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NORTHERN INDIGENOUS COMMUNITY-LED DISASTER MANAGEMENT AND SUSTAINABLE ENERGY

Ranjan Datta, Margot Hurlbert and William Marion

ROUTLEDGE

Northern Indigenous Community-Led Disaster Management and Sustainable Energy

This book examines how current energy and water management processes affect Indigenous communities in North America, with a specific focus on Canada.

Currently, there is no known Indigenous community-led strategic environmental assessment (ICSEA) tool for developing community-led solutions for pipeline leak management and energy resiliency. To fill this lacuna, this book draws on expertise from Indigenous Elders, Knowledge-keepers, and leaders representing communities who are highly affected by pipeline leaks. These accounts highlight the importance of providing Indigenous communities with technical information and advice, allowing them to practise community-led disaster management and giving them direct access to lawyers and decision-makers. If implemented into current policy and practice, these tools would succeed in helping rural Indigenous communities make strategic choices for sustainable energy management and utilize their lands, traditional territories, and natural resources to develop a robust, sustainable energy future.

Prioritizing Indigenous perspectives on energy management and governance, this book will be of great interest to students, scholars, and practitioners working in the fields of energy policy and justice, environmental sociology, and Indigenous studies.

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Contents

1 Introduction

Our book aims to reveal gaps in knowledge about energy industries, meaningful consultations among federal and provincial governments and Indigenous communities' disaster management and energy policies and practices, as well as to highlight areas requiring further research and knowledge development. Our book prioritizes Indigenous perspectives on how to overcome disaster risk and build community-led energy sustainabilities through the lens of economic reconciliation and supports leadership in northern Indigenous communities so that they can vision their own energy future and utilize their lands, traditional territories, and natural resources to develop a robust, sustainable energy future. Following Indigenist and relational research frameworks, this book strongly advocates for Indigenous community-led disaster risk management and energy sustainabilities.

Our book's chapters identify current challenges to mitigating pipeline leak risk by collecting stories with Indigenous Elders, Knowledge-keepers, and leaders representing highly affected communities in North America, particularly in Canada. Chapters of our book facilitate the development of a community-led test evaluation framework for identifying and evaluating alternative pipeline leaks and water management options characterized by different knowledge and values. Moreover, our book chapters showcase community perspectives to create community-led policy dialogues with industry and government. Community perspectives explain how to improve practice and policy by engaging with activists, providing Indigenous communities with technical information and advice, allowing them to practise community-led disaster management, and giving them direct access to lawyers and decision-makers.

Our book aims to provide rural Indigenous communities with new community-led tools that can help them make strategic choices for sustainable energy management that enhance their resiliency to pipeline leaks and protect their treaty rights. Our two key questions are as follows: how do current energy and water management processes affect Indigenous communities? And, how an Indigenous community-led strategic environmental assessment tool can help to develop alternative energy and water management processes? The study (a) identified community-led consultation surrounding

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pipeline leaks, energy, and water management; (b) developed a community-led test evaluation framework of alternative pipeline leaks, energy, and water management policies and management strategies; and (c) explored community-led solutions, anchored in sustainable energy and water management politics, that support Indigenous communities' and organizations' attempts to negotiate benefits from industrial projects on the one hand, and defend treaty rights, traditional land use, and environmental integrity on the other.

Focusing on the community perspective, this book impacts the scholarly community through advancing approaches to assessing, understanding, and improving Indigenous community resiliency by introducing a structured Indigenous framework for community engagement and decision-making. Following our relational responsibility, we tried to advance Indigenous methodology and new areas of application for Indigenous community-led strategic environmental assessment. We hope our book may be helpful for communities, governments, and industries to identify agreed-upon pipeline leak risk, energy, and water management policy solutions and implications for implementation and help build a longer-term community-defined research programme at the policy-science-community interface.

Why Is This Book Important?

Currently, there are no known Indigenous community-led strategic disaster risk management tools for developing energy sustainabilities, particularly in remote Indigenous communities in Canada. Notwithstanding the potential for disaster risk management to contribute to sustainable energy management policy and planning for rural Indigenous communities, it has not yet been applied to a pipeline management context or with the explicit aim of fostering community resiliency (Datta & Hurlbert, 2020, 2019). The Calls of the Truth and Reconciliation Commission (2015) and the United Nations Declaration for the Rights of Indigenous Peoples (2008) all provide us with the opportunity to develop a strategic framework as a starting point for strengthening community-level decision-making procedures in duster risk mitigation and policy development. Developing a community-engaged and community-led approach from and within community perspectives, which facilitates respectful dialogue between parties, reversing the standard and normalized one-way flow of power reflected in pipeline case law, and supporting efforts towards reconciliation are all synergistic opportunities. If properly designed, this community-engaged and community-led approach initiative can encourage Indigenous self-determination in sustainable energy resiliency.

Our book informs both academic and non-academic audiences about the community-led collaboration throughout an entire research project in Treaty 6 territory (2016–2022), including reporting the research team's progress and findings (Review of Environmental Assessment Processes Expert

Panel, 2018; SSHRC, 2017). Community-engaged and community-led proposed energy sustainability knowledge is co-produced not only with Indigenous communities across Canada but also with Indigenous communities all over the world. By following community perspectives, both in traditional and creating new means of sharing knowledge, we engage with and reach an extended audience beyond academia and the partner communities.

Our book may be useful to critical readers in public policy, energy justice, environmental sustainability, education, environmental sociology, anthropology, interdisciplinary studies, postcolonial studies, ethnic studies, environmental sustainability, Indigenous studies, and women's studies. It will not be produced without building upon and working within a number of fields, including postcolonial theories, Indigenous methodologies and methods, sustainability theory and practices, decolonization, community-based practice, youth practice, and Indigenous knowledge and practice. It will also appeal to different disciplinary, interdisciplinary, and transdisciplinary academics and practitioners. As this book tries to demonstrate what Indigenous scholar Linda Smith calls a "decolonization and reclaiming approach," this book will also be very relevant to energy justice policymaking in both the Eastern and Western world.

Through this book, we are requesting all of us to work together – as Indigenist, to build relational networks for the important work of the inter-cultural bridge, moving beyond cultural awareness and inclusion – challenging racist ideology as we rethink and re-imagine ourselves in relationship with one another sharing place – mother land (Battiste, 2000, 2013; Cajete, 1994; Datta, in press; Danard, 2013).

Our Research Is Our Ceremonies

Following the Indigenist research framework, our research consisted of ceremonies of learning and reflecting. We consider our research as a lifelong process of learning, unlearning, and relearning ceremonies (Datta, 2022; Wilson, 2008). Our research is our responsibility to act on community needs, centre community perspective, and transform our objectives into action (Datta et al. 2014, 2015; Indigenous rights, 2008; Smith, 2012). We used relational ontology and accountability as a theoretical framework, which benefits both researchers and participants in their efforts to decolonize by unpacking issues of power, voice, and possibility when hierarchical ways of being and knowing create and exploit constructed divisions among humans and with the more-than-human (Datta, in press, 2015; Wilson, 2008).

We intentionally wanted to use an Indigenist research framework. We know while Indigenous peoples have been doing research for centuries, Western research has colonized the meanings of research and its purposes (Kovach, 2021; Smith, 2019, 2012). However, the Western perspective[1] of colonized is feared by many Indigenous communities as it is used as a tool for reinforcing stereotypes, creating distress, or contributing to further bad

press (Kovach, 2021; Pyett, Waples-Crowe, & Van, 2008; Simonds & Christopher, 2013; Smith, 2012). Studies have suggested that Indigenous and other local communities have long experienced exploitation by researchers and that increasing their participation will aid in decolonizing research processes (Datta, 2019, 2018; Prete, 2019; Proter et al., 2017; Wadams & Park, 2018). Wadams and Park (2018) explain that predominately Western ideologies and societal discourses may influence both Western researchers and their research bias. Moreover, many Indigenous studies (Prete, 2018; Simpson, 2014) suggest other compelling challenges to Western research. Indigenous researchers have to deal with a lack of respect for Indigenous peoples, their land rights, and self-determination.

An Indigenist method, however, is rooted in Indigenous epistemologies, ontologies, and axiologies (Wilson, 2007). While it recognizes that variations exist between groups of Indigenous peoples, Indigenist methodology bridges Indigenous and other worldviews in respecting and honouring Indigenous worldviews. Indigenist research methodology respects and honours Indigenous knowledge, culture, and ways of being (Parter & Wilson, 2021; Wilson, 2007). This methodology also encourages the building of trustful relationships between Indigenous and non-Indigenous peoples in ways that make researchers responsible for the land, people, and sustainability. Once non-Indigenous researchers, educators, and community members use Indigenous research methodology, they become accountable for their research and their research participants. Indigenous scholars (Hughes, 2021; Rigney, 2017; West et al., 2012) refer to Indigenist research methodology as part of a researcher's responsibilities, including building trustful relationships with participant communities, respecting and honouring Indigenous knowledge and practice, knowing the process of decolonization, and centring Indigenous knowledge as scientific knowledge. Therefore, Indigenist methodology recognizes multiple worldviews, ways of knowing, and realities as distinctive and vital to Indigenous existence and survival (MacDonald, 2017), and it honours Indigenous peoples' knowledge, culture, and practice. Indigenist methodology also inspires researchers to learn and situate themselves in their research. It is a process that makes non-Indigenous peoples responsible for Indigenous land rights and social justice. Indigenist methodology also reshapes researchers to understand that there are multiple Indigenous worldviews and practices and helps researchers take responsibility for privileging Indigenous voices, people, and lands. Indigenous scholars (Kovach, 2010; Wilson, 2008, 2007) also remind researchers that the four Rs – respect, relevance, reciprocity, and responsibility – are central to Indigenist methodology. *Respect* and honour are core beliefs/values of Indigenous relationships that Indigenist researchers need to understand and practise sincerely in their research. The *relevance* of the research to the community is another crucial issue that Indigenist researchers must learn from the people they are working with. *Reciprocity* refers to the priceless gift offered by Indigenous peoples, that is, the breaking of boundaries between researchers and participants through building trustful relationships. Finally, there is the

responsibility that Indigenist researchers have towards their participant's communities – the responsibility to respect, honour, and advocate for the community's knowledge, identity, land-water rights, and needs in research.

Following Indigenist research, we chose the relational methodology because: (1) relational ways of thinking prioritize collaboration between researcher and community; and (2) community knowledge, community ways of knowing, community ways of constructing knowledge, and community ways of disseminating knowledge are highly valued by all parties (Datta, 2018; Simpson, 2011; Smith, 2012). We focused on transformative learning through the researchers' relational accountability and obligation to study participants and the site for several significant reasons. First, in relational ontologies, a researcher's relational accountability is fundamental to the research. Indigenous scholar Shawn Wilson (2008) suggests that a researcher's relational accountability involves fulfilling his or her relationship with the surrounding world. It requires researchers to be accountable to "all my relations" (p. 177). Using relational accountabilities in our research framework, our goal was to foster respect for difference, build relational accountabilities into all stages of the research, and allow an ethical space of mutual engagement to take shape. Another critical characteristic of relational ontologies is the building of collaborative partnerships. Indigenous scholar Kovach (2005) researched collective responsibility. According to Bastien (2004), "Knowledge is relational and dependent upon the relationships that are learned in childhood" (p. 77). Our relationships with Saskatchewan Indigenous communities are well situated for our research and book goals. As the first author, I am Ranjan Datta, who is a settler scholar of colour from a community in Indigenous land known as Canada. Through my graduate studies, leadership and professional activities over the last ten years, I have developed a strong relationship with Saskatchewan's FN, Métis, and non-Indigenous communities. In addition to academic institutions' (Mount Royal University and the University of Regina in Canada) ethical approval, we followed Cree First Nation cultural protocols. The first author learned 25 traditional stories from the Cree First Nation Elders and Knowledge Keepers with the guidance of one of the Cree First Nation Knowledge Keepers, who has kindly agreed to be the second author of this chapter. We followed institutional and Knowledge-keeper guidelines to protect research data, analyse stories, and write reports for the communities. We followed continuous forms of consent for this research, including using their direct quotes for publication. We know that Indigenous knowledge varies according to the community, and from community to community, land to land, and generation to generation. In this chapter, our intention is not to generalize, predict, or compare. We shared our learning as a part of relational responsibilities with honour and respect for the community's knowledge and needs. We consider our learning to be a lifelong process of learning, unlearning, and relearning.

We learned from Indigenous Elders', Knowledge-keepers', and leaders' stories that pipeline spills profoundly impacted Indigenous peoples, their environment, and traditional meanings of sustainability, including land, water,

insects, plants, and others. As the community explained, spills have created many negative impacts on Indigenous physical, mental, and spiritual health, their culture, and traditional knowledge. Pipeline spills have also created genocide on Indigenous peoples' environment. The community explained that there were many studies from industries and provincial and federal governments on these issues; however, minimal studies focused on Indigenous people and their perspectives. In regard to Indigenous energy resilience, according to the community, all others, including industries, provincial and federal governments, and academic researchers, have historically violated Indigenous treaty rights, broken trust, and imposed colonial forms of development on the community. Therefore, the community suggested redefining the meaning of "impact" from and within community perspectives and rethinking the meaning of "development" from Indigenous treaty rights. Rethinking, reshaping, and relearning the meanings of energy resilience with Indigenous community perspectives will benefit all, including Indigenous peoples, industries, and provincial and federal governments. The purpose of this report is to provide a summary and recommendations on assessing the environmental, health, and spiritual impacts of spills and develop community-led, community-engaged energy resilience guidelines. This report outlines the main results from the study and provides recommendations for the policymakers regarding community perspectives. Our objectives were to:

- Identify community-led consultation practices for addressing pipeline leaks and energy management;
- Develop a community-led test, evaluation, and risk evaluation framework for addressing pipeline leaks and energy management that will inform community and business relations, policy, regulations, and legislation; and
- Explore community-led solutions anchored in sustainable energy management politics that support Indigenous communities' and organizations' attempts to negotiate benefits from industrial projects on the one hand, while defending traditional land use and environmental integrity on the other.

Chapter Outlines

We organized our book into ten chapters. The second chapter explained why we need this study and our Indigenist and relational methodology. Many significant issues came up in our learning; we organized our chapters according to Elders' and Knowledge-keepers' suggested themes and perspectives as follows:

Chapter 2: Pipeline Spills and Indigenous Energy Justice: A Scoping Review

In this chapter, we shared our scoping review focusing on Indigenous sustainability issues in relation to surrounding pipeline spills/leaks, impacts

on drinking water, and Indigenous communities in Western Canada. We found that Indigenous communities are particularly vulnerable to pipeline leaks and have limited capacity to mitigate them. Strategic decisions need to be made about the management of pipeline leaks. For building Indigenous energy justice, the findings of this chapter suggest that Indigenous-led databases, programmes to monitor and assess impacts, report leaks, and funding for community-based participatory action research are required.

