collaborated with Indigenous the documents were coded with a decolonial approach code set. Out of the 36 documents coded there was only one (1) reference to decolonization. This one reference was from the Assembly of First Nations annual report 2019-2020. There are four (4) mentions of settlers (in the appropriate context): two (2) in the AFN report and 2 in the Canada

Water Agency Discussion Paper. The coding results show little to no reference to Indigenous knowledge. The only mention of decolonization or related codes is in documents produced by Indigenous organizations. While the GoC states they are committed to reconciliation and decolonial processes there is little to no reference of any codes relating to colonialism or to Indigenous knowledge.

Out of the 36 documents coded there were 67 references to truth and reconciliation in ten (10) documents. Of the ten (10) documents four (4) refer to the budget and how investments are being used to advance reconciliation (Budgets 2017-2019 highlights). For example, Justin Trudeau's speech discussing his government's plans to advance truth and reconciliation. The Auditor General's report also reiterates the government's emphasis on the importance of truth and reconciliation and how this commitment and the elimination of long-term boil water advisories are key components to reconciliation. The next document to reference reconciliation is the *Follow Up Audit on Infrastructure* on reserves which states that their community infrastructure program promotes the spirit of reconciliation by the program working closely with Indigenous communities. The two documents on the creation of the Canada Water Agency mention truth and reconciliation seventeen (17) times. Finally, the last document to mention truth and reconciliation is the AFN annual report which mentioned it the most at 23 times.

Out of the 36 documents nineteen (19) of them reference 'unceded lands' 153 times. The Indian Act cites 'lands' the most at 108 times. Not all mentions of land directly refer to unceded lands, but I have included them as they still refer to control over Indigenous lands. The UNDRIP is only mentioned in one document, the AFN Annual Report. No federal government policy or document ever mentions colonialism but there is one mention of Britain's North American colonies under the law and history section of the 2006 Expert Panel. Treaty and treaty rights are

referenced 129 times in ten (10) documents. Again, most references are in the AFN Annual Report. This annual report consists of regional chiefs' reports, council reports, and sector reports. This report was included in the policy review as it gives an Indigenous perspective on programs as well as outlines needs and prospective programs, projects and community engagement from regions all across Canada.

To assess the impact of historical policies I have included the title Indian Act as a code. The Indian Act is referenced 67 times in six (6) documents. Most references refer to the Indian Act in terms of clarifying population baseline and demographics as ISC funding is based on population and only counts for "status holding Indians" and those living on reserves. The Indian Act is mentioned in the SDW in terms of defining First Nations and bands. The Report of the expert panel (2006) mentions the historical legacy of the Indian Act and the associated impacts it has on communities.

Climate Change Codes

To determine whether the impacts of climate change were taken into account, the commitment and its resulting investments and projects were coded with key climate codes. Out of the 36 documents coded there were 230 references to *climate change* in seventeen (17) documents. There are 29 references to *drought* in five (5) documents, 35 references to *extreme weather* in six (6) documents, 105 references to *flood*s in eight (8) documents, 47 references to *mitigation* in ten (10) documents, 119 references to *natural disasters* in 11 documents, 204 references to *sustainability* in nineteen (19) documents. There is no mention of water protectors in any of the documents. While climate change and its associated codes were mentioned greatly there was *no* mention of climate codes relating to Indigenous people such as water and land protectors.

6.2 Interview Results

I conducted 5 interviews, 1) researcher from a science-based non-profit environmental organization 2) Indigenous grandmother, Dorene Bernard 3) Indigenous water operator, Deon Hassler 4) Indigenous organization, AFNWA 5) Federal manager. In order to find appropriate participants, I created a potential interview list of all desired participants and their areas of expertise. From this list I contacted individuals and scheduled interviews with those who were available and willing to participate. Of the 15 potential participants, two (2) participants responded saying they were unavailable for interviews, one (1) from the federal government and one from the non-profit sector, eight (8) participants either did not respond or were not interested in participating and five (5) participants were interested and consented to interviews.

Interviews were conducted over Microsoft Teams and audio-recorded with a handheld recorder. Interviews were each roughly 1 hour long and covered 18 questions (see **Appendix A**). As interviews were semi-structured some interviews had additional questions that arose during the conversation.

6.2.1 Expert Interviewees

The five participants were selected based on their area of expertise.

Participant 1 is an Environmental Researcher from the non-profit sector who has co-led a report conducted two years in a row that monitored the government tracking towards its commitment to end DWA. The non-profit is a recognized leader in research and advocacy for Indigenous water among other environmental causes. Virtual interview was October 27, 2021.

Participant 2 is a Mi'kmaq grassroots grandmother, of Sipekne'katik, Dorene Bernard and has consent to have her name included. As a social worker with an MSW from Sir Wilfrid Laurier University, she has focused on Aboriginal child welfare and healing programs for

Shubenacadie Indian Residential School survivors and their families. Currently she is the organizer and water protector of Stop Alton Gas and Treaty Truck House, speaking for the water (Bernard, 2018, p. 297). Her role as a grassroots grandmother came from a ceremony and asking the Creator - “what is it that we need to do to help our people to heal because of the historic trauma?”. Bernard’s role as a woman and as a grandmother is related to drinking water as she is a water protector and water walker and is very serious about the protection of the water and speaking for the water as well as the sacredness of water. Virtual interview was November 17, 2021.

Participant 3 is an Indigenous Operator and Trainer, Deon Hassler and has consented to having his name included. Deon Hassler is a Circuit Rider Trainer for the File Hills Qu'Appelle Tribal Council. His enthusiasm and expertise have made him a well-known expert across Canada. He provides mentorship, training and day-to -day assistance to water treatment operators across 11 First Nations bands. Deon is a leader in the water sector as the President of the Safe Drinking Water Team and a Board of Directors at Water Movement. Deon's commitment to the water sector was recognized by Indigenous Service Canada where he was the 2019 recipient of the National First Nations Water Leadership Award. Referred to as a "Water Hero" by his colleagues at Water Movement. Deon is truly a change-maker and trailblazer in the industry and an expert in his field, making him an excellent participant for this research. Virtual interview held on December 6, 2021.

Participant 4 is a representative of an Indigenous Organization and consented to be named. James MacKinnon is the interim Chief Operating Officer (COO) of the Atlantic First Nations Water Authority (AFNWA), an Indigenous-owned water and wastewater management service based in Atlantic Canada. The first utility of its kind, AFNWA works at improving health

and safety in First Nations communities through improved water and wastewater management. A two-time Dalhousie University Alumnus, James graduated with a Bachelor of Science with a double major in Chemistry and Sociology, in 2011 and Master of Public Administration in 2020. His career began with Atlantic Policy Congress of First Nations Chiefs Secretariat, holding positions of increasing responsibility culminating with his position as Director of Housing and Infrastructure. James is born and raised in Coxheath, Unama'ki, and now resides in Halifax. Virtual interview was December 17, 2021.

Participant 5 is a federal Government Representative. They are a manager at Indigenous Services Canada with knowledge of the long-term drinking water advisory commitment. Virtual interview date was December 22, 2021.

In all five interviews, participants were asked about the commitment and its impacts on them, individually, as well as on their work and roles related to drinking water. There was consensus about the spirit of the commitment among all participants stating at least one positive statement about the commitment (see 6.2.2). However, there were overwhelming concerns over the five-year timeline, funding (see 6.2.3), and who received the necessary support.

6.2.2 Support and Skepticism

Interview thoughts and attitudes about the 2016 commitment are summarized by support for the spirit of the commitment followed by scepticism about the GoC ability to follow through and meet the expectations. The scepticism was later confirmed when the commitment goal of March 2021 was not met and followed by disappointment and heartbreak. All participants stated they supported the 2016 commitment and appreciated its goals. However, all participants were skeptical about whether the GoC could actually accomplish the goals. Some of their views were as follows:

Participant 1 (Environmental Researcher): *A laudable goal and I think it is a challenging situation. It is not an easy fix.*

Participant 2 (Dorene Bernard): *I was really happy that it was actually going to be... that it was a part of his political campaign and he was going to get rid of the drinking water advisories once and for all… finally address the extent of hundreds of these water advisories that were going on. If they can put in oil/gas pipelines, they can put in a water pipeline that will bring water to the people who need it and make sure that this was a priority. It is life.*

Participant 3 (Deon Hassler): *I had questions about it. But from what I can see from Trudeau's government there, they made promises, things moved pretty good, lots of things going on but all of a sudden, projects stopped. Now, this year [2021] when the election was announced it just seemed like all our projects just came to a halt.*

Participant 4 (James MacKinnon): *At the time? I thought it was ambitious. Any commitment when you hear that like the spirit of it is great! You want those boil water advisories to be eliminated. Of course, right! I knew the work they [the GoC] had cut out for them. My initial thoughts were "I'm not sure if you'll meet that date" but it's a good thing to strive toward. At the time that it was announced I personally was a little skeptical if they were able to do it or not. The other thought I had was 'it's one thing to eliminate a boil water advisory, it's another thing to have sustainable funding and resources to make*

sure it [the DWA] never comes back. Like great we can get rid of them but what are we doing to make sure that they don't come back?

Participant 5 (ISC Manager): *At the time I was not in the department or working in this section. Though I can't really speak to what my thoughts were at that time, I mean certainly it has been a commitment that has been very important in making the progress that has been achieved so far.*

While there was concern over the feasibility of the timeline, participants expressed their support for the commitment as a whole and the investments into First Nation water.

Participant 5 (ISC Manager): *The commitment has resulted in significant investments in water and wastewater for First nations.*

Participant 4 (James MacKinnon): *The investments went up. We have verifiable data that essentially, say in 2013 we knew the capital deficit was X, and in 2015 or 2017 we knew it was Y and now we know it is Z. We have seen it [the deficit] go down. We can see the investments in drinking water actually pay dividends.*

Also, MacKinnon stressed the importance of transfer of service to Indigenous control. James read a passage from the *Indigenous Services Canada Act* to show how this particular passage in the act answers how his work changed.