Chapter 3: Impacts

This chapter discusses how most of the communities' Knowledge-keepers, Elders, and leaders suggested decolonizing the concept of impact. We discuss how the community discussed the current form of impact as a Western colonial process, which only focuses on a minimal perspective, such as impact only on limited time within a few days of the spill and restricted areas of water. The community expressed that in many cases, Western researchers from industries, governments, and academics focused on only a few places in river water with few days of spills. While communities are living by the river and they have everyday interaction with the river, the Western perspective of impact did not include community perspectives in most cases. According to the communities, Indigenous meanings of impact are significantly different from Western; they are holistic and based on everyday knowledge and practice. For instance, pipeline spills are not water; they impact everything, including humans (i.e., physically, mentally, spiritually, and culturally) and non-humans (i.e., water, soil, plants, insects, animals, and medicinal plants). Therefore, most of the communities' Knowledge-keepers, Elders, and leaders suggested that we need to decolonize the impact on how to see and how we want to resolve this disaster. This chapter discusses how the impact is still ongoing, and it will be continued for seven generations.

Chapter 4: Disaster

This chapter reflects on communities' Knowledge-keepers, Elders, and leaders who explained that pipeline spill is a serious disaster for the communities. We will discuss how the communities referred to this disaster as genocide against their traditional medicinal plants and spiritual animals. All three communities did not have any communication with the government or industry during and after this disaster. The communities were left behind in all forms of communications from governmental decision-making during and after the cleaning process. This disaster became severe when the provincial governments provided much misinformation. For instance, during and after the pipeline spill, governments provided much misinformation when they communicated with communities; they denied the spill and did not develop collaboration with communities. Therefore, we will focus on the communities' suggestions that communities should be part of any decision-making process to lead the disaster resilience process.

Chapter 5: Challenges

This chapter focuses on communities' perspectives focusing on the concept of challenges that need to be understood before, during, and after pipeline spills. Since Indigenous communities faced many challenges during and after the pipeline spill, we discuss how they were most affected. Communities explained many challenges to mitigating pipeline spills.

Chapter 6: Community-Based Consultancy

This chapter discusses communities' perspectives on how they want to see community-based consultancy. We discuss how the community is at the centre of their meanings of community-based consultancy. We will share how all the communities want community-based consultancy with their community members; they want to lead, guide, and collaborate. The Elders and Knowledge-keepers are in the centre who have long sustainable knowledge, experience, and leadership to guide their youths, Western scientists, and industries. All of the Elders, Knowledge-keepers, and leaders suggested they collaborate with Western researchers, governments, and industries. They indicated that the community could guide energy industries and governments to develop meaningful implications of community-based consultancy.

Chapter 7: Traditional Healing

We focus, in this chapter, on communities' perspectives on traditional healing, particularly focusing on the historical genocide in Canada. As we know, the pipeline spill disaster is not new. We discuss how Indigenous people live in everyday racism, discrimination, and oppression. In this chapter, we share our learning on community perspectives that their traditional healing process helped them to fight an ongoing colonial disaster again. Indigenous traditional healing processes are limited not only to humans but also to non-humans. Traditional ceremonies refer to land-based healing interconnected with their land, water, animals, plants, insects, and so on. We will discuss how land-based healings are referred to as traditional ceremonies that include songs, dances, spiritual prayers, drumming, and fire.

- Taking Responsibility with Singing and Dancing
- Follow Treaty Guidelines
- Promise to Protect Land and Water
- Taking Care of Land, Water, Plants, Insects
- Healing for Physical, Mental, Spiritual Health
- Healing for Traditional Medicine, Plants

Chapter 8: Communities' Visions/Perspectives on Policy Recommendations

This chapter discusses the communities' knowledge on how to build their resilience with their treaty rights, community capacity building traditional

knowledge, culture, and practice. Once governments and industries are considering community visions/recommendations, community Elders and Knowledge-keepers should be included. Further, governments and industries should include Indigenous leaders according to Elders' and Knowledge-keepers' guidelines. In the following, we summarize communities' visions/recommendations for meaningful implications of Indigenous energy resilience.

Chapter 9: Leading Change

This chapter focuses on current laws and practices. In this chapter, we give particular focus to communities' thoughts and priorities outlined in the section above and offer a solution going forward. The window of opportunity may be now with Canada's recognition of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). But this will only be successful if Indigenous voices like the communities' Knowledge-keepers, Elders, and leaders are heard. This section recounts policy and some thoughts of participants in this regard. In this chapter, we discuss how in the last several decades, a long, arduous process of change has been attempted within and outside the legal system to undo Canada's colonial settler history. We also highlight how to implement the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and the right to Free, Prior, and Informed Consent (FPIC) for Indigenous peoples. Adopting this Declaration as a framework for reconciliation is the first step, but ensuring that this window of opportunity is led and determined by Indigenous people is required.

Chapter 10: Conclusion

We conclude by focusing on communities' visions and exceptions to guide, lead, collaborate, and make significant contributions to developing their sustainable energy resilience. We proposed an Indigenous community-led participatory action research (CBPAR) to develop policy about documentation (NB: this may be a combination of storytelling, including oral and digital formats, as well as written) and information dissemination.

Note

1 Many studies suggested that Indigenous communities have long experienced exploitation by western research and researchers (Datta, 2020; Smith, 2012; Wilson, 2008).

2 Energy Management and Its Impacts on Indigenous Communities in Saskatchewan and Alberta

A Scoping Review[1]

This chapter explores one of the significant questions raised by Sovacool (2014), *"what ways do discourses of energy and climate erase indigenous or alternative forms of knowledge, or hide the particular history or assumptions underlying them?*" (p. 14). While the Western energy development (particularly pipeline development) has brought income to some and wealth to a few, pipeline leak's impacts on the environment and on the lives of many Indigenous groups are profoundly concerning. Literature suggests that the pipeline leak and their impact on Indigenous drinking water, fishing, hunting, and harvesting in their communities are reflective of a host of unresolved matters that speak to issues of colonization, inequity, justice, and institutional trends within governing and funding bodies in Canada (Atlin & Gibson, 2017; Booth & Skelton, 2011; Government of Canada, 2018 Conklin Métis Local, 2016; Olive, 2018). Therefore, Indigenous safe drinking water sources, as well as traditional ways of life, such as hunting, fishing, trapping, and gathering air, are quickly becoming impossible for many Indigenous communities.

Pipeline leak in Canada and their impacts on Indigenous communities are significantly concerning. A study by Alberta's Energy and Utility Board on pipeline spills counted over 12,000 incidents of leak and ruptures over a period of 15 years, 57% of which were caused by internal corrosion (Alberta Energy and Utility Board, 2007), challenging the legitimacy of the energy industries. Over 25% of the proposed pipeline and tanker corridor sat within 80 kilometres of 69 Indigenous communities, tribal councils, and Metis organizations, which hold traditional titles to these lands (McCreary & Milligan, 2014). Indigenous titles are acknowledged under the Canadian constitution, following a Supreme Court ruling in 1973 (Calder case) recognizing Aboriginal peoples as distinct polities with distinct rights and claims (Godlewska & Webber, 2007). A 2004 (Haida case) ruling enforced the government's duty to consult and accommodate Indigenous groups for developments that could negatively impact Aboriginal rights or titles (Eaton, 2017; Newman, 2009).

The recent Assembly of First Nations report on Drinking Water Advisory (DWA) shows that there are 81 long-term drinking water advisories

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affecting more than 50 Indigenous communities across the country (2018). Many Indigenous communities in the Western provinces (particularly in Saskatchewan and Alberta) live with unregulated resource extraction (i.e., high-risk oil spills, leaking pipelines), leading to drinking water advisories and water quality below that of the general population. As of August 6, 2018, there were 42 short-term DWAs in place, alone more than 15,000 Indigenous people living under a DWA in Saskatchewan (Table 2.3). A scoping review of this chapter examining high-risk oil the leak, inability pipelines leak management, and its relationship to Indigenous drinking water quality, health, environmental impacts, was focused. While the Canadian federal government called for consultations with Indigenous groups along the pipeline route (excluding downstream nations), Indigenous groups invoked international law (the United Nations Declaration on the Rights of Indigenous Peoples) to support their right to make free and informed choices about the development of their lands and resources (Boutilier, 2017; Gardner, 2012). The right to free, prior, and informed consent (FPIC) under the UN declaration is, however, a non-binding instrument to simply guide the behaviour of states (McCreary & Milligan, 2014). Indigenous groups thus requested that Indigenous rights be recognized on lands with title claims, through consultation and consent for all impacted Indigenous communities (Environmental Protection Agency, 2017; Fine, 2014). The Northern Gateway Pipeline (NGP) had gained acceptance from some Indigenous communities, but Enbridge faced its greatest challenges to its legitimacy among coastal Indigenous communities who feared a spill would destroy the marine environment (McCarthy & Lewis, 2016a). Pipeline leak, destruction of Indigenous wildlife habitat, risks to human health, Indigenous sovereignty, and the long-term viability of NGP resulted in the federal government's decision to not approve the pipeline in 2016, in part, due to inadequate engagement with stakeholders (Haalboom, 2014, Hurlbert & Gupta, 2015, Hurlbert & Mussetta, 2016, Jennifer & Damien, 2012, Jofe, 2010; McCarthy & Lewis 2016a, 2016b).

This chapter from various studies recommends that research needs to identify critical issues in energy management (particularly pipeline leak management) and their impacts on Indigenous communities. For instance, where most pipeline leak occur and why. Other critical knowledge gaps include developing a better understanding of environmental sensitivities that affect the impact of spilled oil. More research is also needed to understand government and non-governmental initiatives on Indigenous communities' involvement in their energy management (Hurlbert & Rayner, 2018; Lee et al., 2015). Coordination and collaboration is needed between the oil industry and these government agencies to ensure that monitoring addresses the needs for data to assess the distribution and effects of spilled oil in ecosystems most at risks of leak. Indigenous communities' engagement, their decision-making in energy management, and their perspectives on oil production are significantly missing in Canada (Hurlbert & Rayner, 2018). Finally, this chapter suggests researchers need to examine Indigenous

communities' past leak response records, pipeline leak impacts on their health and environment, and current risk management processes and regulations to identify weaknesses. This review chapter also suggests that significant time will be required to meaningfully and honestly engage with communities to move from acceptance, through approval, to co-ownership of the project as the firm builds its legitimacy, credibility, and trust with Indigenous communities.

Methodology and Method

Scoping Methodological Framework

This chapter used a scoping review framework for this particular review according to a scoping methodological framework (Arksey & Malley, 2005; Pham et al., 2014). A scoping methodological framework is "a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge" (Clin Epi. 2014: 1292–1294). The goal of this scoping review was to reveal gaps in knowledge about energy industries, federal and provincial governments, and Indigenous communities' energy management policies and practices, as well as to highlight areas requiring further research and knowledge development (Morris et al., 2019). This review instead provides a summary of themes found across the research literature, as well as areas of difference or gaps in knowledge that may assist with the formulation and design of future research studies in this area. Findings of this review may be used to inform future research in this area. The scoping methodological framework was chosen as it provides the following benefits (Colquhoun et al., 2014):

- Determine the ability to conduct a systematic review
- Exercises in and of themselves
  - to summarize and disseminate research findings
  - to identify research gaps or general gaps in an area
  - to make recommendations for the future research
  - to map a body of literature with relevance to time, location (e.g., country or context), source (e.g., peer-reviewed or grey literature), and origin (e.g., academic field)

In this chapter, the scoping methodological framework was followed according to some sequential steps; however, the review process was not used as linear; some steps were repeated to ensure a comprehensive assessment of the literature. We used a scoping review in this chapter over a systematic review because the purpose was not to extract data, or formally assess the quality of studies and make specific conclusions. Rather, the review sought to identify challenges faced by researchers and gaps in the literature.

Research Questions

Two questions were followed in this scoping review: how do challenges (i.e., historical, social, political, cultural, and environmental) associated with pipeline spills/leak impact on the Indigenous communities? And what gaps in the research are evident?

Data Sources and Search Strategy

Key search terms were developed and mapped with online databases prior to the article search. Electronic databases that covered a wide range of disciplines were used initially, which include Web of Science (multidisciplinary, 2008–2019) and Google Scholar. Search queries consisted of the following keywords: pipeline spills/leak, Indigenous communities (and synonyms), drinking water, environmental and health challenges (see Table 2.1).

A Google web search was also conducted using the search strings pipeline spills/leak AND Indigenous Drinking water AND environment AND Impacts on Health AND Canada to identify grey literature. A decision to screen the first more than 50 hits from the Google search was made *a priori*, considering the time required to screen each article. This theory is based on evidence that further screening is unlikely to yield many more relevant articles (Table 2.1).

Table 2.1 Keywords Used for Literature Search

#1 Pipeline spills/leak
Pipeline Spills, OR Leak OR Pipeline Breaks OR Pipeline, High Risk
#2 Indigenous energy
Indigenous Meanings of Energy OR Energy Management OR Energy in Indigenous land
#3 Drinking water
Drinking water quality OR water quality OR potable water OR healthy water OR drinkable water OR drink water OR drink OR safe water OR water OR suitable water OR palatable water OR edible water OR tap water OR fresh water OR water supply
#4 Indigenous communities
Indigenous people OR Indigenous OR Aboriginal OR Native(s) OR Indigenous people OR
First Nations OR Metis OR Inuit Or Inuk
#5 Environmental impacts
Environmental Impacts OR Environmental Harms OR Environmental Injustice
#6 Health
Health Risk, Health outcomes OR health wellness OR well-being OR physical health OR mental health OR social health
#7 Challenges
Challenge
#8 Canada
Canada OR North America
#9 #1 AND #2 AND #3 AND #5

Eligibility Criteria and Study Selection

The scoping selection was limited to peer-reviewed documents from Canada subject to three inclusion criteria. Particular focus was given to Saskatchewan and Alberta oil leak and their impacts on Indigenous communities.

- The first criterion for inclusion involved keywords; peer-reviewed journal articles, theses, government and technical reports with the keywords (and synonyms as listed in Table 2.1), and combinations of these terms were selected.
- The second criterion was the timeframe of publication. Only papers published within the last ten years (between the years 2008 and 2018) were selected.
- Finally, only English and English documents were selected for inclusion.

A two-stage process was used to assess the relevance of articles identified from the search. After the initial article collation and deduplication, articles were manually screened by checking their titles and abstracts for identified articles that discussed issues related to pipeline spills and drinking water quality in Indigenous communities, First Nations environmental harms and health outcomes, and other challenges to safe drinking water among Indigenous communities.

Data Charting and Summary

A Microsoft Access database was used for data entry validation and coding. Data extracted from the selected articles included author(s), year of publication, title, design, type, location, and type of Indigenous communities. Other information extracted from the selected articles included a summary of the findings, pipeline spills, energy development, environmental impacts, and drinking water assessment and quality, associations and comparisons, recommendations and limitations. Articles were labelled by letter. The results below include proportions of articles with similar findings, as well as individually identified articles for reference (i.e., 14/19 articles were published in academic peer-reviewed journals; these included articles A–C, E, G, H, and K–S) (Table 2.2).

Results: Overview of Selected Studies

A total of 220 articles were retrieved from the overall search; 46 from the bibliographic search engines and 174 from grey literature. Following deduplication and relevance screening, 35 articles were found to meet the three first-level eligibility criteria (based on title and abstract). However, 21 articles did not meet the second-level eligibility criteria, leaving a total of 19 articles for inclusion in the final scoping review. The results section has three

Table 2.2 Summary of Articles Included in Scoping Review (n = 19)

ID *Authors' year*	*Topic*	*Research Methods*	*Site*	*Summary of Findings*
A. Olive A (2018)	Oil development in the grasslands: Saskatchewan's Bakken formation and species at risk protection	Qualitative: government documents	Bakken in Saskatchewan	Oil development is in Saskatchewan, destroying important habitat for many native grassland species. Most of the governmental environmental assessment documents are based on this information. Oil industry in Saskatchewan is one of the least regulated in North America but the provincial government offers little in the way of environmental protections.
B. Liu E (2014)	Energy east: where oil meets water	Qualitative and Quantitative	Alberta, including Indigenous communities	If the pipeline is built, it would cross approximately 90 watersheds and 961 waterways, including sources of drinking water, valued fishing, tourist and recreation waters, a beluga whale habitat as well as the home of the world's largest tides in the Bay of Fundy.
C. Booth & Skelton (2011)	"You spoil everything!" Indigenous peoples and the consequences of industrial development in British Columbia	Qualitative	West Moberly First Nations, Halfway River First Nation, and Treaty 8 Tribal Council	Indigenous communities and their traditional knowledge on energy development have been missing historically. Need recognition and meaningfully address all types of impacts. First Nations experience is critical for ensuring environmental justice for Indigenous peoples.

(*Continued*)

Table 2.2 (*Continued*) Summary of Articles Included in Scoping Review (n = 19)

ID *Authors' year*	*Topic*	*Research Methods*	*Site*	*Summary of Findings*
D. Atlin & Gibson (2017)	Lasting regional gains from non-renewable resource extraction	Mixed Methods	Indigenous Territories in Thunder Bay, Ontario, Canada	Local community engagement and meaningful decision-making are important for successful energy management in Indigenous communities.
E. Huseman & Short (2012)	"A slow industrial genocide"	Literature Review	Northern Alberta, Canada, Treaty 8	While the project has brought income to some, and wealth to the few, its impact on the environment and on the lives of many Indigenous groups is profoundly concerning. This project impacted on Indigenous ability to hunting, trapping, and fishing. Indigenous people became fearful of toxins in their drinking water and eat fish from waterways polluted by the "externalities" of tar sands production.
F. Eaton	Climate Politics in the Patch Engaging Saskatchewan's Oil-Producing Communities on Climate Change Issues	Qualitative Research methods: Interview – interviews	South-eastern Saskatchewan	Oil spills can have significant negative impacts Artic communities. One of the participants say that her land was undergoing a $1 million cleanup due to an oil spill when the company found further salt water damage that had gone unreported for years.

G. Lee et al. (2015)	The Behaviour and Environmental Impacts of Crude Oil Released into Aqueous Environments	Surveyed scientific literature, key reports, and case studies	Canada Arctic	Research is needed to better understand the environmental impact of spilled crude oil in high-risk and poorly understood areas, such as Arctic waters, the deep ocean and shores, or inland rivers and wetlands. Research is needed to increase the understanding of effects of oil spills on aquatic life and wildlife at the population, community, and ecosystem levels.
H. Wanvik (2016 a, b)	Governance transformed into Corporate Social Responsibility (CSR): new governance innovations in the Canadian oil sands	Qualitative Research methods: Interview	Extractive hot zone of Alberta – Fort McKay in the north to Cold Lake in the east, and from Métis Crossing in the west to Calgary	The Indigenous communities have not been included in the Indigenous energy management (oil development decision-making) processes. This paper argues that this governing policy is apparent violation of an existing Aboriginal or Treaty right recognized and affirmed by the Constitution Act (1982). The author argues that the extractive industry (oil development) activities have had a great impact on the social, cultural, and environmental realities in the extractive hot zone of Alberta in general and in Aboriginal communities in Conklin in particular.

(*Continued*)

Table 2.2 (*Continued*) Summary of Articles Included in Scoping Review (n = 19)

ID *Authors' year*	*Topic*	*Research Methods*	*Site*	*Summary of Findings*
I. *Conklin Métis Local* (2016)	Conklin Métis Local #193, 2016. Stories from A Long Time Ago. Conklin Métis Local #193	Story and reports	Conklin in Alberta	The traditional way of life based on hunting, fishing, trapping, and gathering is quickly becoming impossible for the Métis of Conklin. Community members find it increasingly difficult to access traditional lands. Old trails have been destroyed or upgraded into roads for trucking, numerous new seismic cut lines have been created throughout formerly intact lands, and long-standing routes have been restricted or blocked by oil developers. Oil spills have caused a rapid decline in the numbers of animals, berries, and plants, as well as a decrease in air and water quality. In addition, the social and cultural challenges experienced within the small community are devastating, with substance abuse, alcoholism, high crime rates, and poor living conditions taking a heavy toll of its inhabitants.

J. Preston (2013)	Neoliberal settler colonialism, Canada and the tar sands Method: Story and reports	Story and reports	Athabasca tar sands – Enbridge Northern Gateway pipelines project	In Athabasca tar sands as many remote Indigenous communities continue to fight for access to drinking water, the tar sands industry expends and pollutes much needed clean water. Prestone argues that water protection remains a major concern for Indigenous Nations in Canada, and particularly for those in the Athabasca region like the Athabasca Chipewyan First Nation.
L. Wingrove (2012)	Small oil leak discovered in Alberta	Qualitative	Alberta	Since 2011, there have been at least ten oil spills, ranging from small to large, in Alberta. The biggest include one from a Plains Midstream pipe near Little Buffalo, where an estimated 4.5 million litres spilled in April, 2011, and another in December last year, near Judy Creek, Alta., where 1.9 million litres spilled from a Pengrowth Energy Corp. pipeline. There were two major spills in June, totalling as much as 700,000 litres.
M. Swift et al. (2011)	Pipeline and tanker trouble: the impact to British Columbia's communities, rivers, and Pacific Coastline from tar sands oil transport	Quantitative	British Columbia's communities	Oil spills ultimately result in devastating environmental effects. Indigenous communities, who envision themselves as most intimately connected with their environment, are those very communities most devastated by the serious oil leak.

(*Continued*)

Table 2.2 (*Continued*) Summary of Articles Included in Scoping Review (n = 19)

ID *Authors' year*	*Topic*	*Research Methods*	*Site*	*Summary of Findings*
N. Vasey et al. (2013)	Ethical Enbridge? The real story of Line 9 and the tar sands giga-project	Quantitative	Athabasca Chipewyan First Nation	Oil spills and water protection remain a major concern for Indigenous Nations in Canada.
O. Austen (2013)	Oil sand industry in Canada tied to higher carcinogen level	Quantitative	Canada	Oil spills increase serious environmental toxins, including carcinogens, gene mutagens, and endocrine disruptors. These toxins including cancer-causing compound (polycyclic aromatic hydrocarbons, or PAHs) cause serious diseases. These toxins are found at dangerous levels as per official reports.
P. Wilke & Freeman (2017)	Potential Health Implications Related to Fracking	Quantitative		Relationship between pipeline oil leak and health impacts is highly significant. Relationship between pipeline oil leak and air quality is important to understand because of the influence of air quality on acute and chronic respiratory illnesses.
Q. Sinha (2017)	Energy east: where oil meets water			Energy East pipeline will create over 1,000 bodies of water at risk of spill, including sources of drinking water. This report also cautions that this pipeline will violate First Nations' rights protected under the Canadian Charter of Rights and Freedoms. If Energy East pipeline is approved, two significant points this report made: Alberta's emission of CO_2 will continue to skyrocket as production in oil sands supplies more crude every year; many waterways become at risk of detrimental oil spills.

R. Hurlbert & Rayner (2018)	Reconciling power, relations, and processes: the role of recognition in the achievement of energy justice for Aboriginal people	Case Study	Chippewas First Nation	Many energy projects, from dams to the oil sands, have had negative impacts on Treaty and traditional lands. Aboriginal people in both remote communities and inner cities suffer from energy poverty and energy insecurity is clearly a problem of distributive (energy) injustice did not advance their case against pipeline expansion and inequitable distribution of environmental harms. This study suggests that all aspects of procedural, recognition, and distributive energy justice must exist; to attain recognition justice, procedural and distributive justice are required.
S. Todd (2017)	Fish, Kin, and Hope: Tending to Water Violations in amiskwaciwâskahikan and Treaty Six Territory	Qualitative	North Saskatchewan River	This study suggests a rethink of human and more-than-human relations. The author viewed oil and oil-progeny as contaminants, or pollutants, and the oil itself as imbued with messy human politics, which extract it from the ground and flood pipeline arteries stretched across the entire continent. Pipelines running along vital waterways that make this oily progeny a weapon against fish, humans, water, and more-than-human worlds.

(*Continued*)

Table 2.2 (*Continued*) Summary of Articles Included in Scoping Review (n = 19)

ID *Authors' year*	*Topic*	*Research Methods*	*Site*	*Summary of Findings*
T. Alava & Calle (2017)	Pipelines imperil Canada's ecosystem	Quantitative	Alberta and British Columbia	The Trans Mountain-Kinder Morgan pipeline and Enbridge's Line 3 pipeline expansion in British Columbia increase CO_2-equivalent emissions (i.e., all greenhouse gas emissions) by about 30 million tonnes per year. It will also threaten the fragile population of harbour porpoises. Approximately 80 southern resident killer whales (one of the most endangered populations of marine mammals) on British Columbia's south coast are threatened by increasing tanker traffic sevenfold, creating acoustic pollution and posing the risk of bitumen oil spills.

subsections, beginning with the characteristics of the studies in the sample. Second, we report on methodological strengths and limitations of both the studies themselves and the sample as a whole. Third, we explore the specific content of the studies, overall themes, and gaps in research examining health outcomes and water in Indigenous communities.

Thematic Analysis and Study Findings

The findings of reviewed articles were grouped under the following key themes:

a Pipeline Spills/Leak
b Challenges in Indigenous Engagement and Energy Management
c Impacts on Indigenous Drinking Water
d Energy Leak Management and Health Outcomes
e Challenges in Pipeline Spill Cleaning-up

This scoping review utilized a systematic approach to explore the nature and extent of information on Indigenous environmental issues associated with pipeline spills in Indigenous communities in Canada. The review found 19 relevant articles following a scope of an initial pool of 220 articles. The most striking observations in this review were the paucity of literature on the topic of pipeline spills, water, and health in Indigenous communities in Canada as well as variations in the methodologies used to assess drinking water quality, environmental issues, energy management, and perceptions of pipeline spills, cleanings, water, and health in these communities. None of the articles in the sample used a decolonizing approach on pipeline leak and energy management. Given the recommendations of the Truth and Reconciliation Commission, governments, researchers, and Indigenous communities are in need of new approaches and improved relationships to move forward on issues of energy, health, and safe drinking water. Nevertheless, the findings validated previous reports describing inequalities related to the pipeline leak and their impact. The thematic analysis and study findings are summarized below.

Pipeline Spills/Leak

Pipeline spills/leak were evaluated qualitatively (i.e., asking perceptions) in six articles (three purely qualitative articles, plus three mixed methods articles; Table 2.2). Wingrove's (2012) study shows that since 2011, there have been at least ten pipeline leak, ranging from small to large, in Alberta. The biggest include one from a Plains Midstream pipe near Little Buffalo, where an estimated 4.5 million litres spilled in April, 2011, and another in December last year, near Judy Creek, Alta., where 1.9 million litres spilled from a Pengrowth Energy Corp. pipeline. There were two major spills in June 2011, totalling as much as 700,000 litres.

Five articles show that pipeline spills not only impact on Indigenous people's drinking water but also make negative impacts on non-human (such as birds and mammals destroy their thermal insulation and buoyancy) (A, C, E–I, L). For instance, Austen's (2013) study shows that pipeline spills increase various environmental toxins, particularly cancer-causing compound – polycyclic aromatic hydrocarbons, or PAHs. These environmental toxins (polycyclic aromatic hydrocarbons, or PAHs) dissolve in water and kill fish and other aquatic creatures (before they typically break down quickly and disappear). Other chemicals can persist in the water and cause chronic health effects for aquatic species that show up months or years later. Another study (S) suggests that oil and oil-progeny are contaminants, or pollutants, and the oil itself is imbued with messy human politics, which extracts it from the ground and floods pipeline arteries stretched across the entire continent. The pipelines running along vital waterways make this oily progeny a weapon against fish, humans, water, and more-than-human worlds.

Two articles suggest that it is not only the spills themselves that threaten ecosystems, but oil spill cleanup can be damaging as well (B, S). Todd (2017) discusses that physical cleanup (e.g., removing oiled vegetation or tarred shoreline) destroys habitat and can cause erosion or the buildup of silt. Habitat damage reduces the abundance and productivity of native species and fosters invasive species. Using chemicals to disperse spilled oil often means surface oil is transferred to subsurface water at concentrations that can be toxic to aquatic life (especially to fish embryos). More research is needed on spill cleanup methods that limit habitat damage and the threats to wildlife.

A number of studies indicate that pipeline leaks are common in many northern Indigenous communities, particularly in Alberta and Saskatchewan Indigenous communities (L, M, and Q). Some of the recent pipeline leak between 2015 and 2018 are very concerning in Alberta and Saskatchewan Indigenous communities (Torres, 2018). For instance, some of the recent incidents are as followed:

- **2015:** On March 1, a pipeline leak spilled about 17,000 barrel of condensate, in Northern Alberta. On May 5, a gas transmission pipeline failed approximately 36 kilometres southeast of Drumheller, Alberta. The incident resulted in an undetermined volume of sweet natural gas and associated hydrocarbon liquid being released onto agricultural land. On July 15, a pipeline at a Long Lake oil sands facility in northern Alberta leaked about 31,500 barrels of oil emulsion. The spill covered approximately 16,000 square metres (4 acres) but was mostly contained within the pipeline's right of way. On August 14, a leak from a pipeline spilled about 100,000 litres of an oil, water, and gas emulsion on the Hay Lake First Nation, about 100 kilometres northwest of High Level, Alberta.
- **2016**: On July 21, a leaking Husky Energy pipeline spilled 225,000 litres of oil into the North Saskatchewan River, prompting a massive cleanup.

- **2017** January Saskatchewan, in which a Husky Energy Inc. pipeline leaked 225,000 litres into a major river and cut off the drinking water supply for number of Indigenous communities. On February 17, a total of 200,000 litres of oil condensate in Strathcona County, Alberta were released from line 2A, near Anthony Henday Drive and 92 Avenue after line was struck during third-party construction operations. March: T 225,000 litres of heavy oil mixed with diluent onto the bank of the river near Maidstone, Saskatchewan in July. About 40% reached the river and the oil plume flowed hundreds of kilometres downstream.
- **2018**: On January 7, a butane oil pipeline ruptured in St John, New Brunswick. About 30 homes in the area were evacuated, as well as the SPCA Animal Rescue League Shelter. On May 27, a Trans Mountain pipeline leaked at the company's Darfield station north of Kamloops, British Columbia. About 4,800 litres of crude was released.