Participant 4 (James MacKinnon): 7B reads in accordance with any agreements respecting the transfer of responsibilities that are entered into under section 9 take appropriate measures to facilitate a gradual transfer to

> indigenous organizations of departmental responsibility which respect the development and provision of those services. *That piece gives authority to the minister to transfer ministerial responsibility for the development and provision of water and wastewater services from ISC to us [the AFNWA].*

The skepticism and concerns participants had when the commitment was first announced were focused on the feasibility of the timeline, in relation to 1) the time it takes to work through the feasibility design and construction process infrastructure projects with their regular delays, 2) government processes tending to be too slow and cumbersome, 3) funding timeline and delays. These concerns were confirmed when it was announced the goal would not be met and participants all agreed to being devastated yet unsurprised. Their responses were similar:

> ***Participant 1 (Environmental Researcher****): My heart breaks for the nations that do not have clean drinking water. It is something we all take for granted.*

> ***Participant 2 (Dorene Bernard):*** *No surprise at all, and you, you know. I was... what was surprising was how they blamed that on COVID. That was a little surprising, that because of COVID, we couldn't get there. But you know, but they could have got there for the last 25 years.*

> ***Participant 3 (Deon Hassler):*** *I was upset. I mean there was a good push going on. I was happy for a while there. They really pushed. It was moving along but when they announced they didn't reach the goal that's when everything went on pause. So, all these projects, our meetings even got stalled. They were happening like every month now they were just kind of like maybe every second or third month. Some of them haven't even met this year because*

of what? I don't know. Why did everything stall? I was happy that Trudeau did make that commitment. There were things happening, but I don't know, it frustrates me that everything came to a halt.

Participant 4 (James MacKinnon): *Not surprised. We knew it was going to come and go. I remember having conversations in 2016 they weren't going to do it.*

Participant 5 (ISC Manager): *It's disappointing I understand from the public perspective and the first nation perspective we had a goal; we didn't achieve it. At the same time the work continues to support first nations, investments continue, and I mean the government is certainly doing everything can to support first nations to eliminate the remaining long-term DWAs as soon as possible.*

6.2.3 Funding

Each participant was asked about their organization's and/or community's funding before and after the 2016 commitment. While not all participants could speak to direct funding amounts, participants noted that investments did increase based on historical investments.

Participant 4 (James MacKinnon): *We saw that investments have been made and things have improved on the drinking water side. It's not perfect, the whole system hasn't changed yet, but I can't deny that investments happened.*

Participant 5 (ISC Manager): *In Budget 2016 provided $1.8 billion for water and wastewater which was for five years. Which was a historic investment in water and wastewater for FN.*

> ***Participant 3 (Deon Hassler):*** *Yeah, we have seen in infrastructures when they promised in 2015, they moved at a good pace and there was also the promise of O&M funding to increase to 100%.*

Additionally, while the AFNWA's funding did not come directly from the 2015 commitment but rather through special initiatives funding through INAC (now ISC) they were funded appropriately based on what they needed and requested.

> ***Participant 4 (James MacKinnon):*** *The AFNWA had enjoyed a level of commitment for the development of the authority for some time. We did see I mean I can't say for certain whether funding increased or decreased but we were funded for what we asked for.*

As for who received funding directly, **Participant 5 (*ISC Manager*)** explained how the money committed in the budgets for the commitment is sent directly to ISC, through the budget process called "target funding" and "not targeted funding," that is then allocated through an investment planning process to First Nations for their projects.

Participants acknowledged that investment into First Nation drinking water was increased; however, participants also noted that fulfilling the promised funding was a slow process with lots of delays and there was no direction[12] to the communities on what the funding was for.

Participant 3 (Deon Hassler): Deon who is also president of the Saskatchewan First Nation Water Association (SFNWA), has been waiting on funding for the Water Association so they can hire an administrator and establish the association. Deon said

[12] This mainly applies to O&M funding rather than capital infrastructure funding. First Nations submit proposals to the department for capital projects and, once approved, the funding is provided for the projects specifically.

We have been promised 'you'll have your money this year, we haven't seen nothing. We have been waiting on the final word of it. That puts us in a bind because now we're just kind of stuck in neutral just waiting for funding.

Participant 1 (Environmental Researcher), "Government processes tend to be too slow and cumbersome".

Participant 3 (Deon Hassler): *that the promise of increasing O&M funding to 100% was not fulfilled because "some of our managers didn't even know where this money came from or what it was for. So that money basically went to different sections or departments or even different priorities. So basically, that investment was supposed to be used to increase the operators' salaries but that really didn't happen because nobody knew what that money was for.*

Hassler also pointed to how and where the money gets spent.

For some of these water plants for a small population they spend more money on these projects and meetings than it cost to build the water plant. Where have all these meetings, they cost money for people to travel and for their time, etc. The designs of those small communities are just a really small system like just a bottle fill or in the sink system or something like that doesn't cost much money when you compare it to all the meetings we are having to discuss. It's just ridiculous and then there are some systems that are not funded because they are too small of a system or they serve enough people.

Additionally, Hassler explained that funding for training often only applies once an operator has their level one certificate but there is no funding for potential new operators to get their level one.

When talking about operators and O&M funding like for training there is no funding for training here in SK for potential operators. There is only funding for training once they get their level one. But for new operators that need training there's no funding for that. We got to beg and borrow to get the money for those operators. The other thing is there is usually one community who wants to do it at one time and another community that wants to do it at another. If we could get it all together then we might be able to get a little more funding, but it just doesn't work when it is individual communities.

6.2.4 Reasons for Why the Goal was Not Met

There were differing viewpoints on why the goal was not met. The government employee had a traditional western viewpoint while the grandmother, water operator and COO of AFNWA had a more Indigenous perspective. The environmental researcher manager was somewhere in the middle.

Participant 5 (ISC Manager) believed there were 3 main reasons for not meeting the DWA goal 1) Pandemic, 2) Length of Project Design - from feasibility through design and construction - and 3) Remoteness, and Capacity of communities. The government cites COVID-19 as its main reason for failing to reach the commitment.

Participant 5 (ISC Manager)*:* March 2020 hit, and the coronavirus pandemic happened, many First Nations closed their borders and most construction projects stopped or faced delays as a result of the pandemic. In some cases that was short-term, sometimes long-term projects didn't get started back up for months. Since then there's been labour shortages, there's been vaccination requirements for contractors that they sometimes can't meet, and the supply

chain issues are really affecting progress right now. We are seeing that across the board on these projects.

Other reasons the ISC Manager cited for failing to reach the deadline is that the original timeline was very short and too demanding to be completed in only 5 years stating:

> *We had five years but if you're starting a water project from scratch or a major infrastructure upgrade it's going to take years. So just the regular time it takes to work through the feasibility design and construction process infrastructure projects are I mean it's weird but it's normal to be delayed especially big ones and then you have the added factor of remoteness in many First Nations communities and all the challenges that that brings to an infrastructure project.*

Remoteness, capacity issues and political considerations were also mentioned as reasons for missing the goal.

> *The added factor of remoteness in many First Nations communities and all the challenges that that brings to an infrastructure project. There are also considerations around operational capacity that are hindering some lifts. So the infrastructure project might be done but due to the operational capacity in the community, the advisory can't be lifted. Certainly, some political considerations as well so it's definitely a complex mix of factors as to why March 2021 was not met.*

Clearly the failure to deliver on such an important commitment to Indigenous people is significant but the government defends itself stating it is on-going process and delays were inevitable.

According to the independent 3rd party from the non-profit association, the goal was not met because of 1) bureaucracy, 2) complexity and remoteness, 3) unexpected delays and realities of life, 4) capacity and 5) a lack of good relations between the federal government and First Nations. The main issue referenced by the environmental researcher representative had to do with bureaucracy and the government processing being "too slow and cumbersome".

Participant 1 (Environmental Researcher) said "*It all depends on people so you can have someone who makes a bad decision from bureaucracy that has not spent a lot of time in the nation or does not know what the nation needs."*

Participant 1 (Environmental Researcher) also mentioned the complex nature of the Indigenous water crisis as a whole stating,

> *I think partly it is a complicated problem. For example, one of the Nations we worked with had a timeline and was supposed to meet with the government over the summer and then the nation had a crisis of suicides and shut everything down, so I think the realities of real-life and the complexities of a nation and the remoteness.*

They also mentioned capacity issues saying,

> *"The nations are often growing and so even if the capacity is achieved at one point in time it may not be sufficient for a growing population."*

The environmental researcher also believed the relationship between the government and First Nations is broken.

> *Also, this bureaucracy and historical relationships between the federal government and First Nations has led to bad relations and systemic racism on part of the government.*

Overall, the non-profit science-based environmental organization employee believed there were numerous reasons for the government failure to meet the deadline and all stem from the problems Indigenous peoples have in dealing with government bureaucracies and the disconnect in that communication.

In contrast to the government and environmental research employees, those with an Indigenous perspective believed the goal was not met due to 1) reality of scope of work, 2) the election, 3) lack of awareness of the issue, and 4) environmental racism. This perspective was articulated by both Hassler, the Indigenous water operator and Bernard, the Indigenous grandmother. MacKinnon also had an Indigenous outlook although not Indigenous himself. It should be noted that Indigenous participants and representatives are not always privy to all information and thus their reasonings might only be assumptions or they may not know at all. Hassler stated he doesn't understand why the goal was not met but blames it on the election. He voiced his frustration:

> *Projects were moving well and only now, this year [2021] when the election was announced it just seemed like all our projects just came to a halt. To me, it's like all our subjects are on pause right now. We are doing emergency repairs but that's all that's going on right now it seems like with these projects. They make it look like something is moving but I really haven't seen*

any progress going on with all these projects. It frustrates me because I have to try to keep these water plants going just on emergency repairs and it has been pretty frustrating. It leads us to going back on BWA.

James MacKinnon, COO, used his experience to make the assumption that a possible lack of communication or understanding between politicians led to an unattainable timeline and reality of scope of work.

Participant 4 (James MacKinnon) *"sometimes a politician makes a goal and sometimes that goal doesn't mean reality on the ground"*

Bernard referenced the lack of awareness of issues faced by Indigenous communities and stressed the importance of listening to Indigenous communities especially those who are living with long-term DWAs.