Lack of Indigenous Engagement in Energy Management

There is no single article found which discussed Indigenous perspectives in energy management and Indigenous decision-making opportunities in pipeline leak management. However, there are two articles which show that Indigenous engagement in energy and pipeline leak management has significantly been missing historically (E, Q). Other two (D, R) strongly suggest to include Indigenous communities and their traditional practices in their sustainable energy management.

Three articles discuss that while government reports and assessments, as well as case study reviews by non-profit organizations, highlight and identify imbalances in the provision of energy and safe drinking water between Indigenous and non-Indigenous communities, very few reports discuss oil spills' impacts on Indigenous communities (A, E, H). A recent report on Saskatchewan shows that pipeline spills and their impact on Indigenous drinking water are more common in Indigenous communities compared to the national average, and 30% of Indigenous communities' water systems are described as "high risk" (Table 2.3). Two studies (O, P) discuss that inequities in the energy management provision and access to reliable and sustainable sources of drinking water leave Indigenous communities vulnerable to waterborne diseases, potential exposures to chemical contaminants, and associated health effects.

Other five articles discuss that governments' lack of interest in Indigenous engagement is a significant challenge for sustainable energy management (A, E, H, O, and P). Studies (O, P) argue that the lack of Indigenous communities' involvement in energy management means many Indigenous communities have been suffering from a number of negative impacts on their drinking water, health, and environment (A, E, L).

Indigenous communities in the Treaty 6 territory are one of the most vulnerable parts of Canada. For instance, according to the Assembly of First Nations, there are 81 long-term drinking water advisories affecting more than 50 Indigenous communities across the country. As of August 6, 2018, there were 42 short-term DWAs in place. There are more than 15,000 Indigenous people living under Drinking Water Advisories in Saskatchewan (Table 2.3).

Recent federal government activities also became a major challenge for reducing pipeline leak and their impacts on many Indigenous communities (Nikiforuk, 2018). A recent report on Canadian governmental initiatives for Indigenous energy management discusses that as of May 30, 2018 Trudeau government in Canada confirmed that it would pay $4.5 billion to buy the Kinder Morgan pipeline. Yet the water in First Nations is underfunded and the number of advisories increased this month (Nikiforuk, 2018). There were a total of 124 DWAs at the beginning of May 2018, and now the number has spiked to 174 advisories in the last couple of weeks. While in December 2017, the Parliamentary Budget Officer estimated the cost of ending boil water advisories by 2020 to be $3.2 billion, the Kinder Morgan pipeline crosses 1,355 waterways, putting communities' drinking water at risk. Coldwater Indian Band, along with several other Indigenous nations, launched a legal challenge because the pipeline cuts right through the nation's drinking water source. This study also claims that instead of allocating adequate funding to ensure clean water for First Nations and uphold the human rights to water and sanitation, the Trudeau government is committing $4.5 billion to bail out Kinder Morgan and ram through a project that puts the drinking water of Indigenous nations and municipalities at risk. This study also argues that the $4.5 billion Trudeau committed to bailing out Kinder Morgan could increase Indigenous communities' capabilities to end boil water advisories in First Nations.

Impact on Indigenous Drinking Water Quality

Seven articles discuss that pipeline leak, DWA, and poor water quality are prominent in Indigenous communities. It was coded regardless of the reason for source water deterioration and included advisories issued due to the oil spill on the North Saskatchewan River (Table 2.3). A groundwater source was believed to be under the direct influence of surface water but there was insufficient treatment to deal with the direct influence of surface water. Poor source water was coded. Silt being drawn into the treatment system by wells and changing the source water to a non-regulated water source was coded as poor source water.

The pipeline development and its impacts on Indigenous communities are also concerning factors for other parts of Canada. According to a recent report by Health Canada and BC's First Nations Health Authority, their data highlights that up to one-in-four people may not have clean drinking water

Table 2.3 Drinking Water Advisories (DWAs) in Saskatchewan Indigenous Communities

First Nation	*Community*	*Type of Advisory*	*Date Set (YYYY/MM/DD)*	*Population*
Birch Narrows Dene Nation	Birch Narrows	BWA	2018/06/26	101–500 people
Black Lake Denesuline	Stoney Rapids	BWA	2018/03/28	0–100 people
Buffalo River Dene Nation	Buffalo River Dene Nation	BWA	2018/04/30	501–1,000 people
Flying Dust First Nation	Flying Dust	BWA	2018/05/11	101–500 People
Lac La RongeIndian Band	Bell's Point (only)	BWA	2018/07/31	1,001–5,000 people
Makwa Sahgaiehcan First Nation	Makwa Sahgaiehcan	BWA	2018/07/16	501–1,000 people
Ministikwan Lake Cree Nation	Ministikwan Lake	BWA	2018/07/30	501–1,000 people
Nekaneet	Nekaneet	BWA	2017/10/26	0–100 people
Pelican Lake First Nation	Pelican Lake First Nation	BWA	2018/07/30	501–1,000 people
Peter Ballantyne Cree Nation	Deschambault Lake	BWA	2018/05/29	501–1,000 people

Source: Government of Canada (2018, August 6). Drinking water advisories: First Nations south of 60. Saskatchewan. https://www.canada.ca/en/indigenous-services-canada/services/short-term-drinking-water-advisories-first-nations-south-60.html#sask.

on First Nation reserves (The Council of Canadian Acting for Social Justice, 2018). This report argues that DWA in Indigenous communities should not be a way of life in a country with an abundant water source, but it's a lack of infrastructure, a lack of political will, and a lack of public solidarity that causes such problems. This report also shows that on top of long-standing DWAs, the Trudeau government has actually approved a series of development projects that threaten important First Nations waterways such as Kinder Morgan's Trans Mountain Expansion project and Enbridge's Line 3 tar sands pipeline replacement project.

Three articles reported how pipeline leak and their contamination in drinking water are concerning specific pathogens in pipeline spills/leak that include cancer-causing compound – polycyclic aromatic hydrocarbons, or PAHs in water (L, M, and O). Qualitative measures of water quality were assessed in terms of risk perception in five other articles. Concerning health risks from impacted drinking water are listed as J, Q. Risk perceptions for First Nations people were cautious in general, but differed by province, water source, health concerns for water consumption, likelihood of reporting illness from tap water, and money spent on bottled water (J). Three articles show that residents of First Nations reserves were less confident about their water source, household water supply, and overall water safety than non-Aboriginal populations (J, Q, and N).

Pipeline Leak Management and Health Outcomes

Pipeline leak and health outcomes are associated with poor drinking water in Indigenous communities. In Austen's (2013) study, environmental toxins including carcinogens, gene mutagens, and endocrine disruptors have been poorly tracked by governments and, in cases where scientists have conducted the research, the Government of Alberta and others have criticized their findings. It is only recently that the cancer-causing compound – polycyclic aromatic hydrocarbons, or PAHs – was officially reported to have been found at dangerous levels in waterways near oil and gas excavation and production. This study found that the relationship between pipeline oil leak and health impacts is highly significant. Wilke and Freeman show that the relationship between pipeline oil leak and air quality is important to understand because of the influence of air quality on acute and chronic respiratory illnesses. Using data from a large electronic medical record representing more than 400,000 primary care patients, this study claims that 5,935 patients are suffering from asthma. The most commonly stated health issues reported in relation to drinking water were gastrointestinal infections. A variety of concerns were reported about the health impacts of poor drinking water quality and are summarized in Tables 2.2 and 2.3. All of the articles concluded with statements linking increased risk of negative health outcomes with poor drinking water quality.

Challenges in Pipeline Spill Cleaning-up

Oil spill cleaning myths have existed for many years in Canada (O, L). Conklin Métis Local (2016) shows that since 2011, there have been at least ten oil spills, ranging from small to large, in Alberta. The biggest include one from a Plains Midstream pipe near Little Buffalo, where an estimated 4.5 million litres spilled in April, 2011, and another in December 2017, near Judy Creek, Alta., where 1.9 million litres spilled from a Pengrowth Energy Corp. pipeline. There were two major spills in June 2016, totalling as much as 700,000 litres. The majority of the oil evaporated, dropped to the ocean bottom, smothered beaches, dissolved, or remained on or just below the water's surface as sheen or tar balls. Some oil-chewing bacteria offered assistance by biodegrading the oil after it had been dispersed. Rough estimates indicate that out of the total amount of oil it spilled, companies recovered 3% through skimming, 17% from siphoning at the wellhead, and 5% from burning. Transport Canada admits that it expects only 10%–15% of a marine oil spill to ever be recovered from open water.

A study argues that a big spill is almost impossible to contain because it is physically impossible to mobilize the labour needed and current cleanup technologies in a timely fashion (L). When the city of Vancouver released a study in 2015 on the effectiveness of responses to large tanker or pipeline spills along the southern coast of British Columbia, the conclusion was blunt: "collecting and removing oil from the sea surface is a challenging, time-sensitive, and often ineffective process," even in calm water (NUKA, 2015).

Studies show that part of the challenge in pipeline leak cleaning is ineffective technologies (Nikiforuk, 2018). Ever since the 1970s, the oil and gas industry has trotted out four basic ways to deal with ocean spills: booms to contain the oil; skimmers to remove the oil; fire to burn the oil; and chemical dispersants, such as Corexit, to break the oil into smaller pieces (Nikiforuk, 2018). For small spills these technologies can sometimes make a difference, but only in sheltered waters. None has ever been effective in containing large spills.

Two studies show that industry's pipeline leak clean myths for years (L and O). Corexit, industry's favourite dispersant, is widely believed to contain hydrocarbon, which gives it an ominous undertone. The product was first developed by Standard Oil, and its ingredient list remains a trade secret. Nor are the numbers any better for small marine spills (smaller than 7,950 litres) (O). The York University researchers (2016) discovered that offshore oil and gas platforms reported a total of 381 small spills between 1997 and 2010 (Nikiforuk, 2018). Only 11 spills mentioned the presence of seabirds, yet it only takes a dime-sized blotch of oil in cold water to kill a bird.

Three studies show that profit in energy development and the cost of pipeline spill cleaning become a conflict of interest for many non-governmental oil development organizations (L, M, and N). In Canada, multinational oil

companies also own the corporations licenced to respond to catastrophic spills (L–N). The Western Canadian Marine Response Corporation, for example, is owned by Kinder Morgan, Imperial Oil, Shell, Chevron, and Suncor while the Eastern Canada Response Corporation is owned by Ultramar, Shell, Imperial Oil, and Suncor. In a recent analysis on this cozy relationship, Robyn Allan, an economist and former CEO of the Insurance Corporation of British Columbia, concluded that letting international oil companies determine the goals and objectives of marine spill preparedness and response was a flagrant conflict of interest.

Large spills, which can destroy fisheries and entire communities, can impose billion dollar cleanup bills and still not restore what has been lost (E, L). The cleanup costs for the *Exxon Valdez* disaster reached US$2 billion (paid by various parties), and Exxon fought the federal government's claim for an extra $92 million for restoration, until the government dropped their claim in 2015. According to a University of British Columbia study (2015), a release of 16,000 cubic metres of diluted bitumen in Vancouver's Burrard Inlet would inflict at least $1.2 billion worth of damage on the local economy, which is heavily reliant on tourism and promoting its "natural" beauty. That figure doesn't include the cost of a cleanup. This report also suggests that in the event of a 16 million litre oil spill during the month of May 2015, local revenue loss could be in the range of:

- $380 million–1.23 billion in output value
- $201–687 million in GDP
- 3,238–12,881 person years of employment

Meanwhile, the evidence shows that nearshore and in-port spills are four to five times more expensive to clean up than offshore spills and that heavy oil, such as bitumen, costs nearly ten times more than light oils because it persists longer in water. And yet, no more than CAN $1.3 billion has been set aside in Canada for a major oil spill – a sum experts find woefully inadequate.

Recommendations

This scoping review is indicative that there is a critical need for academics to work together with Indigenous communities to understand Indigenous participation and their decision-making capabilities in energy and pipeline leak management, as well as conditions on Indigenous that impact their drinking water quality and health outcomes, and to identify solutions. Barriers and challenges exist for the communities, but also for researchers attempting to better understand the inequality. Overall, the number of studies was very small; however, the studies reported reflected a broad range of research designs and data types.

In response to above fundamental challenges, this scoping review strongly suggests to Aboriginal community council or other representative body, based on terms of reference developed and endorsed by the community. The term "community" is used to refer people residing in a location adjacent to, or affected by, pipeline leak projects. They share a place of residence and an experience of impact, though the nature of that experience may differ between individuals and groups within a community; and people (frequently Indigenous) who share economic, cultural, and social ties through their association with an area of land or water affected by pipeline and mining. They may not reside in one place, and indeed may be widely dispersed. Yet they represent a social and cultural community and, again, an experience of impact, though in this case, the nature of that impact may vary. Studies suggest that there is room for improvement in encouraging two-way communication, writing: "Pipeline companies should view consultation programs as opportunities to discover new ways to improve their operations from those who live and work closest to the pipeline, rather than simply as obligations they must fulfill" (Hunsberger & Awâsis, 2019). Even the Alberta Federation of Labour, who endorsed the project, made its support conditional on "appropriate community consultation (with urban and rural municipalities, landowners, and on a respectful nation-to-nation basis with indigenous peoples)" (The Alberta Federation of Labour, 2013: 5).

Pipeline leak and their impacts on drinking water systems are very high in many Indigenous communities. While some research is emerging, there is very limited research on Indigenous communities' perspectives on current pipeline development and water management. Future research efforts should focus on improving communications and cultural understanding, as well as increasing the numbers of communities and participants per community. Greater sample sizes are necessary to better understand the heterogeneity in experiences both within and among communities. There is a need for community-based participatory research that also applies best practices for collecting and analysing observational data when the objective is to evaluate causal associations, such as the questions raised about the impact of pipeline leak on chronic disease in some of the studies included in this review. A step forward to improving conditions of safe drinking water would be to recognize that research must not just be credible, but also action oriented.

Studies on Treaty 6 territories (Alberta and Saskatchewan) found that there are significant gaps in the knowledge of health outcomes related to pipeline leak in Indigenous communities. There are no systematic studies on Indigenous perspectives on their drinking water across Canada. No fully agreed-upon indicators of cleaning pipeline leak and safety have been catalogued or evaluated on a systematic basis, for which researchers could create a database or link to health outcome data. Confusion exists on reserves as to whether illnesses such as gastrointestinal illnesses are related to drinking water, and there is a problem with underreporting potential drinking

water-related illnesses. There are no studies that focus on drinking water and health of women and children in Indigenous communities. Given the recognition that many adult health problems originate in childhood, these studies are acutely necessary.

To move forward on ameliorating the conditions of pipeline leak and their impacts on water, drinking water, and health outcomes in Indigenous populations in Canada, we suggest the following recommendations that emerged from the scoping review:

- Build a coordinated network of researchers, communities, representative organizations, and government agencies to conduct large cross-sectional and longitudinal studies examining the relationships between pipeline leak, environment, and health outcomes in Indigenous communities in Canada.
- Develop a database and management system for collating information on pipeline leak related to drinking water in Indigenous populations. This can be co-created to include indicators and data sets derived from multiple knowledge systems and must do so in an ethical and respectful way. Clear definitions of concepts (i.e., energy, energy management, safe drinking water, health and risk) from Indigenous worldviews should be developed as a part of this process.
- Encourage funding agencies to put together a special call for interdisciplinary work on pipeline leak and their impacts on Indigenous and environmental health outcomes in Indigenous contexts across a variety of platforms to encourage immediate and longer-term projects targeting needs as discovered in this scoping review (i.e., widespread water quality data and content analysis of health records for "suspected" water-related illnesses on reserves as well as examining source water protection issues, community perceptions of risk and health, and policy mapping).
- Create funding opportunities to develop capacity within Indigenous communities to monitor and report pipeline leak and health outcomes and to implement strategies for ameliorating barriers and challenges to safe.

Note

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3 Decolonizing Meanings of Impact

This chapter discusses how most of the communities' Knowledge-keepers, Elders, leaders, and youths suggested decolonizing the concept of impact. We shared our learning experience on how the community discussed the current form of impact as a Western colonial process, which only focuses on a minimal perspective, such as impact only on limited time within a few days of the spill and restricted areas of water. The community expressed that Western researchers from industries, governments, and academics focused on only a few places in river water with few days of spills in many cases. While communities live by the river and have everyday interaction with the river, the Western perspective of impact did not include community perspectives in most cases. According to the communities, Indigenous meanings of impact are significantly different from Western; they are holistic and based on everyday knowledge and practice. For instance, pipeline spills are not just water; they impact everything, including humans (i.e., physically, mentally, spiritually, culturally) and non-humans (i.e., water, soil, plants, insects, animals, medicinal plants). Therefore, most of the communities' Knowledge-keepers, Elders, and leaders suggested that we need to decolonize the impact on how to see and how we want to resolve this disaster. This chapter also discusses how the impact is still ongoing and will be continued for seven generations.

Why Decolonize Meanings of Impact

While learning the meanings of impacts from the community, we were deconstructing the concept of impact for Indigenous people. Community people do not trust Western meanings of impact as it is methodologically challenging. For instance, according to three First Nations communities, Elders and Knowledge-keepers, the Western meanings of impact are challenging. It gives a narrow focus, is limited within certain areas, and focuses on certain perspectives while excluding other interrelated issues. Community suggested the Western way of looking at the meanings of impact as a colonial process as it does not see community perspective as scientific or important. All three communities' Elders and Knowledge-keepers also suggested that

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the Western meanings of impact only focus on technological perspectives while excluding communities' long traditional, cultural, and spiritual experiences. Therefore, communities' Elders and Knowledge-keepers suggested decolonizing the way we, as researchers, explore the meanings of impact. A Knowledge-keeper explained the narrow focus on impact brock community trust. For instance, they explained that

> the narrow focus of impact by the researchers/industries/governments all overlooked the overall impacts on our animals, plants, water, land, and many more. Impacts were on everything, but they [researchers/industries/governments] did look at only a sample of water; they did not catch it from all perspectives. By the narrow focus of impact, they [researchers/industries/governments] brock our trust. You know, we do not want to trust them anymore.

The same Knowledge-keepers also explained why we all need to decolonize the meanings of impact from the Indigenous perspectives. He says pipeline leaks impacted not only just water, "they [pipeline leaks] impacted the animals that we eat, the water we use in everyday life, many lives underwater." An Indigenous leader Wayne explained that "it's a big question. It's not just looking at water being contaminated. There's so much more to look at." This leader gave an example of why he thinks the Western ways of understanding impact need to decolonize by saying that

> when I looked at the reports [governments, industries, and university researchers' impact], they very much minimized, many things they overlooked. Their impact report did not bring all the wildlife, plants, animals, and underwater lives suffering because of the oil spills.

How to Decolonize

Learning from community-led perspectives about impact can bring many positive opportunities to all. Communities' Elders and Knowledge-keepers also suggested that the Western perspective of impact is useless for the community if they are not interconnected with the community perspectives. When we as researchers were learning how to understand the meanings of impact diversely and inclusively so that our learning can be beneficial to the community as well as to Western science, all of the communities suggested that the meanings of impact need to be from holistic, fluid, and hybrid perspectives. For instance, according to communities' Elders and Knowledge-keepers, the meanings of impact have to be led by the community with community lived experience, stories, and guidelines. The holistic meanings are deeply interconnected with every learning, practice, and culture. The community participants suggested that learning about the community-led impact can create a meaningful bridge between Western science and

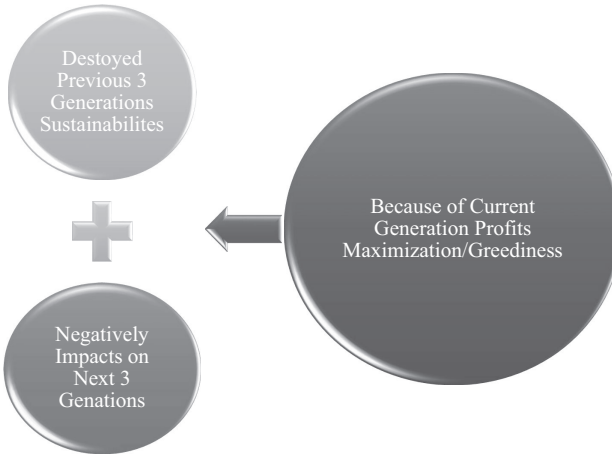

Figure 3.1 Indigenous Meanings of Impacts.

community needs. As the community explained their meanings of impact, it's helpful to understand how Indigenous meanings of impact are interested with seven generations. For Instance, one of the Indigenous water experts explained that pipeline spills impacted seven generations (see Figure 3.1). He explicitly expressed how seven generations are interconnected when we are going to understand Indigenous meanings of impacted. He said,

> because of the current generation's mistakes or greedy profit maximization process, they [current generations' profit maximization process through uneven developmental projects] destroyed past three generations of humans, animals, insects, and plants' sustainabilities, and these negative impacts are going to continue for the next three generations.

An Indigenous leader explained why current research on impact needs to decolonize by saying that "western ways of look to impact is colonial because it is a historical process that undermines Indigenous perspective." "It is so hard for us to trust [governments and industries reports about impact]. There are so many instances in the past."

We Are Relearning the Meanings of Impact from Community Perspectives

Community perspectives of impact are diverse, multiple, and fluid. We learned that the community meanings are beneficial for all, such as Indigenous, non-Indigenous, environment, sustainable development, industries, and many more. Thus, when we see the meanings of impact, we should consider it as affecting everything. As many Elders and Knowledge-keepers

Figure 3.2 Decolonial Meanings of Impact.

explained that impact does not mean only water or land as Western research and researchers want to see. Indigenous ways of seeing impact show (Figure 3.2) how it is holistic and inclusive. Figure 3.2 shows how we have learned Indigenous community perspectives of impact. The Indigenous meanings of impact include hundreds of visible and invisible ways of knowing. The holistic perspectives provide a compressive model of how Western research and researchers need to decolonize their research to explore the impact. An Indigenous youth, who experienced the impact directly, explained by saying that "pipeline spills affected everything, not just the use of the river, but animals, fish, plants, and insects."

For instance, an Indigenous leader explained the meaning of impact from the Indigenous perspective by saying that

> everything has impacted us. And this is not just for First Nation. This is for all people, our people. Our quality of life stands from the land. It comes from the land, water, plants, and animal lives that exist in the whole evolutionary chain. So too often, when we talk about impacts, all they want to find out is how much water did you have to buy to replace your drinking water that was contaminated? It's not about that. You have to look at how we look at life overall. The impacts are on everything around us. Just because it only happened in the Saskatchewan River, it doesn't mean that that's the only area that has to be looked at. It impacts all the animals, the wildlife, the fish, the insects, and plants, but they're all impacted.

An Indigenous leader explained how to reclaim Indigenous meanings of impact by saying, "If you ask our elders, our spiritual people. You will get an answer on how to look at impact." He further explained how he learned from his Elders and spiritual people by saying that

> pipeline spills impacted everything. It's not just the water's contaminant; we have to look beyond the way governments and industries look at the impact. The meanings of impact to us are everything, all the plants we eat, the berries we pick, the fruits that come from the land, all the medicines that we use to pick up from the land, all the wildlife that live in the land, all the lives that live on the water, the fishes and everything else. The ducks and rabbits live along the water.

Community Perspectives on Impacts

Although the pipeline spills impacted almost everything on humans (more than just humans' lives spiritual lives), the community suggested some of the following issues that most impacted (Table 3.1). In the following, we explained our learning reflections from the community Elders, Knowledge-keepers, leaders, and youths.

Impacts on Fish

Community people explained how the oil spills impacted their fish. The community also explained that the oil spills affected many fish relatives, and the effects are still there. For example, some fish are directly affected by the oil spills, such as Walleye, Sauger, Yellow Perch, Northern Pike, Lake Whitefish, White Sucker, Burbot, Rainbow Trout, and Water Flies.

The impact of fish relatives negatively impacted Indigenous communities' traditional diet. For instance, Indigenous Elder and water expert William Bill Marion explained that

> if you were here four years ago, there used to be 100 people from the community fishing. And our main staple diet was river fish. That's all way up there. But after the oil spill over the past two years, that staple of ours disappeared. There's been a gradual deterioration over the years of, you know, the availability of fish and so on and the river for this oil spill, you.

Another Elder gave the example of a fish community that was impacted by saying that

Table 3.1 Community Elders, Knowledge-Keepers, Leaders, and Youths' Perspectives on Pipeline Leaks

Pipeline Spill Impacts	
Animals	Elk
	Moose
	Bear
	Deer
	Beaver
Fish	Walleye
	Sauger
	Yellow perch
	Northern pike
	Lake whitefish
	White sucker
	Burbot
	Rainbow trout
Birds	Songbirds
	Goose
	Beaver
	Ducks
	Ground squirrels
	Chickadees
Water	Quality
	Insects
	Bugs
	Fish
	Water flies
Traditional	Hunting
	Gathering
	Ceremonies
	Medicine
	Spiritual sites
Physical health	Human
	Children
	Women
	Water
	Animals
	Plants
	Insects
	Soil
	Agriculture
Mental health	Fear
	Danger
	Food crisis
	Frustrations
	No cleaning
	Dirty water
	Future health impacts
Disturb natural flow/growth	Water
	Animals
	Plants
	Human
	Soil
	Insects

> many fishes got affected particularly on crayfish. We call them crabs at home. My family and I are deeply connected with crayfish. We used to eat every day. Now they were dead on the river. It is not normal. They couldn't handle contamination from the oil spill.

The impact on the fish family created fear in the community. For instance, two Indigenous environmental experts on water and pipeline spills (Donald and Glen) specifically explained how the oil spill impacted river fish and how they are still for the communities: "It [oil spill] affected our fish, plants, wildlife in the river bank. There's still a concern because parts of the river. River water transformed into different colours. We are feared seeing this." In a similar line, Elder Bill also explained his fear of the negative impact on the fish family. He says,

> all the, in fact, you don't know the extent of the damage. You don't know if there's still oil under the river. There's no fish in the water. They are so polluted and contaminated like we can't even look. Previously we were able to see everything, all the water.

Like the fish family, many bird relatives were also impacted by the oil spill. Community identifies some of the birds: Songbirds, Goose, Beaver, Ducks, Ground Squirrels, Chickadees.

Impacts on under and above Water Lives

Many under and above water lives impacted from the oil spill. For instance, a youth from Little Pine First Nation (Nelson) explained how it happened by saying that "for the pipeline spill the petroleum and hydrocarbons that are introduced in the water. This serious contamination directly impacted vegetation lives underwater."

A Knowledge-keeper explained how underwater fish impacted.

> As I remember, we used to use it for drinking water until I was about 10, 11 years old. We used to get the fish from there, you know, till I was a teenager. We even had the community on the west side of the reserve. We had a fish basket. They called it a fish basket where we put this basket in the river and sort of fish. When they're not using it; we're eating the fish; we take the basket out of the water. But now we cannot do that because there have been many contaminations.

Impacts on Traditional Practices

Pipeline leaks seriously impacted traditional hunting and gathering. For instance, one Elder (Lez) says that

> we use to collect many medicinal plants and many kinds of barries by the riversides. After the spill, you might not see the barriers right beside the contaminated places; oil still may still hold in the sends. You might be able to see the oil combinations still there.

Another Elder explained how hunting animals got impacted by the spill. She said, "oil spills our hunting animals from all directions, including their foods, living areas, etc. We can see many strange behaviours after the oil spill".

The oil spill had a serious impact on Indigenous Treaty rights. An Indigenous leader explained that

> the Oil spill seriously violated First Nations Treaty rights. We, as First Nation people, never gave up our treaty rights. Impacted on our land, water, and plants is the serious violence on our treaty rights. I believe all industries and levels of governments willfully violated our treaty rights; most importantly, the government of Canada has walked away from the treaty table.

Another Elder similarly expressed that

> I totally believe that nobody's ever going to change my mind. Our Elders have released a treaty, and we agreed to share it. They didn't say we would give up our treaty rights for cash. They didn't say we would give up our half. We never agreed to be governed. We agreed to be treated as equals because we signed a treaty as equals. That's all it is.

This Elder also explained why Treaty rights are important for protecting their lives and land from future impacts, "We want your assurance that if anything happens, everyone knows. By protecting our treat rights, we need to try and put it back our land and water where it was before."

Impacts on Physical and Mental Health

Indigenous water impact assessor explained how the oil spill impacted Indigenous physical and mental health. He explained,

> First Nations community people did all the cleanup right after the oil spill. During cleaning, the community did not any masks, just wearing light suits. So I think some of those physical issues could possibly come

> up for many of our people because there were dozens of people working there, whether or not they were cautioned or were not told to wear masks or that type of stuff. The chemical makeup of the fingerprint of husky oil no scientific sense. And with that in some of the work that we've undertaken, you know, there's certainly fear of the aquatic life.

Oil spills created many physical and mental health risks to many communities. Elder Bill says,

> the Oil spill created many dangers to the community, such as cancer, and many other risks that are still unknown may be shown down the road. We don't know how I measure that in these cancer rates. If there's any real health concern for any time contaminants are introduced to the environment, that is to our people.

Similarly, another Elder Les expressed his concern about the health impact of the oil spills. He says "they [oil spills] have been damage done already to our health, our future generations' health, our environmental health. We can't fix that. We have to let nature take over."

A Knowledge-keeper, a community health expert, shared their concern for a health issue,

> they [Oil spill] impacted our women and children's health. I would think that many health problems are created from oil spills, like stomach problems. Many others health issues will remain for years. So I don't know what it's like. You may see a lot of kids in with flu-like symptoms and stuff like that. That probably came from our water contamination from the oil spill, right? Because no one can afford to buy bottled water all the time. Right? Either way, our water comes from the river. Right. Oil spills mess up our water, land, and health systems.