Participant 2 (Dorene Bernard): *I can tell you that many people didn't even know this problem existed. And it's only I mean… just like they didn't know about the residential schools, just like they didn't know about, a lot of Indigenous history.*

Bernard also believed that racism played a part in the goal not being met stating, ***"****I think that you know when I look at the Mi'kmawi here, at least in Nova Scotia, you know, the biggest problems with water, you know, it has been environmental racism."*

Bernard also refuted the government position that COVID was the reason the goal was not met:

I was... what was surprising was how they blamed that on COVID. That was a little surprising that, but that's because of COVID, because we couldn't get there. But you know, but they could have got there for the last 25 years…

6.2.5 Persistence of DWAs

The persistence and reoccurrence of DWA's is a disturbing trend that has yet to be resolved. Examples of First Nations across Canada enduring persistent drinking water issues are plentiful. When asked about these issues, Participant 5 first discussed DWAs as a public health tool.

> ***Participant 5 (ISC Manager)****: DWAs are a public safety tool meant to advise the public that the water is or may be unsafe to drink as a result of anything; a water line breaks an upgrade at the plant that's underway whatever the case may be. When they're in place for a few days or a week or two weeks it's there I mean they're not bad.*

Participant 5 cited that short-term advisories are not bad, but rather they are useful and necessary tools and a variety of reasons can cause a DWAs to become long-term and become a concern over becoming long-term. These reasons vary from needing continuous repairs to the need for a major infrastructure project to address long-standing issues with the system which will take a significant amount of time. Often, there are no interim solutions, and a larger scale project is required.

> ***Participant 5 (ISC Manager):*** *repairs at a plant or ongoing or they repaired one-line break and then there was another." Or there are examples "where the advisory was put into place and a feasibility study was underway and that feasibility study took time there was no interim solution that was agreed-upon so then you're into this large-scale project that again is going to take years. I don't want to say they're [long-term DWAs] unavoidable but in some cases it's not feasible to truly address the problem in a shorter period of time.*

The Non-profit environmental researcher references a number of reasons for the persistence of DWA's, 1) these communities and issues are out of the limelight and have low populations so a break in the water system isn't seen as much as a crisis. 2) systemic racism, 3) capacity and 4) lack of operators. In this regard Participant 1 states:

In *a city there will be multiple mechanics available that have been trained to fix something but in a nation of only 400 there may not be someone available due competing jobs and competing crises. This makes it hard to maintain operators and back-up operators.*

According to the three participants with more of an Indigenous view, the reasons for persistent DWA's are varied. Deon stated a continuous maintenance problem as the main reason for the persistence of DWAs.

> ***Participant 3 (Deon Hassler):*** *Well the main thing is a continuous circle here. We fix something and then it breaks down. The operators do the fixes but there are costs for these breakdowns. Some of the designs are not appropriate for those so we are constantly trying band-aid fixes for those, that's just one of the causes for repairs. When you see operators not getting funded or increased salaries, they are not going to be taking care of that equipment as it should be.*

MacKinnon's reasons are summarized as, 1) reactive action as opposed to continuous upgrades and maintenance, 2) no ability for long-term planning, 3) capacity issues and 4) lack of funding and support for operators.

> ***Participant 4 (James MacKinnon):*** *For instance, if you have a First Nation community water operator but they are the only operator for the community. When could they possibly go on training? They can't because they can't leave*

the system. They can't afford to get sick because who is going to run the system? So that is one element that plays a role in capacity development.

Participant 4 (James MacKinnon): *The other piece is, and this goes back to funding and not enough money is allocated for operations and maintenance, but the operators are underpaid. If you look at a [provincial] utility a water operator can make anything like $50,000- $52,000 a year. I've met operators in Atlantic Canada who are certified operators making $15 an hour. It's not the community. It is absolutely the O&M funding.*

Bernard continues to believe that persistent DWA's is a result of systematic racism within the government and the band aid solutions of the past that never fully address the issue:

...when you need a reno on your house because there's safety issues, you know, standard issues of safety but they keep fixing one thing at a time, so every year one thing gets fixed but it's not like all up to standard, it's still unsafe. So, this can go on for years, but you are never living in a safe home. A reno would address all the issues all of that all at one time to bring it all up to standard. That is the same thing with the water.

6.2.6 Emergent Themes

While the semi-structured nature of the interviews was maintained as much as possible, due to the human nature of the conversation, it moved organically to other topics and deviated from answering all set questions. For example, due to the passion and nature of the interview with Dorene Bernard, we explored different cultural practices and traditions. We paused mid-interview and held a water ceremony to honour water as a life-giving spiritual force. Bernard

taught me about the importance of respecting water and what you can do every day to care for the water. Bernard explained,

> *So, in the morning you want to take that water [water placed near bed overnight] first thing you do when you get up. Tell the water I love you. I thank you. I respect you. Water is life. Yeah, so you ask your higher power or whatever that is I call him gisuke or creator. Yeah, and I asked my grandmothers and grandfathers just like my ancestors to bless this water. Make this water medicine so when I drink this water it goes to my mind, my body, my spirit, my heart. You always want protection. Then you take your tobacco or cornmeal with just a little pinch of it and I'll go outside and sprinkle it on the earth and say thank you for this water. And then You can drink it. And that will be the start of your day. That's the first connection. It's simple, just something grandmother just said, you know, you can do this. You should just give thanks to the water and make it medicine for you.*

Alternatively, Hassler brought up other concerns and reasons for DWAs, from an operator's perspective, mainly the issue around cisterns. Hassler stated,

> *One big problem is our cisterns; we don't really count those in ISC. Accessibility but just the ground shifting. The trucks move the ground which cracks the cement and breaks the lids. Some of the contract workers that do the cleaning, they find out that there are cracks or sand or leaking even rodents getting into the cisterns. People find snakes, mice and even animal parts in some of those cisterns. So, it's pretty nasty not only does ISC not provide the funds for those systems but also the cisterns and the trucks that deliver water to the cisterns don't get cleaned often enough. Any water that leaves through the trucks we consider a DWAs because we have no assurance that that truck has been cleaned or sanitized or maintained. That's another cause for DWAs.*

Conclusion

The results of the policy document review and interviews align with each other and reflect similar areas of concern and support. A quantitative analysis of expenditures shows there was significant investment over the time period (2016-2021) and the participants agreed that while the funding increased, it remained inadequate, and was slow to materialize and lacking in

direction. A comprehensive review and revision of funding formulas will be necessary to move forward. While commitment and its investments lifted 124 long-term drinking water advisories and prevented 205 short term advisories from becoming long-term (see table 1), it failed to eliminate 36 and 27 new advisories were added which will need to be addressed going forward.

There was no material presence of gender codes in the documents and this was reflected in the participants comments about a lack of Indigenous collaboration, particularly when it came to women. The effects of colonialism were lacking in the policy review and as well as in participant interviews in the comments about systemic and environmental racism. Understanding and acknowledging the historical and cultural context of DWA's will be necessary to finding sustainable solutions. Climate change and its impact on water security was not well addressed in either the policy review or in the interviews. Climate change plays an increasingly important role in water security and unpredictable effects will be a continuous and recurring challenge that must be addressed.

The reasons for the commitment's failure vary depending on the field of work. The government cited the COVID pandemic and its effects on supply chains and meetings as the main reason for missing the end date. Most of the interviewees claim that COVID was a lame excuse and the government has had years to rectify and eliminate DWA's. Remoteness, resulting in supply and labour shortages, as well as capacity issues in First Nation communities were additional reasons given for delays and inability to meet the set timeline. The non-profit environmental researcher agreed with the government that terms of remoteness, capacity, unexpected delays of life and the pandemic all contributed to the shortfall. All participants pointed to the reality of the scope of work which was overly ambitious from the start. The timeline set by the GoC underestimated the length of project design for water systems from

scratch and this sentiment was echoed by Indigenous representations. Based on the interviews, what is lacking in the policy review is the extent of the operator's problems in terms of education, training, compensation and support. Interview results also highlight the extent of environmental racism and a lack of good relations between the federal government and First Nations as reasons for the commitment's missed end date.

The interviews confirm what is discovered from the policy review but add more to the research by the deviations and different topics that were being raised by the participants. The interviews and policy review both support the basic spirit and goal of the commitment and recognize the attempt but also show gaps in the execution in terms of Indigenous collaboration, and feasibility. Overall the commitment was viewed positively though people were upset over its failure to achieve the goal.

Chapter 7 Discussion

The discussion is divided into three sections in accordance with the research questions listed in Chapter 1.2. Together these sections demonstrate that the 2016 commitment was able to achieve some progress, but still a lot has yet to be accomplished.

7.1 Why Was the 2021 Goal Not Met?

7.1.1 Lack of Plan

The passive nature of the commitment led to the involvement of multiple parties and departments. While this generated a lot of collaborative capacity among actors working on Canadian drinking water, the commitment's lack of action plan reduced its overall ability to harness this capacity. Thus, a fragmentation of investments and projects characterize the work done to end all DWAs. This led to a lot of confusion and a lack of efficiency in fulfilling the commitment especially within the timeline. An example of this confusion can be seen in the comment from **Participant 3** (Deon Hassler) about Operation & Maintenance (O&M) funding increasing but not actually being utilized due to management not knowing where the money came from or knowing what it was dedicated to. This confusion resulted in operators' salaries not increasing, leaving operators without the support they needed to be able to do their jobs.

This confusion was compounded by the lack of clear leadership, entrenched hierarchies and regulations, federal and provincial jurisdictional ambiguity and risk avoidance during election periods. Furthermore, without a plan, the work to achieve the commitment became too bureaucratic, too redundant and too time consuming. The lack of plan associated with the commitment exacerbated the number of meetings needed, costing more money and diverting funds away from the projects and communities the commitment was supposed to help. Many

times, multiple departments were working in consultation on the same projects resulting in the need for interdepartmental meetings causing delays and wait periods as all departments needed to approve all decisions. While the temporal delays of collaboration are costly, so is the lack of communication as it can lead to interference between projects. It is likely these bureaucratic costs outweigh the technical costs as these meetings involve highly qualified and paid engineers and federal employees. In comparison communities are often only getting small bottle fill systems as Hassler states in Chapter 6.2.3. While interdepartmental work is happening, it only recently started but remains bureaucratic and cumbersome, and often still excludes Indigenous stakeholders. There are intergovernmental agencies working toward addressing the lack of collaboration with Indigenous groups, as seen in certain cases such as Grassy Narrows/Wabaseemoong Independent Nations. However, in the case of Grassy Narrows the collaboration only came at the end of the long-term DWAs and due to the several decades of advocation from Grassy Narrows. Again, showing the burden placed on Indigenous groups to make their voices heard.