Mental Health

Other community health experts explained how the oil spill created many mental health issues. For instance, the health expert Borta Head says, "I am concerned about my grandchildren and grandchildren. Mental health impacts will remain for many generations." Another Elder (Lez) says,

> I am 66 years old now, and I have seen all these pipelines; if you look at the work of the pipelines are going through Saskatchewan and Alberta. You'd be amazed to know that all these pipelines cross our water and land, and many of our community members do not know. The spilling is every day to our water, agricultural land, everywhere as these pipelines are so old, some are continuously leaking, and others will break down very soon as they expired a long ago, may the 30s, 40s, or 50s. Spilling

> will be more frequent. They cannot clean permanently. The industry might say it's permanent, but it's not. All of these spills are within our water and food systems. Many spills you do not see from your bear eyes happen every day. They are now within our health system. It contaminated our both physical and mental health. They destroyed natural health as well. Thus, they are everywhere, including human health and ecosystem health.

Another woman Knowledge-keeper who is also a community health expert explained her concern about the oil spill, "it [oil spill] really affected our women's health indirectly. We are also more concern about our grandchildren." Another woman, Elder, explained that "Oil leak impacted me personally and my community. I know our water is not good to drink, even like our tap waters. Our tap water may be interconnected with our river water, but now our health is in danger."

4 Human-Created Disaster

This chapter reflects why Indigenous communities considered the pipeline spill a disaster to their communities and the communication they received surrounding the spill. Communities' Elders, Knowledge-keepers, leaders, and youths explained pipeline spills as severe disasters and outlined governments' and industries' responses to pipeline spill management. We shared our learning experiences on how the communities referred to this disaster as human-created genocide against their land-water, health, and sustainable ecosystems.

All three First Nation communities' Elders, Knowledge-keepers, leaders, and youths explained that their pipeline spill was a human-created disaster. It was created from serious mismanagements, irresponsibility, and broken Treaty responsibilities by all local, provincial, and federal governments, industries, and researchers. All three communities expressed that they did not have authentic communication before, during, and after this disaster. The communities were left behind with all forms of communication from governmental decision-making during and after the cleaning process. This disaster became severe when the provincial governments provided much misinformation. For instance, during and after the pipeline spill, both federal and provincial governments provided much misinformation and/or communicated with communities; governments denied and did not collaborate with communities. This chapter shares our learning experiences regarding prior, during, and after pipeline spills from the communities' Elders, Knowledge-keepers, leaders, and youths.

Community Perspectives Situations before Pipeline Spill

We discussed the pipeline spill situations from communities' (particularly Elders, Knowledge-keepers, leaders, and youths) perspectives, focusing on governments' and industries' communication, consultancy, legal support, and forms of the monitoring process.

No Communication. Most of the community expressed that they had received no communication regarding possible pipeline spills, pipelines, or any pipeline issues from responsible parties, including local, provincial, and

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federal governments and industries. For instance, one of the leaders said, "No communication before leaks either government or company. Nothing at all. No, none at all. No, no, no, no." Another women's health expert also said that

> they did not communicate with us at all don't think so. No no. Maybe our leadership did, but they [governments and industries] didn't inform us about existing pipelines in our land and water. No no. Maybe our leadership did, but they didn't share it with us.

At a similar point, an Indigenous leader expressed that

> There was no communication prior to the pipeline spill from any responsible sectors. When you talk about communications between Husky and any industry person or government, nothing has happened. They said there is no burning issue on the file.

No Knowledge about Pipeline. Many community people expressed that they did not know about the existing pipelines in their land and water. For instance, one of the leaders said,

> I didn't know that there was a pipeline before the pipeline leaks in 2016. I also did not realize that there are so many pipes in the ground that cross the river. I did not know there were so many pipelines close to each other.

Another Knowledge-keeper explained, "No, no, I never knew that pipeline existed. No one did tell me about anything pipeline? No. I never knew that there was a pipeline going on through that river until it broke."

Regarding Prior Consultancy and Negotiation. The community explained that there was no prior consultation regarding how to manage the pipeline, monitoring, and other energy issues with any community members. One of the leaders expressed that "when the issue of the consultancy comes, we [indicating Indigenous communities] are always the last. They [indicating governments and industries] never ever did communicate with us, did not build any working agreement with anyone." Similarly, another leader explained his frustration regarding minimum or no negotiation or no monitoring by saying that "there is nothing legal and political support from the company or government. No prior monitoring, None. None, none. none, none."

Community Perspectives during Pipeline Spill Disaster

All communities expressed very minimal or no collaboration during the spill. Many times, there was much misinformation and mismanagement regarding pipeline spills from both governments and energy industries; they

denied oil spills and/or provided confusing information to the communities. Therefore, community Elders, Knowledge-keepers, leaders, and youths regarded this spill as creating one of the most severe human-created disasters for the communities.

Governments' and Industries' Collaborations. Communities explained that there was not enough collaboration during the pipeline spill from either governments or industries. For instance, one of the Indigenous leaders said that

> There was no consultant from anyone [indicating governments and energy industries]. So, from the First Nations' point of view, even the word collaboration you asked for is useless to the governments and industries. Therefore, there is great dissatisfaction among community people. Regarding collaboration, there are many misunderstandings and miscommunications created by outsiders [indicating governments and energy industries]. Outsiders need to know that First Nations people are not their real enemies. If there were no Indians, there would not be any industries. Indians are not anti-development. We want a balanced development. Balancing means protecting our land and water according to our treaty rights.

No Information

As the community explained that there was no information from either government or industries during the pipeline spill. For instance, an Elder who is an Indigenous water expert explained how he found pipeline leaks,

> it was still like a week after that oil spill. Oil was leaking into the river! But the one gentleman there once said that when you go to the river, you would be able to see that there are lots of oil weeds. They look like spills, he said. It didn't look like it was a small amount; they were huge, everywhere in the river. At the time, I learned from the media that there was one of the two hundred and twenty-five thousand litres of oil spills. But no information from the governments or industries.

Another Elder explained how governments and industries tried to hide the pipeline spill from the communities by saying,

> It was still like a week after that oil spill; oil was leaking into the river! Since so many oil leaks happened, it was obvious that the oil stream at the river had been open for a long time. That way, the damage was done to that water, land, and other areas by hiding information at the right time.

Community Elders and Leaders expressed that instead of providing the correct information at the right time, governments and energy industries

became busy with blame games. One of the Elders stated, "At first both governments and energy industries denied any leaks, when it came to the media they were blaming each other. In the meantime, oil spills were spent many days and impacted many areas, and many communities." Similarly, another water expert who directly observed the oil spill at that time says, "Delaying acknowledgement of oil spills affected everything, not just the use of the river, animals, fish, plants, and insects."

Poor Management. The community discussed that poor management by governments and energy industries was evident in areas such as acknowledgement, cleaning, and many others. For instance, an Indigenous Knowledge-keeper says,

> Well, first of all, that river bank settled in where their pipeline broke. So people began to look around and say, where are these other pipelines? What is possible other pipelines are going to break. There was a lot of concern about that. More people were nervous about that when they learned to know where the pipelines were and what other impacts there might be. And, you know, we didn't know how much oil had gotten into the river. You know, Husky kept a lot of information themselves. They didn't disclose it. No, we didn't. All we got was on the news, although they did meet with the husky representative. They never talk to my chief about that.

Denied. Deny tendency was a significant challenge for properly managing the pipeline spill disaster. One of the Elders says,

> The big problem was no information during the spill. We didn't hear about it. They tried to cover it up and keep it secret for a long time. A few days later, they actually came out and acknowledged it when it was too late. Somebody should give the right information at the right time instead of leaving it running for three days or for a week. There wasn't any management at all.

Another Knowledge-keeper explained how governments and industries hiding information created a more serious disaster,

> We didn't actually know when the break happened. The volume of oil that came out would suggest that it had been leaking for a while. So, it was only on the 21st that notice, a public notice came out as Huskies papers were broken over by work between Lloydmintster and North Battleford. So, we got that notice. But it was too late; the river had already risen by that time. So the volume, like the push, was really hard, and it made its way here. There was a challenge from government levels to say that there was no oil spill. The Husky responsible person also denied telling us that no oil came through the river. When they agreed, it was too late.

Community Perspectives after Leak

Most community members explained that the pipeline spill was essential to protect water, land, and communities. However, communities have seen serious mismanagement from all responsible sectors, such as all levels of governments and energy industries.

No Communication with Community. There was no communication with Indigenous communities, even after weeks, months, or years. For example, one Elder expressed his frustration on this by saying, "You know, there's no follow-up or anything from governments and energy industries at all." Another Elder says that "although the damage was already done. Right? There is still no communication with communities, neither governments nor energy industries." Another knowledge-keeper similarly expressed that "There was nothing legal and political support from the company or government, still not even today. None. None, none. None, none."

Created Scare and Panic. Since there was not enough cleaning or no cleaning in many areas at all, even after two years of our research, the communities were so scared about their water. For example, one of the Elders expressed,

> Like within my lifetime, I have seen things like the river to the river we used to swim, but now we are scared about contaminated water. We do not dare to go to the river for fish, collect berries, hunt, and do spiritual practice. All are gone.

Another Indigenous environmental expert explained his concern by saying,

> You know, we used to spend a lot of time out there [indicating river and river-related activities], you know, now there's still oil in it. We are afraid to after the oil spill; we are not comfortable going there anymore.

He further said,

> As I remember, we used it [indicating river] for drinking water until I was about 10, 11 years old. We used to get the fish from there, you know, till I was a teenager. We even had the community on the west side of the reserve. We had a fish basket. They called it [indicating river] a fish basket where we put this basket in the river and sort of fish. After the oil spill, we're not eating the fish when we're not using it. Now we cannot do anything because they contaminated our water.

Another Elder raised similar issues by saying, "contamination, the damage has been done already. How do we fix that? We can't fix that. We have to let nature take over. An Elder from the James Smith community explained his fear by saying that in fact, you don't know the extent of the damage from the

oil spill. You don't know if there's still oil under the river. There's no fish in the water. So polluted, contaminated, like we can't even look."

Misinformation. According to community members, there was much misinformation during the pipeline spill disaster from governments and industries. For instance, an Elder says, "If they had come and checked at the right time, there would not be that much damage. Still today, I have yet to see proof that they care. We haven't seen any proof. No, no, no proof at all." Another Knowledge-keeper explained why it is happening by saying, "Now they [indicating government and industries] were trying to save money by making our land, river, and us vulnerable."

Challenges in Poor Research, Researchers. As many community Elders, Knowledge-keepers, and leaders explained, misinformation and/or wrong information came from governments and energy industries and came from academic researchers. For instance, many leaders explained that academic researchers provided wrong information in their reports, "many researchers claimed that oil is good for soil." An Elder expressed his anger on this poor research by saying that

> we do not trust their [indicating academic researchers] reports. Oil spills affected our water, fish, plants, and wildlife on the river bank. But researchers report saying differently. They [indicating academic researchers] did not talk to us at all. They did not collect our lived experiences.

Another Elder, a water expert, expressed similar concern on this by saying that

> many false claims came from governments and industry researchers. We have many tools to prove that the oil was coming down for years, and the spills are not good for our soil, water, or plants at all. They [industries and government] did have those dogs that sniff hydrocarbons. They were detecting hydrocarbons on the river still as of last year. So it is still showing the impacts. So I'm not sure if they're going to call it again this year, but that's where they say that those hydrocarbons. Now, they were saying that oils leaks were good for the environment. They said much wrong information. That's Huskies, guys [indicating industry researcher]. [6.3s] But we don't think so. It was a false claim from their paid researcher.

At the same point, other Knowledge-keeper researchers and scientists broke communities' trust: "my trust was broken when the scientists said no, you're OK, your water is OK, We didn't trust it. Why could we trust them?"

Another Knowledge-keeper provided an example of why community members do not want researchers/scientists by saying that

> Well, we know what researchers' goals are. We don't trust them [indicating researchers/scientists]. I am giving an example of why we don't trust

> them. During the spill last year at our community, Huskey researchers/scientists came out with a report and said, we've looked at the plants, looked at the animals, and tested the fish. Here's what we did not find enough information about oil contamination, so you are OK.

The same knowledge-keeper explained why he did not trust industry researchers'/scientists' reports:

> They [indicating industry researchers/scientists] just picked one fish or plant from very contaminated areas and said, OK, well, there is not much information for us to go through. As Husky researchers said, they looked at only 48, which is not a very big sample size for any small sample. It may not be statistically valid. It wouldn't be. Their sample size is way too small. They needed to see at least 5000 units to measure this. Yeah.

He further explained why the sample was invalid,

> the second question is: Where did you get them? Where did you get these sample sizes, these samples? Well, you could tell from where they were picking from; they were picking where they knew the river would fly by. So, there would be nothing there if the oil would just zip right through. All right. So, you could see that they were taking, let's say, inside of turns. So, we knew that the oil came would hit the outside of the turn. What is carried into that bank and then come around while they were taking from the inside of the turn where they knew the oil wouldn't. We said, well, we don't believe you and your group because your sample size is way too small. You're drawing your samples from where you know that the river oil isn't. That's why we can't trust you.

Economic Greediness. The community explained that disaster was created by governments' and industries' economic greediness. For example, a Knowledge-keeper explained that

> Governments and industries did not care about oil spills as they might be too expensive to clean up. They made billions of dollars but did not care to clean up. There are many oil patches without cleaning. They are making billions of dollars but no money.

5 Community Perspectives on Challenges

This chapter focuses on communities' perspectives regarding how communities face challenges in their energy governance from various perspectives (see Table 5.1). According to community Elders, Knowledge-keepers, leaders, and youth, many of the challenges have been historically continuing as a process of colonizing Indigenous people's land, water, and sustainabilities. This recent pipeline spill disaster is one of the examples to showcase how the disaster is human-created in Indigenous communities. As most of the community explained, community perspectives on challenges are significant not only for understanding the real causes of pipeline disasters but also for creating future energy sustainabilities within and from Indigenous leadership. Therefore, in this chapter, we shared our learning reflections on the concept of challenges that need an understanding before, during, and after pipeline spills. We discussed challenges in this research according to main themes (see Table 5.1).

Challenges within and from Western Research

Most of the community Elders, Knowledge-keepers, and Leaders discussed that the Western form of research is a critical challenge during their pipeline spill disaster. As they discussed, they have found the Western form of research is limited within fix tools that do not include Indigenous lived experiences, everyday stories, and practice. The community also expressed that Western research and Western researchers are not always as objective and/or authentic as they claim. In many cases, the community found the only Western form of research may be influenced by the existence of power and profit. Therefore, many communities see the Western form of research as a significant challenge in recolonizing tools. Focusing on pipeline spill disasters, we shared many communities' lived experience stories. As the community discussed what they have experienced, research has become a significant challenge for many reasons, such as researchers' false claims, no community involvement, minimal sample size, disagreements among Western and Indigenous researchers, and many more (Figure 5.1).