Without a strategic plan in place, key stakeholders such as Indigenous chiefs and Indigenous women, who are needed both for identifying problems and for delivering outcomes, were excluded. This issue was exacerbated by the lack of contingencies or guidelines to deal with unexpected factors such as COVID, the residential school tragedy[13] and other issues that distracted from the plan. Historically, the government has been focused on short-term outcomes, Band-Aid solutions and compliance with rules and regulations rather than on long-term strategic results. There's always been a very superficial view of the extent of the problem, why the problem exists, and what really needs to happen to fix it. The ongoing problems with DWA is a

[13] While Indian Residential School deaths have been well known, the actual discovery of the graves brought this reality to light at the time of conducting this research.

result of this short sightedness and lack of planning. This lack of collaborative planning resulted in solutions that were not supported by the community and thus not sustainable.

7.1.2 Adequacy of budget

The commitment and its resulting investments have been marked as historic investments in water and wastewater in First Nations. While these investments are substantial and appreciated, they are considerably lower than the amount needed. Even before work began, the Parliamentary Budget Officer (PBO) found that the money the Federal government allocated was inadequate and at least an additional $3.2 billion was needed in addition to the initial $1.8 billion and $141.7 million associated with the original 2016 commitment. Thus, the budget was inadequate from the start and the GoC still needs to do more to fulfill its responsibility to First Nations, Inuits and Metis.

This issue of inadequate funding has been an ongoing problem over numerous Federal governments and is not new to Trudeau's Liberal government. PBO analysis from both the 2017 report and the 2021 report show that investments do not meet the estimated need costs. However, it should be noted that the estimates were based on the 2011 Assessment contained in the Neegan Burnside reports. While these reports are extensive and were accurate when written, it has been over 10 years since First Nation infrastructure has been assessed and thus the current needs and costs can be assumed to be higher than in 2011. Furthermore, PBO took into account population growth and other demographic factors that the GoC budget estimates did not. When you take population growth into account the total spending would only cover 54% of the total investment needs due to the increased capacity and quantity demands from the larger population.

The 2017 report indicates that total historical spending since 2011-2012 and the planned spending announced in Budget 2016 will only cover 70% of the total investment needs. The

estimated capital and O&M costs are considerably more than the actual and planned government funding for First Nations water and wastewater (W & WW) infrastructure (Ammar, 2017, p. 6). The updated PBO report in 2021 found the government had set aside $6.4 billion for infrastructure upgrades, which is well above the estimated remaining costs of $3.1 billion (Giswold, 2021). Though the report found the spending needed for infrastructure is higher than the estimate, the funding committed to O&M is still considerably below the estimate. Since the amount is earmarked for infrastructure, it cannot be used for O & M funding even though more O&M funding is needed. The disparity between infrastructure funding and O & M funding illustrates 1) the government is not listening to operators and 2) operators have to continue to struggle with insufficient budgets and salaries. Planned spending until 2025-2026 on W & WW O & M will only cover just over two thirds of funding needs, suggesting an annual funding gap of $138 million, on average, to operate and maintain First Nations W & WW systems.

The lack of O & M needs has been reported time and time again as seen in the 2017 and 2021 PBO reports, the 2018 Report 5 Socio-economic Gaps on First Nations Reserves and, in the Auditor General report. All reports state that if water treatment plants are not properly maintained, it can lead to higher costs and future DWAs among other problems. The interview with Indigenous Operator Trainer, Hassler, restates the lack of O & M funding and repeated the need for more funding and support for maintenance and operators. Insufficient O & M funding frustrates operators and hinders their ability to their jobs. Often operators cannot ask for parts or money for chemicals or even travel to go get these supplies they need as they know there is no money in the budget. Furthermore, ISC's funding formula had a requirement that First Nations cover 20 percent of O&M-related costs for water and wastewater infrastructure, including operator salaries but reports by both the government and external organizations have noted that

many First Nations struggle to come up with their share. This has since changed and announced November 30, 2020 that O&M funding support from the government increased from 80% to 100%. This has been a long-awaited change and only changed at the end of the commitment timeline.

The inadequacy of the budget contributes to why the 2021 goal was not met and to the decades of inadequate and insufficient funding resources resulting in inadequate operation and maintenance of First Nations infrastructure. Investments of billions of dollars over decades have not translated into safe drinking water for thousands of First Nations persons living on reserves. This impacts operators the most as they have the burden of maintaining their systems without the necessary funds or materials. Facilities are running on emergency funds as seen by Hassler's comments and trying to maintain and repair the systems becomes the main goal of trainers and operators.

The government has had a history of over promising and under delivering. When the expected lack of follow through or failure to reach a set deadline ultimately happens, Indigenous communities are unsurprised and continue to struggle to cope with their long-term DWAs. For example, Neskantaga just passed its 27th anniversary of its advisory (February 7, 2022) and continues to wait for the GoC to design an appropriate treatment plant. In the interim, it has had to rely on bottled water and face evacuations resulting in disruptions and trauma over the lack of water.

The continued inadequate budget exacerbates maintenance issues requiring more funding and repairs. If O&M funding continues to be insufficient, "water-related infrastructure may continue to deteriorate at a faster-than-expected rate, and overall costs may continue to increase as the infrastructure ages" (Giswold, 2021). Inadequate funding is nothing new; it has been cited

time and time again as the reason for the lack of maintenance of water facilities. Investments need to reflect the needs of communities and make up for the years of insufficient resources.

7.1.3 Lack of Indigenous Knowledge

Indigenous knowledge has regularly been under-utilized when making important decisions on DWA's. The lack of reference to 'Colonial and Indigenous' codes in the policy review shows that Indigenous groups (who are on the ground protecting the water) and their knowledge are not being consulted for these policies and projects. As evident in the policy review, the GoC is not using the appropriate terminology in policy development and by failing to write policies using accurate terms specific to a community and culture, the government ends up further marginalizing people who are already marginalized. Furthermore, the government has not learned from past mistakes as is made evident by the lack of interaction with colonialism or its derivatives in the documents examined except for one mention from the AFN about decolonialism. There is a lack of awareness of the reality of what is needed to achieve their commitments, despite the numerous calls for decolonization and promises of respecting Indigenous knowledge and practices. Also, due to the limited Indigenous collaboration and lack of Indigenous knowledge it is doubtful that any new policy will reflect Indigenous practices and traditions possibly furthering the disconnect communities feel from their water facilities (see 7.2.2 benefits on ownership).

The GoC states they are committed to reconciliation but the lack of genuine collaboration with Indigenous communities is evident by the lack of colonial codes in the review. The GoC makes sweeping declarations about working towards truth and reconciliation as seen by Prime Minister Justin Trudeau's huge commitments such as "…in partnership with Indigenous communities, the provinces, territories and other vital partners, we will fully implement the calls

to action of the Truth and Reconciliation Commission, starting with the implementation of the United Nations Declaration on the Rights of Indigenous Peoples" (Trudeau, 2015) and “eliminating all long-term boil water advisories by 2021” (Trudeau, 2017). However, while it was agreed that the spirit of these commitments is in-line with working towards truth and reconciliation they are dealing with huge, often systemic and very complex, problems and set impossible timelines that they cannot achieve.

Indigenous knowledge is fundamental to Indigenous identities. Colonialism has perpetuated the belief that their knowledges are not of value and that Western knowledge is superior. However, a lack of collaboration with Indigenous communities and First Nations and non-recognition of their cultural ways has been shown to detrimentally impact these communities for not only does it contribute to long-term DWAs but also because communities that are not involved in the decision-making processes have less than ideal solutions. They cannot provide their own lived experience into how to resolve drinking water advisories or their own Traditional Knowledge and practices on respecting water and taking care of it and the land and the Earth in general.

Water policy has been and continues to be technically driven and technically focused with no regard for Indigenous and Traditional Knowledge. The Western model considers water as a commodity to be managed and consumed and only looks at the engineering and infrastructure aspects. This model ignores the social, cultural and environmental considerations that are a critical part of Indigenous water systems. This preoccupation with centralized and technically oriented solutions of past decades has failed to address water security on reserves. By failing to incorporate the local knowledge in the decision-making process, the process is doomed for failure. These understandings and conclusions were drawn using Two-Eyed Seeing

to understand the core barriers by grounding the analysis on the knowledge learned from Indigenous works and during interviews with Indigenous participants. The success of any project depends on Indigenous peoples' role and engagement in the process and thus the GoC must do a better job of establishing an environment that promotes the full and effective participation of all. The core to re-Indigenization is an Indigenous mindset or worldview, informed by relations with the land (and water), which sees all of the "ecologies" as alive, interdependent, and interrelating forms in flux and permeated by spirit (M'sit No'kmaq, Marshall, Beazley, Hum, joudry, et al., 2021, p. 844). If the GoC embraces an Indigenous mindset it would go a long way towards setting the stage for the necessary transformative systemic changes (M'sit No'kmaq, Marshall, Beazley, Hum, joudry, et al., 2021).

In addition to collaboration, communities must be provided with full and complete disclosure on all activities that affect their communities. Negotiations and agreements with Indigenous are often fraught with a lack of transparency and a power imbalance as was the case with Alton Gas Case. The lack of transparency negatively impacts communities as evident by Bernard's comments about impact benefit reviews and the situation with Alton gas coming in and not fully explaining their project resulting in confusion about project impacts. Notifying communities of projects is considered as collaboration though communities are not made aware of the decades of pollution and negative consequences on their lands and waters. This is not genuine collaboration but rather a one-time consultation and does not make time for input and knowledge from communities or Elders. Governments ultimately have a responsibility for strengthening policies and practices to protect Indigenous communities, culture and environment.