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Table-5.1 Communities' Perspectives on Challenges

From Research	False Claim
	No Community Involvement
	Small Sample Size
	Disagreement among Researchers
	Only Western Science-Based Research
Breakdown Community Trust from	Provincial Government and Federal Government
	Industries
	Researchers
	Scientists
Negotiation Process	No Negotiation Prior and After Leak
	No Community Financial Support
	No Legal Support
	No Consultation Before and After
Responsibilities	Broke Treaty Responsibilities
	Disrespect Community Perspectives
	No Fiduciary Duty from Canada Govt.
Cleaning	No or Poor Cleaning During and After
	Denied Community Perspectives
	Ignored Leaders' and Elders' Perspectives
	No Collaborative Cleaning Process
Technology	Week Pipes
	Week Research Tools
Information	No Information during and after
	Community Uninformed
	Denied
	Hiding
	Mismanagement
Misconception	Community Meanings of Development
	Elders and Knowledge-keepers Knowledge
	Traditional Knowledge
	Treaty Responsibilities
Greediness	From Governments
	From Industries
	From Scientists
Destroy	Hunting Areas
	Scared Areas
	Medicinal Plants
	Water Quality
	Ecosystem
	Soil Quality
	Ceremonial Area
	Food Source
Developed	Fear
	Frustrations
	Danger
	Food Crisis
	Distrust
	Uncertainty
Support	No Support Before, During, and After
	No Legal Support
	No Financial Fund
	No Community Meetings

For instance, one Elder explained why he thinks governments and energy industry researchers made false claims in their research reports. He said,

> We [indicating Indigenous researchers and community water experts] have some tools to prove that the oil was coming down for years. However, they [indicating industries and governments] said they did not have enough evidence of hydrocarbons. If you [indicating us] go down the river, you can see that still showing the impacts. We do not understand why they need to lie and from whom.

At another point, this Indigenous water expert Elder expressed that governments and industry researchers made false claims by saying,

> They [indicating industries and governments researchers] were saying that leak oils were good for the environment. Who can say this? How oil leak can be good for water, land, and Indigenous people? How do you think, we can these researchers and their reports? We strong believe that it was false claim from their paid researcher.

From a similar perspective, another Knowledge-keeper is also an Indigenous water expert, and it is discussed similarly that

> we had our researchers [indicating Indigenous researchers and community water experts], who evaluated samples and collected our stories on pipeline spill disaster, they said, it [indicating pipeline spill disaster] impacted on everything water, land, plants, and insects, and many more.

Following this statement, this Knowledge-keeper questioned Western researchers' positionality by saying that

> Is not science supposed to be objective by providing logical explanations of the event? It should provide similar outcomes for the same event and helps to try to solve the problems. If yes, why are there huge disagreements between our researchers and their researchers? We can no longer trust them [indicating industries and government researchers] and their reports.

Broken Trusts

Broken community's trust became another critical issue for mismanaging this pipeline spill disaster. All of the community members expressed that all responsible parties have broken community trusts, such as governments, industries, and researchers. For Instance, an Indigenous leader expressed that

> Our governments and industries broke our [indicating First Nations in Canada, particularly in Cree First Nations in Saskatchewan] trust right from day one. We've been neglected and kept in the dark corner regarding our rights to environmental resources, not even allowed to have a voice. So it's very frustrating for me to talk about this. … I am frustrated by seeing that their [indicating governments] supposedly moral superiority, with all their legalities, and their bullshit transparency and accountability. They have been acting with us in such a dishonourable fashion regarding our Treaty rights. Where's their [indicating industries and government researchers] honour to our Treaty rights? Where is the duty of the crown? where is that fulfilling the fiduciary obligation to First Nations? They all broke our trust

Negotiation Process

Community suggested that another significant challenge was no negotiation before, during, or after the pipeline spill disaster (Figure 5.2). One of the youths said,

> I know from my grandfather that there have been no negation at all. We do not know what's going on. We would like to talk to work group through a consultation from external entities or provincial or Federal people. Consultation, counsel giving us. Let's be honest.

An Indigenous leader also says at a similar point that "there was no no negation at all, none, none. Even until today no negation process. So from the First Nations point of view, these are meaningless."

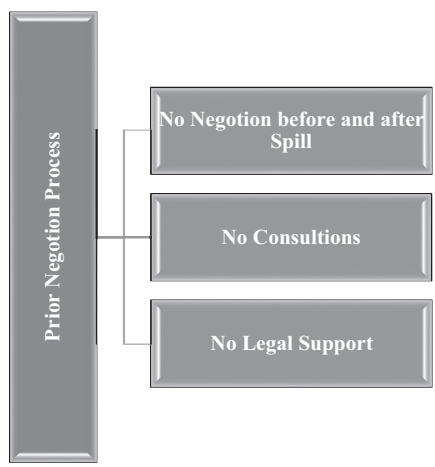

Figure 5.1 Community perspectives on challenges in the Western form of research.

Another knowledge-keeper suggested that "We [[indicating First Nations in Canada, particularly in Cree First Nations in Saskatchewan] are always the last whenever something happens on our reserve, there was no negotiation, never, ever any working agreement with nobody."

Many Indigenous leaders expressed similar sentiments. For instance, one of the Little Pine Cree First Nation leaders said,

> in the UN Indigenous Declaration that negotiation needs to follow consultation principles of free, prior and informed consent. These are all meaningless terms for them [indicating industries and governments]. Nobody applies them. Corporate social responsibility only applies when it comes to their investors to their bankers. I was at a pipeline built in Magneto lake [Indicating local Indigenous area]. It is a spiritual area for us. I took some Elders there, and again, we were told that we are anti-progress instead of negotiation. We went there to pray that the project they're doing benefits, just some rich person in Calgary. There is no process negotiation from anyone.

Broken Treaty Responsibilities

Not respecting Treaty responsibilities from the governments is a significant critical challenge for the communities. For instance, one of the Indigenous leaders said, "The spirit and intent of Treaty have been broken. All for capitalistic intent, a self-serving interpretation of the Treaty. It's just a continuation of everything we face from day one." Another First Nation Elder similarly explained,

> For me and my position as a chief for my community, Treaty rights stand above everything we do with our land. Everything that the governments do, the federal, provincial, the municipal government, broke their Treaty responsibility. It's illegal because they haven't consulted with us. Not only that, it's not about consultation, not about telling us we're going to do this. I totally believe we do not have the right to do whatever they want to do in 6 Territory.

Disrespect Community Perspectives

Disrespect community perspectives or not including community perspectives has been a significant challenge for the community. As all community members explained, disrespecting community perspectives came from all levels, such as governments, industries, and researchers. For instance, an Indigenous leader explained that

> the Government of Canada and whoever is not holding on to the Treaty relating to acting in such a shameful, cheating, dishonourable, dishonest

> fashion. That's the real issue. It's not how First Nations are. The real issue is how Canada and the leadership in the provinces and the industry are not acting responsibly.

Another Elder similarly expressed how disrespecting the community perspective is an important challenge.

> I think one of the major gaps is a lack of respect and sincerity to the community visions from the government and the industries. There's all there's a lack of commitment that respect. There's a lack of sincerity. It's been happening historically. There's a lack of respect. There's a lack of sincerity.

Not completing Fiduciary Duty from Canadian Governments

Not completing fiduciary duties from all levels of government has been a historical challenge in dealing with any disaster, such as a pipeline disaster. For instance, an Indigenous leader explained how all levels of government failed to complete their fiduciary duties toward their Indigenous communities in Canada. He said,

> The government of Canada took the share that we [indicating First Nations communities in Saskatchewan and Canada] offered them, and then they [indicating Government of Canada] took our share and mismanage it. Where is the accountability about taking our share? And how come we have to beg for our share? How come they make meaningless actions in such a fashion that they are not responsible. Why are they not fulfilling their fiduciary obligation to do the best for your [indicating Government of Canada] First Nations? Still, they have been getting away with their responsibilities because the laws of Canada support it. The courts can do that through the laws and support the Canadian government. So, where are the First Nations in this? Nothing has been fair for us [indicating First Nations communities in Saskatchewan and Canada]. There have been many wrongs here, and nobody [indicating the Government of Canada] wants to come to any table that truly ever gets to it and address it. There is no process now, regardless of what we can recommend, So from the First Nations' point of view, these are meaningless without completing fiduciary duties.

Similarly, another Elder expressed that

> the Government of Canada does not see that they have a fiduciary obligation to First Nations. They [indicating the Government of Canada] won't define fiduciary. For me, a fiduciary means that our rights and interests come first. Even ahead of their, in this instance, the oil spill, on any damage to the environment. In the fiduciary obligation, we have

> our rights and interests that need to come first. Unfortunately, nothing has been done yet.

No or Poor Cleaning during and after

There had been serious mismanagement cleaning from all levels of local governments and energy industries. As the community expressed, there has been no cleaning or very poor cleaning, which has made disaster situation challenging. For instance, many Elders expressed their "frustrations regarding poor or no cleaning efforts from governments and industries, You know, there is no follow-up or anything like that after the leak." Another Elder said that only questions should be asked when there was any cleaning process they made. But there was no process until now. As a leader of this community, I have not seen any cleaning process, so can we suggest improving it as we have not seen any progress. So from the First Nations' point of view, improving the cleaning process is meaningless.

Weak Technology

The community explained that there were many other challenges that contributed to the pipeline spill disaster, including weak technology to detect ongoing leaks, old pipes, no ongoing monitoring process, and denying, hiding, and failing to inform the communities. For instance, many Elders and Knowledge-keepers explained in Figure 5.2.

Explaining the above figure, an Elder expressed that

> I do not know, why government and Huskey [energy industry] did not take care of it in the first place. Why they did not do it. It was a lack of monitoring. You know, the companies were trying to downplay it.

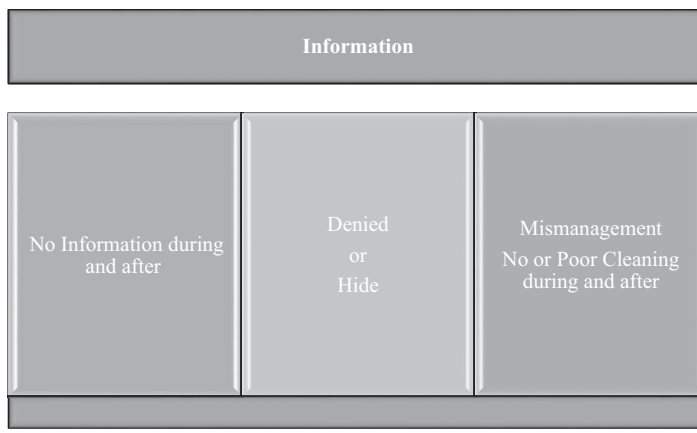

Figure 5.2 Indigenous perspectives on information.

Another Elder similarly explained, "it was almost a week that oil was spilling at the river! Why they did not try to fix it instead of denying it and/or hiding it. That the way, the damage had been done, not just over overnight." Another Knowledge-keeper explained how information on the pipeline had been hidden from the communities: "I didn't know that there was a pipeline before the pipeline leaks in 2016. I didn't realize there were pipes that they are crossing our river and our land. I did not realize that there were so many pipes in the ground that cross the river. I also did not know they were so close to each other.

Another Elder expressed that the tendency of denying or hiding information created all these messes:

> The governments and the industry have never consulted or talked to or let First Nations know of anything that has happened, and it's to hide the fact that they are negatively impacting our Treaty rights. There is just so much wrongdoing that goes on all the time. Yet consistently we are asked when we come to these meetings, but they are not showing any interest.

The community explained that there was a significant lack of communication from both the government and industries, such as an Elder said, "Communications about the pipeline spill with Husky [responsible energy industry] and the government before the spill. There was none. Even today, there are none." Another Elder said,

> in fact, you don't know the extent of the damage. Like you don't know if there's still oil in under the river. But really, what would be the purpose of dredging? There's no fish in the water. So polluted. Contaminated, like we can't even look. Yeah, we had lost everything from our water.

In most situations, the community remained uninformed about the existence of pipelines, pipeline spills, and the cleaning process. For instance, a woman Knowledge-keeper said, "Our people did not tell anything that happened in our river. What we weren't informed at all. You [indicating researcher] are the first person to come in and talk to me about the oil spill. You're the very first person who wanted to talk to me and our community Elders, Knowledge-keepers, and leaders. So we don't know anything about the cleanup. We don't know if there was money given for the cleanup or anything." Another Elder said, similarly, "So when you [indicating researcher] talk about communications between Husky or any industry person or government, nothing has ever happened. And even today, we have not seen any meeting yet. They [indicating governments and industries] said there is no burning issue on this file."

Another Elder said, "No, we didn't know anything about pipeline leaks. We didn't know what had happened. When it happened, I learned about it

from the band office. Our water was impacted by big leaks. Much oil went into the water. So we didn't know anything about it."

Mismanagement

Mismanagement by governments and industries was a critical issue at all levels. One of the Elders explained that

> Mismanagement under the guide of fiduciary responsibility that did not fulfill by any level of government. That's the whole big problem for properly managing disasters. The whole legal relationship is corrupt, and nobody wants to admit it. And as long as Indians [indicating First Nations] don't have money to take anything to court, it will never be addressed.

Misconception

Many misconceptions on Indigenous meanings of development, management, and Indigenous Treaty rights played a significant role in the pipeline disaster. For instance, a leader said,

> There's so much wrong information about First Nation people and their capabilities. Government is so accustomed to having industries think that First Nations are bad people that don't want development!! You're so used to telling the general public that Indians are standing in the way of progress. If that were the case, we would never have signed Treaty at all in the first place. That was the first instance where First Nations wanted to have a meaningful way of sharing their land and resources to accommodate another society that comes to our lands. So who has access to media? Who has access to all that social media? That social manipulation that occurs now?? Our governments and industries do. So right from day one, we've been neglected and kept to dark corners, not even allowed to have a voice. So it's very frustrating for me to talk about this. I don't know who will read your [indicating researcher] report in the end. But at the same time, there are real issues that are going to be talked about here. Are they [indicating governments and industries] ever going to be dealt with? So it's frustrating, and it's totally frustrating for me. As chiefs, we often asked our leaders, government leaders, and a prime minister to come and talk with us. Talk Treaty with us, they would not come out. Governments do not face problems flying to Saskatoon to go To a round dance and take a few selfies with some young people. They [indicating governments] do not come to our community. But we're easy to come and talk freely with us. No matter what position we take, governments do not want to create unity with First Nations yet. The real embarrassment is for the greater society with all their

> [indicating governments] supposedly moral superiority, with all their legalities, with all their non-transparency and accountability, all these are bullshit, that they can act in such a dishonourable fashion when it comes to the very first people that signed Treaties that allow Canada to exist. Where's their [indicating governments] honour to our Treaties? Where are their [indicating governments] the duty of the crown? Where about fulfilling their [indicating governments] the fiduciary obligation to First Nations?

The community also mentioned that there were also other forms of misconceptions about Indigenous Elders and Knowledge-keepers Knowledge lived knowledge, considering them as essential knowledge, the importance of traditional knowledge in creating sustainabilities, and Treaty responsibilities. By explaining the significance of Indigenous Elders, Knowledge-keepers, and leader knowledge, an Indigenous Elder explained that

> through our meanings of protection, we want your assurance that if anything happens, every you know, we try and put it back where it was before. Our treaties can play an essential role in this. Many white people misunderstand or misrepresent our treaties to the general people. When white brothers came across and signed the treaty, we agreed to share our lands with our great grandfathers; they agreed with the white people that they would share the land. Right after signing treaties, they misrepresented our rights or were not talking about this. Made many miscommunications created through misinterpretation. In our Treaties, we share only six inches off the property so they could plant their crops and things. Everything under Indigenous people holds the rights. They can take the trees, but you gotta make sure that they get your replantation. Those were their conditions because they knew that once you take a tree, another one needs to grow; it has to happen. See, back then, nothing was followed. They [indicating Governments] didn't teach our treaties to our children and us.