7.1.4 Lack of Indigenous Women Collaboration

Throughout all the policy review there was only one mention to Indigenous women's spiritual connection to water. This one reference was in a Training Manual produced by Health Canada (Health Canada, 2013) however it was a quote by Nicole O'Bomsawin, from the Abenaki Nation (see page gender codes). This is worrisome since we know that Indigenous women have a significant and fundamental role in water resource protection and are considered the primary holders of water knowledge. The federal government lacks collaboration with Indigenous women excluding them from decision-making processes. The lack of any meaningful acknowledgement by the government of Indigenous women's connection to water suggests that women are not valued for this knowledge and it is not included in any decision-making processes. In my personal experience working with federal departments on First Nation drinking water, there are multiple women in leadership roles however, these women are not Indigenous and often do know understand the added connection Indigenous women have with water. When Indigenous women's knowledge and experiences are not taken into account for policy, their needs are not known and thus policy is created without accounting for these needs leaving women more vulnerable and struggling with policy that works against them.

It is evident from the policy review that the government does not place a high priority on gender issues which is in contrast to Indigenous literature and ideologies. In contrast to the GoC documents, gender codes and references to women's role were very present in Indigenous produced documents and interviews. Indigenous women are leading the work in their communities. Dorene Bernard and Indigenous women are facing the problems of their community from the highest rates of suicide, highest rates of children in care, highest rates of prison, incarceration for men and women, highest rates of diseases in communities to the trauma of DWAs. Indigenous women are working on as Bernard says, "reviving our cultural traditions,

our ceremonies and learning and those things as I was on my own healing journey as a survivor, a residential survivor" (Bernard, 2021). The fact that Indigenous women are not involved in decision-making processes is not a due lack of women willing to share their knowledge, but rather a lack of collaboration and commitment to reconciliation on the side of the government.

7.1.5 Underestimation of Project and Delays (Pandemic and otherwise)

When the GoC made the timeline, they did not truly understand the gravity of the projects needed as many communities needed a complete infrastructure overhaul. This failure to understand the gravity speaks to the colonial ignorance of the GoC as they are the standing government and permanent bureaucracy that supports it; thus, they had no right not to know. Consequently, the 5-year timeline to end all DWAs was aggressive from the start. Designing projects and water facilities from scratch takes years of design process as they need to be approved by engineers to ensure the feasibility of the design and requires the collaboration of communities to make sure all these projects actually meet the needs of communities. Then there is the construction process and infrastructure requirements. Clearly the scope of the required projects was severely underestimated. The timeline also underestimated the length of project design from start to finish and did not account for any of the typical delays of big projects. Many contributing factors are often known and unavoidable, including the remoteness of many communities and the associated higher transportation costs, shorter construction seasons due to northern climates, and the relatively small market of qualified contractors willing to work in remote regions. All of these should have been incorporated into the timeline.

A second and more avoidable source of delay is the federal government's rigid procurement process. Commitment delays were just amplified by the pandemic and supply chain issues. However, the government blaming COVID is a weak excuse. As Bernard states in her

interview, why was it the pandemic that caused the delay in the timeline for these advisories that have existed for as long as 27 years? A pandemic during the last year of a five-year commitment does not seem to add up to the reasons for the delay and not achieving the goal. While I understand the timeline delays in terms of the supply chain issues and getting the necessary people vaccinated in a timely manner for them to continue working on these projects, this commitment was made in 2016, four (4) years before the coronavirus pandemic. The commitment itself was for five years. The pandemic seems like a convenient excuse for the government to use as a scapegoat for their failure. This work needs to continue until all long-term DWAs have been resolved with a long-term sustainable solution and needs to be completed as soon as possible. In the meantime, communities still need access to water and this needs to be provided.

Government officials' devastation at the failure of the commitment is emblematic of the Canadian attitudes towards DWAs. Yet these feelings are entrenched in the legacies of settler colonialism as they can never truly know the impacts of living with an DWAs. Ministers and other government officials admit that they do not have a good understanding of the Indigenous needs. They have never experienced the emotional and spiritual damage of not having clean water. Government officials sit in their meetings and work to support First Nations, yet they often do not check with the communities they are working to help. A lot of leadership does not even go into the water plant to check on the operator and see what he's been doing or what he needs (Hassler, 2021). This disconnect is demonstrated by the lack of a realistic timeline in terms of the length of system design and creation.

The government's inability to meet the timeline was not shocking as discussed by the interviews and the policy review. While it was expected that the goal was not going to be met,

the failure is nonetheless detrimental to communities who have been living with long-term DWAs. These communities were promised that their DWAs would be lifted and they would be supported, which was the reality for some and another empty commitment to others. Failing to fulfill promises yet again leaves communities waiting for support, funds and the ability to change their situation and remove their water advisory and have safe drinking water. Failing this timeline places Indigenous communities with the burden of dealing with unsafe water, some of whom have never had access to safe drinking water. Failing to meet timelines adds to the distrust of the federal government.

7.1.6 Remoteness and Capacity of Communities

Another factor that contributed to the downfall of the 2016 commitment is the remoteness of the many First Nations communities and the challenges that remoteness brings to infrastructure projects. These reserves and communities have always been remote, but the government continues to cite it as a barrier to providing drinking water. The remoteness was exacerbated by COVID which made travelling more difficult and getting qualified, vaccinated workers to construction sites. The increasing severity of climate change also shortened the construction window. Even for a remote non-First Nation or non-Indigenous community, it is often very difficult to get materials and resources to these isolated communities. The poor quality of services and resources for remote and rural Indigenous and non-Indigenous communities is problematic and there is a need for overall improvement in remote water service delivery among healthcare and other public services.

First Nation communities tend to be small and thus, do not have the population to match their capacity needs. This smaller population in comparison to non-Indigenous communities, results in a lack of technical capacity. In the water systems field, the role that is often vacant is

water operator. Often there is only one operator for an entire community or there's no operator who is trained to run the facility (expanded in Chapter 7.3.3). These capacity issues, lack of human resources to run a facility, and the remoteness of getting additional personnel and materials to these communities has hindered the commitment. These also hindered the work towards removing long-term DWAs as these are barriers that are static and not easily remedied.

7.1.7 Environmental Racism

Lack of access to clean water in reserves is a racial inequality issue in Canada. Indigenous populations disproportionately have higher numbers of DWA's and are subjected to these advisories for much longer periods of time than non-Indigenous people. The colonization of Indigenous lands and peoples is driven by racist beliefs and ideas about Indigenous peoples, their values, their ways of knowing and being, customs and practices. Environmental racism results in these communities suffering a drastically different standard infrastructurally, technically and financially than non-Indigenous communities in Canada.

Racist ideologies, procedures and structures have been built into Canada's government institutions for centuries. Years of inadequate funding and systemic racism hindered the overall commitment by contributing to the misconceptions and misunderstandings about the budget and timeline. Canada's failure to meet the deadline sends a clear message to Indigenous communities that ending the water and human rights crisis simply isn't a priority. Years of inadequate funding results in a normalization of this chronic underfunding which perpetuates systemic racism. This is an institutionalized problem in Canada and an issue that needs to be tackled in the larger view of government and not just in the context of indigenous water but rather all Indigenous needs and programming. The commitment was a step in the right direction and an attempt to move away from this racism however it is one commitment in decades of insufficient

support from the government. One step in the right direction does not negate decades of problems and the systemic racism built into the colonial system must first be addressed.

Ultimately, the timeline not being met continues to disappoint First Nations and leaves them struggling with their DWA. The commitment deadline was not met for a variety of reasons including 1) the lack of an strategic plan which led to additional costs and confusion, 2) the inadequacy of the budget and lack of O & M funding, 3) the lack of Indigenous and Indigenous Women collaboration without which leads to unsustainable solutions, 4) the underestimation of the project and delays which were exacerbated by COVID and the remoteness and capacity of communities and 5) the environmental racism which created a lack of political will.

7.2 Did the Commitment Result in Meaningful Change?

In this section, the commitment's capacity to induce *meaningful change* is evaluated in two parts. Meaningful change is understood as the commitment's capacity to improve overall water quality in reserves across Canada and develop effective systems to ensure long-term water security for all individuals residing in Canada. First, this research examines how many DWAs were lifted, how many remain in effect and where the government process stands. This quantitative aspect allows this research to understand the scale of individuals who were helped or excluded by the commitment. Secondly, this research seeks to understand if the methodologies adopted during this commitment appropriately incorporate stakeholder needs and knowledges. This is achieved by analyzing the investment and project outcome related documents.

Based on the policy review and interviews, the research concludes that the commitment resulted in a moderate amount of meaningful change. Despite not reaching their timeline goal, 127 advisories were removed leaving 36 advisories remaining in 29 communities. The

commitment also resulted in the adoption of multiple new projects which are ongoing. In the interviews each participant confirmed that projects were progressing, and they were receiving investments. The commitment also contributed to increased awareness and support of Indigenous needs, which inspired more projects such as the AFNWA. Furthermore, public attitudes are charging as seen in the increased reference to Indigenous terminology in recent government policies and programs. For example, the consultation process adopted during the creation of the *Canada Water Agency* aligns with Indigenous values and practices. Hence, the GoC is making progress towards developing sustainable and appropriate solutions for First Nations where it concerns drinking water, long-term autonomy, and decision-making processes about Indigenous water services.

An important outcome achieved during the commitment was the improvement of reporting and tracking. Indigenous Services Canada developed a new website for tracking progress on ending DWAs on First Nations reserves. The new website, developed with the Indigenous firm Animikii, offers detailed plans and progress reports for approximately 36 active advisories. The site tracks elements such as construction progress, recommendation of advisory lift status and progress to date on removing all DWAs. For instance, clicking on the advisories for Neskantaga First Nation reveals that "construction of the water treatment system upgrade and expansion is complete, work continues to address wastewater issues" (ISC, 2021b). The centrality of the information in the new website facilitates the data tracking process and data sharing between agencies and the public.

The commitment contributed to the resolution of numerous lawsuits in favour of First Nations[14]. The settlement of $8 billion Canadian dollars was reached in approximately two years and was the product of two national class-action lawsuits. It was heard concurrently by the Federal Court of Canada and the Court of Queen's Bench of Manitoba, which is the first time the federal court and a provincial or territorial superior court presided over a case together (Isai, 2021). The Federal Court of Canada approved a multi-billion-dollar legal settlement that requires the government to swiftly clean up contaminated drinking water on Indigenous reserves and compensate First Nations for the decades they lacked access to clean water. The settlement of these lawsuits further demonstrates that the government is committed to providing reliable and clean drinking water to Indigenous communities (Isai, 2021).

7.2.1 Moderate Achievement based on Poor Standards

The outcomes of the commitment have been generally successful in comparison to prior years and past governments. However, this praise should be taken with a grain of salt since past governments are responsible for generations of racist policies such as the Indian Residential Schools System, the Sixty's Scoop that contributed to the genocide of Indigenous people. While these achievements lifted many DWAs, 29 communities are still waiting. Each positive comment about the commitment is followed by a 'but… it failed in another aspect'. Thus, the commitment continues the GoC's legacy of 'moderate achievement based on insufficient standards' for Indigenous communities.

The commitment was a step towards raising the standards for GoC and Indigenous relations and ensuring that Indigenous communities have equal access to water as non-

[14] The author explicitly notes that the commitment was not the instigating factor to these resolutions. Instead, the work of Indigenous individuals who laid the foundational work of these lawsuits should be recognized. This includes the protests that were held to generate public support, the lawyers who argued on behalf of their reserves, and the many others who facilitated this change.

Indigenous communities. The new programs and initiatives resulting from the commitment helped remove DWAs and provide sustainable infrastructure but fell far short of achieving equity amongst Indigenous and non-Indigenous services. The low standards for First Nations can be seen by the state of existing infrastructure and of water sources. Currently, existing infrastructure is characterised by poor quality materials that degrade faster than that part would in non-Indigenous communities. Moreover, the systems do not properly account for community needs, therefore the already weak system is unnecessarily strained. Thus, these brand-new systems fail to address the overdrawing of source water and quantity regulations, which are necessary to mitigate the impacts of climate change on long-term water security. In brief, the GoC's solutions are mediocre at best.

Dorene Bernard discussed her experiences with the government's failure to understand the actual experience and impacts of DWAs when her community's water source was contaminated by nearby mining. At the time of contamination, Indian Affairs brought bottled water, temporarily for the first week or two, and then left Indian Brook on its own to find their own source of water until the new well was ready, four months later. The water source was changed from a natural spring to a very deep well to overcome the contaminants from nearby mining. The well did remove the DWA however the water was not the same in taste as the natural quality of the spring. The lack of continued support during the communities' lack of potable water shows the poor quality of standards and resources provided to First Nations. The GoC's failure to see with two eyes and recognize water as more than H20 perpetuates the view of water as a commodity. In fact, in "resolving" this advisory by digging a well deep enough that the contaminants impacting the spring aren't an issue, it actually facilitates the degradation of land and ecologies related to the water. As Marisol de la Cadena explains in her book Earth

Beings, water is much more the its chemical composition and includes the broader ecologies that rely on it and is part of it (de la Cadena, 2015). Despite this trend of inadequacy, involved politicians like Justin Trudeau are praised for their so-called “allyship” and support. The GoC has been actively working to fulfil the needs of First Nations and this should be recognized. However, partially fulfilling a promise that is decades too late is the bare minimum and Canada needs to strive for better moving forward.

7.2.2 Benefits of Transfer of Service and Ownership

Indigenous people are spiritually connected to the land and are negatively impacted when their connection is obstructed and their ways of life hindered. If Indigenous communities retain the connection to their lands, culture and traditions, they have a better chance of improving their health and their lives. This logic also applies to water security and management. In each community, ownership is key because it fosters a connection between the community and the system. This connection is what allows the long-term adoption of the system and is reliant upon the system's alignment with the community's values. When INAC split into Crown-Indigenous Relations and Northern Affairs (CIRNA) and ISC, each department had an act of parliament to instate them. In passage 7B of the *Indigenous Services Canada Act,* gives legal power and precedent to transfer responsibility and ownership of services to Indigenous communities. Transferring control to Indigenous communities returns their autonomy and agency over their water and wastewater services by letting communities make their own decisions and using their own practices and laws to protect and treat the water. This new precedent is a step towards Indigenous self-governance yet for governance to be truly self-government for Indigenous Peoples it must be reflective of their ideology and values which is not yet possible in Canada as knowledge creation is still based on western and colonial ideologies see Chapters 2.1 and 4.2.

As part of the AFNWA engagement with their Elders Advisory Lodge, an elder said “a system is made better automatically when you own it " (MacKinnon, 2021) illustrating the importance of ownership that transfer of service allows. Ownership is key, as long as it is accompanied by the support of the GoC as they maintain the responsibility for ensuring Indigenous people’s access to clean water, as per individual treaties. In accordance with this responsibility, the GoC cannot delegate their responsibilities to Indigenous to satisfy their duty. Rather true collaboration and partnership is needed to develop appropriate infrastructure that the communities can take control of and maintain. Programs need to be realistic, meaning adequately funded and supported in relation to the goals of the plan. It is about making sure there is an option for first Nations or community control that is properly resourced. An example of a success in the transfer of services and ownership is the British Colombia First Nations Health Authority (FNHA). The FNHA, which began in 2013, assumed the governance and health care delivery by taking responsibility for the programs and services formerly delivered by Health Canada. Since then, the FNHA has been working to address service gaps by working to implement new partnerships, closer collaboration, health systems innovation, reform and redesign of health programs and services for individuals, families, communities and Nations. The outcomes of these efforts have been impressive although it has taken time and adjustment. A reason for this success, as mentioned by James MacKinnon, was the replacement of Health Canada staff with new employees to ensure that all FNHA employees embodied the agency’s revised outlook on service delivery. This allowed the FNHA to transcend the old dogma of viewing healthcare as a commodity and adopt a health-as-a-human-right perspective. The FHNA has been successful because it is driven by collaborative decision making and cultural awareness and therefore these characteristics should be modelled in the GoC approach to Indigenous water services.

7.2.3 Hope for the Future

The public perception and awareness of the Indigenous water crisis have been drastically increased by the commitment and work of Indigenous groups resulting in hope for the future. Attitude shifts from ignorance and disregard to solidarity and support can be seen within the government as they work towards more transfers of service to Indigenous communities and dissolve ISC. The higher rate of occurrence of gender, Indigenous and colonial codes in the documents about the Canada Water Agency and the collaboration currently happening for the Safe Drinking Water for First Nation regulations show that process is happening, and policies are improving.

Additionally, the AFNWA is another example of success as it aims to be fully operational by Summer 2022. The AFNWA is important because it sets new standards and presents an alternative model for Indigenous water services delivery. This model is cause for hope because it is Indigenous owned and operated and thus understands the traditional importance of water and water in the community. To ensure water's ceremonial purpose is addressed, the AFNWA set up an Elder Advisory Lodge to advise the board and make sure Indigenous ontologies are top of mind. Furthermore, the AFNWA works to ensure women are involved in decision making processes, as they are intrinsic to water management in community. The Elder's Advisory Lodge also emphasized the importance of a woman being the chair because of women's traditional role protecting water. Thirdly, the AFNWA follows a two-eyed seeing model. MacKinnon stressed that Indigenous knowledge needs to be embedded in all aspects of the AFNWA as well as the wider conversation about Indigenous water security and systems.

7.3 Why do DWAs Persist?

It is unrealistic to assume that there will never be another DWA on reserves. The real goal is to not have persistent DWAs and for them to not exceed a duration of two months. DWAs persist for multiple reasons: 1) lack of long-term sustainable solutions; 2) reactive nature of fixing issues; 3) lack of operators support and capacity; and 4) lack of binding regulations for First Nations water.

7.3.1 Lack of Sustainable Solutions

To date, the GoC has not developed a long-term sustainable plan to eliminate DWA's. Financial investments alone will not solve the crisis as past investments have not considered sustainability. Essentially the government has favoured respecting their budgets rather than developing long-term sustainable solutions. No plan has been developed to resolve the ongoing funding gap for on-reserve water infrastructure systems. Additionally, the GoC has yet to develop an approach to maintain systems sustainability while accommodating geographical challenges and socio-economic conditions on reserves. These failures contribute to the persistence of DWAs because temporary solutions lead to band-aid fixes that do not address the source of an DWA. Also, interim solutions often place the burden on individuals to buy bottled water and find their own water source, thus shifting the GoC's responsibility onto the individual. Communities are experiencing trauma as a result of water insecurity and children are growing up without ever experiencing clean tap water, something many Canadians take for granted. Ultimately, sustainable long-term solutions are necessary to meet communities' needs and address the origin of and DWAs to end their persistence.

Operators also need treatment designs and systems that are appropriate for their regions. Some systems designs are not appropriate for the water source and necessary treatment resulting in operators constantly trying band-aid fixes to modify the system to address the inappropriate

design (Hassler, 2021). Interim solutions often need constant work and repairs meaning operators do not have time for training or other tasks such as writing monitoring reports. Also, even when Circuit Rider Trainers[15] can get to a water plant, they often have to spend their time on repairs and work to keep the plant running as opposed to training operators. Therefore, the trainee does not receive the professional development intended to increase the operator's capacity. Furthermore, operators often experience burnout and fatigue as they do not receive the necessary support and face blame and ostracization from their community when DWAs occur. Long-term sustainable solutions that address the current and future needs of First Nations are necessary to ease the burden on individuals like the operators.

7.3.2 Reactive Nature of Fixing Issues

The current nature of dealing with DWAs and water treatment in general is very reactive opposed to proactive. This reactive nature contributes to the lack of long-term solutions because funding is invested as problems arise and permanent solutions are not developed. The reactive nature of funding also makes it hard to plan long-term. Capital for First Nation water is funded annually meaning communities only know their budgets one year in advance, leaving no ability to plan beyond a year. Without the ability to know future investments and budget amounts communities are uncertain if they will have the funds for daily activities to run the facility let alone upgrades or emergency funds. The reactive response to problems illustrates how the lack of continuous maintenance and upgrades leads to DWAs contributing to their persistence. Since, investments are made reactively, the GoC does not invest money on upgrades or to prevent future repairs contributing to the persistence of DWAs.

[15] The Circuit Rider Training Program is a long-term capacity building program that provides training and mentoring services to operators of First Nations drinking water and wastewater systems.

7.3.3 Lack of Operators Support and Capacity

Water Operators have incredibly important jobs as they are the ones responsible for ensuring the quality and the safety of the water coming from these water facilities. Yet the funding dedicated to operators under O & M funding is not enough and has been in-sufficient for many years. The lack of funding causes operators to try and run their facilities without the necessary materials and equipment. New water treatment technologies are often costlier to operate than older ones. The consequences of these policies are severe and put communities at risk.

Certified water operators are also in short supply and are underpaid. The lack of capacity and support means operators can barely leave their water plants, especially if they are the only certified operator. The lack of operators means operators cannot leave their systems and thus they cannot attend training or take sick/vacation days. In many communities, operators cannot retire because there is no one to take over. Chronic underfunding means not being able to pay operators appropriate wages, not being able to hire extra support staff so a lot of operators are overworked, and then just not really being in a position to deal with small problems as they arise. Also due to the lack of support and low wages there is no one interested in becoming operators contributing to the lack of available operators.

The insufficient O & M budget further illustrates that there is a lack of support to operators as not enough money is dedicated to maintenance and upgrades. When operators do not have enough funding, support or adequate salaries, the incentive to maintain the equipment is just not there. As a result, any infrastructure assets on reserve lands are not reaching their full life expectancy due to this lack of maintenance. The lack of support for operators makes the job unappealing and often attracts people who are not reliable, or they do not catch on to what they

need to or spend enough time at the plant as they need to" (Hassler, 2021). Pay scales do not realize the extent of the work involved and the amount of work is not reflected in pay or benefits. The scope of responsibilities and tasks need to be reflected properly in their compensation schemes. O&M funding and support should provide adequate and sustainable funding, resources, training for operators to run and maintain water treatment facilities. With an understanding of long-term needs, decisions on the allocation of funding become more structured and more informed with better outcomes for all.

In addition to the initiatives and programs to support First Nation ownership, the GoC also focused heavily on training. Despite the good intentions, these efforts failed to account for the barriers operators face when accessing training. As seen in Table 4, there are five initiatives with the same goal of "Supporting First Nations control of water delivery and helping prevent advisories from becoming long-term by providing support and water operator training through programs". As Hassler and MacKinnon highlighted, operators cannot leave their facilities and many have not had vacations because there is no back-up operator, therefore how are operators expected to attend training when they have no time. Additionally, only one out of the five training programs focuses on supporting potential youth operators. Hassler stated that the lack of funding and support for operators getting their level one certificate is the largest barrier to acquiring new operators. Yet, the GoC focused its resources on training for operators with existing certifications instead of on the communities and individuals trying to get their first operator certifications. Again, while the GoC is attempting to meet its commitments its lack of understanding barriers hinders the progress towards First Nations' access to water.

7.3.4 Lack of Adequate Regulations

Current standards for First Nation drinking water are set by the *Guidelines for Canadian Drinking Water Quality* and are established by Health Canada in collaboration with the Federal-Provincial-Territorial Committee on Drinking Water (CDW) and other federal government departments. These guidelines are technical non-binding guidelines generalized for all water systems. This general nature is condemned by water quality experts as each water source and system is unique and do not all have the same treatment needs. The current lack of adequate regulations for First Nations water contributes to the persistence of drinking water advisories because there is no enforceable standard resulting in uncertainty over the safety of the water and a lack of accountability or way to ensure compliance. While federal regulations are being created, they will not be implementable for many years.

Finding an explicit definition of "safe drinking water" in Canada, has proved difficult. The most recent *Guidelines for Canadian Drinking Water Quality* (March 2006) do not provide a definition, nor is there one in any provincial or territorial legislation. When there is no clear definition or regulation it raises questions "what is safe and how do we ensure safe water"? Due to the lack of regulations, operators and communities are unsure how to ensure drinking water quality and are left without standards or the ability to ensure compliance to guidelines. For example, the lack of regulations impacts the AFNWA as well as it impacts their ability to set and enforce standards and monitoring procedures. As there are no regulations, there is no regulator either. Thus, there is no 'backstop' or authority to check the work of the AFNWA or any Indigenous water facility. As they wait for regulations, the AFNWA needs to create interim solutions and spend more time and money to operate. Hence, once again, the GoC's failure

shifts the burden of work onto Indigenous communities, increasing the toll of DWAs on communities.

7.4 Limitations of Commitment

7.4.1 Boundaries

The Government's 2015 Speech from the Throne promised a renewal of the relationship between Canada and Indigenous peoples. In this spirit, the Government's first budget proposed an end to long-term boil water advisories on reserves within five years. However, this commitment only relates to First Nation systems "financially supported" by INAC (now ISC). While ISC financially supports most systems on reserve, it does not support all systems. Thus, from the beginning the commitment excluded certain populations, making it null and void from its adoption. Additionally, the commitment only applies to reserves below the 60th parallel meaning the communities in Nunavut, Northwest Territories and Yukon are not included. Consequently, they do not receive any support, money or resources invested as a result of the commitment and to end BWAs. As such, even if the federal commitment was met, inadequate infrastructure and long-term DWAs would still be faced by Indigenous communities.

7.4.2 Wastewater

The commitment focused on drinking water and while it resulted in positive change for the most part, it did not take into account wastewater. Indigenous communities face many challenges to meet established treated wastewater quality standards and require significant support to implement or upgrade their wastewater treatment systems. Improved wastewater treatment and water resource recovery systems are essential to public health and must still be addressed.

Conclusion

The commitment was not achieved due to 1) the lack of clear action plan; 2) the inadequacy of the budget; 3) the lack of integration of Indigenous knowledges and practices; 4) the lack of Indigenous women's voices throughout; 5) the underestimation of project requirements and the impacts of delays; 6) failure to understand the barriers presented the remoteness and capacity of communities; 7) ongoing legacies of environmental racism. The lack of a defined action plan and associated commitments resulted in wasted time and money as the planning phase was subject to the shortcomings of bureaucracy and inter-departmental negotiations. The original budget was found to be insufficient, particularly when it came to O & M funding. Additionally, excluding women from decision-making processes ignores their Traditional Knowledge and discounts their spiritual connection to water. Thus, the failure to include female voices throughout the commitment perpetuated the disconnect communities feel from their water facilities. The timeline of the commitment was not reached due to the GoC underestimating the extent of the design process and the scope of the work necessary. The remoteness and small capacity of First Nation communities contributed to the commitment's failure by making infrastructure problems difficult and contributing to the lack of qualified operators. Finally, environmental racism contributed by placing the majority of environmental burdens on Indigenous communities making resolving all DWAs a complex systemic problem.

The commitment resulted in meaningful change as seen by the removal of 127 long-term DWAs, increased investments and improvements in programs and tracking and reporting website. The commitment contributed to the foundations for transfers of service to Indigenous control resulting in the possibility for Indigenous ownership. However, the commitment goal was still missed but is still being praised for being better than previous government's commitments.

Even when the GoC fails to follow through on its commitment, they are still praised for their attempt. The praising of minimal achievements reinforces the GoC's poor standards for First Nations. Nonetheless, there is still hope for the future as public attitudes are shifting positively and government policy is starting to follow. The reasoning for the persistence of DWAs is complex but can be summarized by a) a lack of long-term solutions; b) the reactive nature of problem-solving; c) the lack of support for operators; and d) the lack of binding regulations pertaining to First Nations water. Currently the GoC has systematically failed to embrace Two-Eyed Seeing commit to the process of fundamentally transforming the way the GoC approaches Indigenous issues. The GoC has paid lip service to the idea of consultation and inclusion of Indigenous Knowledge, but when push comes to shove, they retreated to a purely technical interpretation that appears to be most consistently bookended by electoral advantage rather than transforming the way that one understands the problem. Since the commitment still has not been met, the GoC should amend their process and work with Indigenous communities to foster change in the ongoing work.

Chapter 8 Recommendations

As part of the interviews, each participant was asked for their thoughts and recommendations on ways to move forward. Their recommendations were combined with the lessons and recommendations learned from the process of conducting this research and from working in the domain of Indigenous drinking water.

The following lists summarizes the recommendations from the interviews and research.

1) **Protect Source Water.** As we previously noted, Indigenous people believe that decisions today should result in a sustainable future for seven (7) generations to come. This is a strategy employed to preserve their connection to land and water. As Bernard stated "We stopped Alton Gas. We need to stop the Scotia Shaw Resources from continuing to mine in our backyard as well. We need to protect our water." Source water protection involves managing the release of contaminants from human activities into water sources (rivers, lakes and groundwater) (Canada et al., 2006). Our source water is limited and must be preserved for future generations.

2) **Women Must Be Included in Decision Making Processes**. Meaningful and respectful collaboration with Indigenous women and their communities is necessary to garner their support and ensure their needs are being met. This collaboration should follow Indigenous water governance styles to ensure women are not stripped of their water knowledge. Indigenous women continue to demonstrate strength and resiliency despite colonialisms displacing them from their traditional roles as leaders and devaluing their Traditional Knowledge. Indigenous women are leading and educating their communities about water

issues and are reasserting their responsibilities in nationhood and sustainability, making them key to sustainable water security (Cave & McKay, 2016).

3) **Provide Adequate Training and Support for Operators.** Water operators are essential to the provision of safe drinking water. The evidence shows that there is a lack of support for water operators, inadequate training, lack of funding and appropriate compensation all of which leads to high turnover and instability.

4) **There is a need for long-term planning**. Time and costs associated with infrastructure investments such as water system facilities can take years to build and returns should be measured over long periods. Without a proper plan in place, support and subsequent resources dwindle midway, causing greater damages and increasing the costs exponentially. Furthermore, if the scope of a project is not well defined, targets are not established resulting in moving targets which are more costly. A well-conceived plan would ensure greater success.

5) **Consistent and Adequate Funding is necessary.** The water treatment facility that is the least expensive to build may be the most expensive to run, and vice versa, especially where the quality of the source water is poor. Also, the current system of supplying funding annually hinders the ability to budget for future maintenance and upgrades by only having a year notice. This puts a further strain on capital funding. Funding needs to account for the long-term needs of the community and payments need to be consistent and fulfilled in a timely manner.

6) **Government Transparency and Accountability.** There is a need to hold the government accountable to ensure that clean drinking water is a priority for all First Nations.

Transparency promotes accountability and would help to re-built trust and reconciliation. This need is continuous and applies to all facets of GoC-Indigenous relations.

7) **Clear Federal Regulations for Drinking Water and Wastewater.** Regulations are being created and led by the AFN with the federal government. However, these regulations are multiple years from implementation and interim solutions are necessary.

8) **Embrace and Teach Indigenous Knowledge.** In order to develop effective policies on water security, water must not be thought of as a commodity but as a living spirit. Indigenous knowledge has never been taught or allowed to be taught. This needs to change and the public needs to be educated about Indigenous issues and traditions. People need to learn to protect the water, the land, and the earth. People need to learn that they are water beings. The more society embraces this connection to water and life, they can influence the GoC to fulfill its promises. We Discussion surrounding water must also focus on the traditional aspect of water to complement the financial and technical components. If the government is truly committed to ending DWA's, then science and Indigenous knowledge must work in partnership to achieve it.

9) **Address Systemic Problems Holistically**. Water issues cannot be effectively dealt with in isolation. A comprehensive approach that takes into consideration housing, education and social issues, and healing centers is required to address water security on a community scale. In this regard, adoption of this ontology must occur on all levels of government.

10) **Facilitate Self-governance and Ownership**. Communities need ownership and autonomy of water systems, land and resources. Ownership gives communities pride and desire to improve what's theirs. See 7.2.2 for the benefits of ownership.

11) **The Public Needs to Show Up.** Indigenous populations value water and want their elected officials to prioritize investment in drinking water and wastewater infrastructure. However, they recognize they have to defend their culture and their heritage and thus water protectors, activists and organizers have become more prevalent in recent years. As Bernard explained in her interview: “everyone can show up in their own ways. Sometimes it's on the land, sometimes it's there right on the front line. Sometimes it's only using your voice writing a letter.” This activism helps to create awareness and support for water issues and to force the government to develop the necessary policies and procedures to address the issue. Bernard continues to state “People are starting to embrace that [Indigenous knowledge and the connection to water and life] and so I believe the message is that more of this is going to continue and … we have a lot of people that are standing up and, government can't just continue on the status quo and it's not going to work and they won't be there very long.”

Chapter 9 Conclusion

This research sought to evaluate the Federal government's commitment to end drinking water advisories in First Nation communities (reserves) by 2021. The primary research questions for this thesis were aimed at evaluating the 2016 commitment to understand 1) what it aimed to accomplish, 2) what it actually accomplished, 3) why it missed the goal of March 2021, and 4) why DWAs still persist? This research concludes that the 2016 commitment is the step towards reconciliations however, its achievements are still insufficient and have yet to achieve reliable water quality in Indigenous communities.

The data was analyzed using a Two-Eyed Seeing model to include both a western and Indigenous viewpoint. This was done by 1) using a two-eyed code book, which included both technical and Indigenous terms within the policy review and 2) ensuring Indigenous perspectives through the interviews with Indigenous participants who have technical and spiritual connections to water were highlighted. Based on the interviews, it became apparent that an Indigenous perspective was deemed critical but is lacking in government discourse. This increased awareness of the need to engage with Indigenous people and to utilize their knowledge in tangible ways will be fundamental to move forward with sustainable solutions that will be embraced and supported by First Nations. It also highlights the need to address the power imbalances that have arisen because of colonialism. There must be greater and more meaningful collaboration with Indigenous people in order for DWA's to be fully addressed.

A feminist decolonial approach was also used to examine the male-dominated western thought processes and knowledge creation. This was achieved by including gender codes and exploring the roles of Indigenous women in water policy and in action. Based on the literature

review, it was well documented that Indigenous women have a unique and spiritual relationship to water that must be recognized and utilized when developing water strategies. This connection was affirmed by grassroot grandmother, Dorene Bernard and the water ceremony conducted during the virtual interview. Men and women have different roles and responsibilities when it comes to water and acknowledging this division will help provide better outcomes. As further evident in the interview with Doreen Bernard, women are able and more than willing to participate in water resource policies, but the government must first put aside their male dominated, western view of thinking.

While this research was based on a rather limited number of interview participants, the consistency of their responses which were further corroborated by the policy review, all point to fundamental flaws within the commitment. Primarily the inadequacy of the budget from the start, the lack of government collaboration with Indigenous communities, particularly with women, and the lack of a strategic plan which contributed to inefficiencies and duplicity of effort and a lack of O&M funds. In contrast, the government placed the blame on the COVID-19 pandemic, the remoteness of the communities and the added difficulties with supply chain management during the pandemic. Many of the interviewees believe this is a cop out by the government since the government had 4 years prior to the pandemic to complete the work.

From a quantitative perspective, there was progress made. 131 DWAs were lifted, and 205 short-term DWAs were prevented from becoming long-term. However there still remain long-term 34 advisories in 29 communities and 32 short-term advisories (as of March 28, 2022). In addition to the DWA's that were lifted, progress was made on policy and procedures for reporting and tracking of DWAs. An improved website for tracking DWAs was implemented that will provide current information and transparency on projects and for people to see what is

going on in their fellow communities. While this is a step in the right direction, some people feel the website is just another excuse for the government to justify its delays in lifting DWA's.

The development of AFNWA is a new initiative by the government that gives self-determination and control of resources over to First Nations and allows them to protect their own way of life. The fact that the government is changing how it operates after 150 years is evidence that they are trying to work with Indigenous people towards reconciliation. Other programs such as the Circuit Rider Training Program, First Nation Youth Career Outreach project and WWW Hubs in Ontario were designed to support First Nations control of water delivery and to help prevent advisories from becoming long-term by providing support and water operator training. This is essential as lack of operator support was a key issue that was evident in the literature review and echoed repeatedly by the interviewees. Indigenous Services Canada had not amended its operations and maintenance funding formula for First Nations water systems since it was first developed 30 years ago until recently[16]. This has contributed to ongoing funding and training issues. This must be addressed before meaningful change can occur.

Despite the successful elimination of 127 DWA's, they continue to persist. The reasons for their persistence follow the same historical patterns as why DWA's occur in the first place, namely 1) insufficient funding/resources, 2) a lack of available operators/training, 3) a lack of capacity for long term sustainable solutions and 4) insufficient collaboration with Indigenous people, particularly women. These reasons were re-iterated in both the literature review, policy review and interview responses. By evaluating the accomplishments and missteps of the

[16] This equation was updated in end of 2020 when O&M funding was increased from 80% to 100% (I. S. Canada, 2021)(https://www.canada.ca/en/indigenous-services-canada/news/2021/08/government-of-canada-progress-update-on-improving-access-to-clean-water-in-first-nations-communities.html)

commitment, funding gaps became apparent, and research showed regulations and quality standards were poor if any existed at all. Policy recommendations require that there be clear binding regulations and adequate support and funding to meet set regulations. As the literature review revealed, the government regulates water quality for off reserve communities, but has no binding regulations for water on First Nations reserves. Furthermore, there was no clear definition of safe drinking water. The protection of source water needs to be included as part of these regulations. Improving and clarifying these regulations can help make the GoC more accountable.

The need but lack for long-term planning was evident as one of the main reasons why the commitment was not achieved. The GoC's past action with band-aid solutions only emphasize the underlying issues and does not address the root of the problem. The interviewees all stressed that having a long-term viable plan was critical to the elimination of DWAs. In line with this, there needs to be more accountability and transparency of the government and their work to provide safe drinking water. Despite budget constraints and limited resources, the government must be more open and transparent in their dealings with First Nations. Interviewees noted that due to a lack of information and transparency, there was a lot of confusion which created inefficiencies and monies not being utilized for a lack of clear direction.

It cannot be stressed enough how important it is to include Indigenous voices and knowledge in any policy planning. This was emphasized over and over again in both the policy review and Interview responses. Indigenous knowledge must be taught and embraced. The public can play a role in this by showing up in their own ways. They can: 1) learn about and embrace Indigenous knowledge and learn about issues facing Indigenous populations; 2) hold their governments accountable and demand change; and 3) listen to and amplify Indigenous voices.

While the need to embrace Indigenous knowledge is clear, it must be done in a holistic manner that serves the needs of the community as a whole and provides a holistic approach to drinking water and water infrastructure.

Finally, the government needs to provide adequate training and support for water operators. This research showed that many of the DWAs result from inadequate maintenance of existing infrastructure due to a lack of trained and qualified water operators. In fact, it was shown that much of the infrastructure does not meet its true-life expectancy due to the lack of routine and regular maintenance. The importance of water operators in eliminating DWA cannot be denied, and this was repeated continuously in the literature review, policy review, and interviews. Ending this long-standing problem is an important step on the path to reconciliation. The GoC has never fulfilled its promise to provide First Nations with access to basic and Canadians need to demand better of our government.

This research is one step towards understanding why so many communities are left without water. The government still has a long way to go until all DWA are truly eliminated. In this regard, Indigenous Services Canada has re-committed to lifting all remaining long-term drinking water advisories in First Nations communities. While it has not set a new deadline for this commitment, it seems the government has finally accepted the fact that more work needs to be done in order to address the inequities between Indigenous and non-Indigenous people.

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Appendix A: Interview Guide

Interviews questions

These interview questions serve as a guide to open up dialogue or to start the conversation in relation to the overall research questions.

1. In what ways are you (and your organization) involved with Indigenous DWAs?
2. What do you think of the 2016 commitment?
3. What are your responsibilities in relation to drinking water?
4. Have any of these responsibilities changed due to the 2016 commitment by the federal government?
5. Did your organization receive any funding due to the policy and the $1.8 billion pledge?
6. Can you tell me about the current procedure for DWAs? What actors are involved? Are there protocols you must follow, if so, how do these affect your work/organization?
7. What did the commitment accomplish?
8. Did the commitment result in meaningful change?
9. Why was the 2021 goal not met?
10. What did you think when it was announced that the 2021 goal was not going to be met?
11. Why do new DWAs continue to occur?
12. What needs to be done to resolve DWAs?
13. What needs to be done to provide safe drinking water to all Indigenous communities? (those included in the commitment and those not)
14. Is there anything that government organizations need to do to ensure Indigenous collaboration?

15. What are some recommendations you and your organization will make to improve Indigenous drinking water?
16. Do you have any general recommendations for fulfilling the commitment to Indigenous communities and ensuring they have access to safe drinking water?
17. Are there any other areas I should look into? Or any other people I should talk to?
18. Do you have any questions for me?