Another leader explained that Canada's government and whoever is holding on to the Treaty relation have acted in such a shameful, cheating, dishonourable, and dishonest fashion. That's the real issue of this disaster. It's not how First Nations are. The real issue is how Canada and the leadership in the provinces and the industry are acting.

This leader also explained

> that the Government of Canada got our land, water, and resources that we offered them in good faith of the Treaty agreement, and then they took our share and mismanaged it. Where are the accountabilities about taking our share? Now they are giving us less than 1 percent!! Nothing has been fair. There is so much wrong here, and nobody wants to come to any table that truly ever gets to it and addresses it.

All community members explained that all of these challenges had been created historically as a process of colonization. These challenges contributed to this disaster, creating a disaster for Indigenous people's land, water, and sustainabilities. Therefore, understanding challenges from the Indigenous perspective is going to benefit Indigenous people and all Canadians in creating future energy sustainabilities.

6 Community Perspectives on Community-Based Consultancy

This chapter discusses communities' perspectives on how they want to see the meanings of community-based consultancy. We discuss how the community is at the centre of their meanings of community-based consultancy. In this chapter, we explained how all the communities want to build community-based consultancy with their community members, how they want to lead, and how they want to guide and collaborate. For doing this, we tried to centre the Elders' and Knowledge-keepers' voice who have long had sustainable knowledge, experience, and leadership to guide their youths, Western scientists, and industries. All of the Elders, Knowledge-keepers, and leaders suggested they collaborate with Western researchers, governments, and industries. They indicated that the community could guide energy industries and governments to develop the meaningful implications of community-based consultancy. Our learning reflections found the following themes (Table 6.1) significant for understanding community perspectives on community-based consultancy. However, while community perspectives are not fixed, they vary from community to community, land to land, and generation to generation. The following is explained as significant for achieving energy sustainabilities in the communities. We shared some of the critical themes with community Elders' and Knowledge-keepers' consent in the following.

Community-Led Guidelines

In our research, community members explained that they know how to deal with disasters such as pipeline spills as they have been facing many disasters since the beginning of colonization. They also explained that they need to take more action focusing on their framework, instead of researching to find solutions. As they said, there has been less focus given to acting. All of the communities' perspectives are interconnected. They cannot be separated. The community members explained that they wanted to see the meaningful implications to the communities. The consultancy should not be showcased to manipulate the community and their voice. Therefore, the community wants the credibility of the consultancy. One of

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Table 6.1 Community Perspectives on Community-Based Consultancy

Guide Through
Elders
Knowledge-Keepers
Leaders
Treaty Responsibilities
Collaborative Knowledge
Traditional Knowledge
Western Knowledge
Rethinking Meanings of Science and Scientists
Elders
Knowledge-Keepers
Scientists
Social Scientists
Youths
Collaborative Engagement
Elders
Knowledge-Keepers
Leaders
Youths
Policymakers
Scientists
Social Scientists
Youths
Regular Community Meeting
Monitoring Process
Ongoing Conversation
Ongoing Monitoring
Right Information at Right Time
Respect Community's Diverse Perspectives
Archive History
Capacity Building
Community Youth Engagement
Work Together
Community-Based Research
Follow Treaty Guideline
Enough Funding Support to Band
Prioritize Community Needs
Create a Community-Oriented Research Lab
Overcome Challenges
Discuss with Elders
Discuss with Leaders
Band Meetings

the Knowledge-keepers said, "Consultation has to be more meaningful to the community." According to the Knowledge-keeper, "It has to be a joint decision, not a one-sided decision. It can't be just asking a question. The accommodations have to be real. It has to be guided by our treaty guidelines. That treaty is nothing but a piece of paper to them at this point, right? We want to see real change. We want certainty. When do they ask you what you want? They want to know what you want. They're going to factor that in because they're going to say for us to develop this. We've got to make sure the cost of this is not so much that this is no longer viable." They also explained that while governments focus on community-based consultation for building Indigenous communities' energy sustainabilities, the community-based consultation has to be guided by community Elders, Knowledge-keepers, and leaders based on Treaty responsibilities. For instance, a Knowledge-keeper from James Smith Cree First Nation explained,

> We [Elders, Knowledge-keepers, and leaders] are here to survive to hear, to sustain. We're here to protect our mother earth, not just us as humans. We can do this through our Treaty rights. In our treaty rights, we never give our rights away.

Collaborative Knowledge

Community members explained that collaborative knowledge is at the centre of community-based consultation. According to the community, the community always wants to learn and practise Western knowledge in everyday issues. However, Western knowledge either ignored traditional knowledge or used traditional knowledge as a token. Many Elders, Knowledge-keepers, leaders, and youths want to have meaningful collaboration between Western and traditional knowledge in order to solve everyday problems using both knowledge. A Knowledge-keeper explained that in

> community-based consultation, Indigenous traditional knowledge should be in the center. Our Elders, Knowledge-keepers, leaders, and you should be involved all through the process with governments, policy-makers, and industries. We always wanted collaboration, but none [indicating governments or industries] counted us and our traditional knowledge as part of our solutions.

Another Knowledge-keeper from James Smith Cree First Nations said, "when we talk about consultation, we want our protection rights [indicating their land and water], those companies should come to our door because they feel anything because that's going to flow through our boundary, our song, our sovereignty." Another Knowledge-keeper explained how collaboration could be happened by saying,

> Letters should be written to our leaders and our community council. You know, it should be done. Let's discuss this, and let's see how the people downstream from wherever they're going to build a pipeline or get and see how going to see reality.

Another Knowledge-keeper explained the meanings of meaningful conversation to him,

> it would be nice to have meaningful consultation. It seems like we're always last. We're always last. Whenever we get impacted, we never get consulted. They never want to talk to us. Meaningful consultation starts with trustful relationships. It seems like we're always left only with any kind of agreement. It seems like we're left out. And then once impacts do happen, that's when we're involved. For us, meaningful consultation should be from the very beginning.

Another Knowledge-keeper explained the meanings of consultancy from a collaborative perspective.

> When you're talking about what consultation is. Consultation needs two to work together. Otherwise, it will not work for us. Governments and companies need to collaborate with communities. We got nothing, right?

Another community member explained what collaborative knowledge is for them and how to achieve it by saying,

> Governments and companies should contact our leaders, chief, and councillors, instead of being neglected, not even told what's going to be happening or what project is coming up. Suppose a company or government is going to develop a project upstream or near the Saskatchewan River. In that case, leaders should be called into the meeting and participate in the decision-making process.

A community leader explained how to build collaborative knowledge.

> As being Chief in the past, it is very important that when you're going to move ahead with a project, you're going to get started getting involved in engagement and consultation, that you're able to meet with your band members, those that are utilizing the land or Elders or whatever the case may be. When you sign any type of contribution agreement yearly, it says that your responsibilities these funds are given to you for the health and welfare of your band members. So when it comes to aspects of engagement and consultation.

Rethinking Meanings of Science and Scientists

As the community explained, consultation would never be successful until or unless all the Western researchers, governments, and industries do not rethink their meanings of science and scientists. Many Elders explained that they know their traditional knowledge is science as it helped them live in their sustainable ways for thousands of years. The meanings of sustainable ways are described as living together, such as humans and non-humans (i.e., land, water, animals, insects). Indigenous traditional knowledge as relational and spiritual practices has been proven scientific knowledge. All the community members explained that in traditional knowledge, Indigenous Elders and Knowledge-keepers are considered scientific as they know the good possibilities for the communities. They carry essential knowledge from generation to generation. Therefore, all Elders and Knowledge-keepers suggested to rethink the meanings of science and scientific knowledge while working on Indigenous communities' sustainabilities. Another Knowledge-keeper demonstrates how rethinking can be helpful for meaningful community-based consultancy,

> Through our traditional knowledge and our community involvements, we need to follow up on their cleanup. They need to put the river back and land back the way it was before. At the same time, we [Indigenous] have to be sure that the contamination is removed and taken care of it.

An Elder expressed that

> Our people were left out from the research since the white man came here. We want to be part of it. Plain and simple. We want to be upfront; we want to lead; that's what we want for our future.

Another Knowledge-keeper explained why Western research and researchers are challenging the community by saying,

> There are other scientists [indicating hiring independent researchers] out there. And this was another element of frustration for us because as fast as they [indicating governments and industries] brought their scientists to the impact assessment. It was very frustrating for us when they found that their scientists/ researchers talked from industry perspectives. We know is science is not black or white, right? Isn't it that simple? When our scientists say different than their scientists. One scientist says it's this way, and the other scientist disagrees. Is it science? Shouldn't it be pretty the same? I think.

Ongoing Conversation

The ongoing conversation is essential for successful consultation for developing Indigenous energy sustainabilities. For instance, a woman

Knowledge-keeper explained that "all the community members need to be informed through the ongoing conversation. The ongoing conversation needs to happen through regular band meetings in order to get the information to the people." Another Knowledge-keeper from Little Pine Cree First Nation explained the importance of ongoing monitoring by saying,

> Make sure that they [indicating industries] watch their pipelines closely like every day, not just once a month. If you don't monitor them properly, you know, disaster may happen more often. They should update the community through ongoing conversation with the community.

Regarding ongoing conversation, another Elder said, "Well, of course, if they [indicating governments and industries] really want to solve any problem. They need to come and see community members regularly. Our regular conversation may help us to solve many issues."

An Elder explained the ongoing conversation, "we have opened our door. We are open to building relationships with ongoing discussions. We want to talk to stop abusing our water. We are over here. We have opened the door."

Ongoing Monitoring

Like an ongoing conversation, ongoing monitoring is also essential for community-based consultancy. The community also explained continuous monitoring should be led by the community members, particularly community youth, with proper training. For instance, a Knowledge-keeper explained,

> I think we [indicating Indigenous community members] should be part of all on-going processes so that we know how they are doing, they are protecting our land and water. I think our active involvement may be helpful in making things run smoothly. I think everybody should be involved in that.

Right Information at Right Time

The correct information is an integral part of community-based consultancy at the right time. The community explained that accurate information also plays a critical role in controlling disasters at the right time. A woman Knowledge-keeper explained that

> Our people have to be told of what happened right away; no more hiding anything. The oil spill became a severe disaster for us as we weren't informed of anything. We should be the first person to come in and talk to us. Our Elders and leaders should be first persons.

Capacity Building

Community capacity building plays an important role in understanding meaningful community-based consultancy for Indigenous energy sustainabilities. As many Elders explained, community capacity building could happen through active youth engagement. For doing this, Indigenous youths should get opportunities to work collaboratively with Elders and Western researchers. As one of the Elders explained as capacity building,

> We should have access to all the water systems in our reserves in capacity building. Capacity building, we need to promote our own source of water protection. But it's going to be a template already existing for other First Nations when you do your water protection plans from another source with potential risks. We probably also have this map where all of the evidence is in the province.

Another Knowledge-keeper explains the meanings of capacity building by saying,

> When you promote capacity building, you become more vital when you encourage the ability to admit your people internally. This is how you do it. You layout a framework within the young people, within the youth, and that's it. That's what you're doing with really what we're looking at is your role in establishing our own means of testing water.

Community-Based Research

As community Elders and Knowledge-keepers explained, research meanings are different to the community than the Western research meanings of research. Indigenous meanings of research have been used in sustainable ways with traditional knowledge for thousands of years. The Indigenous implications of research are explained as an everyday spiritual practice with land and water. The community also explained that the meaning of research had been colonized through colonization. Therefore, many Knowledge-keepers explained that research needs to lead by the community by saying, "We should have our own research led by our people. If we need to be part of their [indicating governments and industries] research, they should respect our knowledge and practice as a significant part of science."

Since community members have seen that governments and industries' researchers/scientists were not serving community needs, the community wants to do their own research with their researchers. For instance, a Knowledge-keeper explained that

> We saw how they [indicating governments and industries researchers/scientists] manipulated numbers or samples for their interest, OK? We

> want our own researchers for that. If we have our own researchers, you can see the difference; it's a big thing for us. Probably a costly thing. But it's, we have to reach a level of comfort that we have done everything that we possibly could to make sure our complaints are verified with logic and evidence

Follow Treaty Guideline

Strongly following Treaty rights should be responsible for meaningful community-based consultancy. For example, Elder explained why Treaty rights are essential. "'We are well protected through our treaty rights. They [indicating governments and industries] should respect and strongly follow our Treaty rights as their responsibilities. But they are not doing this, they are keeping their promises by trying to incorporate provincial law enforcement into our lives, land and water. They have been eliminating our fundamental rights. Our Treaty rights have given us full access to our water and land."

A Knowledge-keeper explained how to follow Treaty guidelines:

> Consultation is it's not the one thing I know. No government likes to have a very simple and say OK. It's not that simple. The duty to consult and accommodate is based on the treaty in two ways: One, we do the consultation with the Crown based on treaties. So that's a legal thing; two: We also negotiate an impact benefit agreement with the company, and that's a business thing. These two run in parallel to each other, and eventually, they convert. So they come together at some point. Right.

Another Knowledge-keeper said, "following treaty responsibilities is consultation itself. If the Crown does not want to complete their responsibility towards treaty responsibility, it will not be meaningful consultancy. It cannot be one way." Similarly, another Elder said,

> Consultation can't be just a government person or a licensed, regulated regulatory body coming in and saying, what are the impacts? Because we're sitting there going, we're not sure. What exactly is going to happen. And they dumped the volume of books on us about that high. This is the environmental impact (IS), this is not only IS, but also treaty rights. OK. So that's good for the environment. They're going make big dig a big hole in the ground. They're going to hit demand. What's going to happen to us, our water supply, our animals. Are we still going to be able to hunt in there? Many questions need to ask.

Communities' Treaty rights should be at the centre of community-led consultancy. Community Elders and Knowledge-keepers know what to do and how to do it.

> In 1930, the government left the federal government to develop the Natural Resource Transfer Agreement, which then gave each province authority over resources within provincial boundaries. They didn't consult us on that. So that starts to be one of the most significant issues right now, probably. How was their integrity on this integrity? Who owns the resource industry? No one gave the government of Canada authority or the consent to give the provinces any authority over our resources. They just took it as assumed, so that's a big issue. So these issues are always at play in the background when you're talking to Elders, when are you talking to our leadership, when you're talking to our people.

Overcome Challenges

The community explained how to overcome challenges that governments and industries should discuss with community Elders, Knowledge-keepers, and leaders in the first place. For instance, a Knowledge-keeper said,

> Our elders should be consulted because they've been protecting our Mother Earth much longer than you and I combined. One of our elders died a few years ago, and he told me they have to consult with us. We know a lot more than these. People are getting educated in schools and getting educated in university. They have to consult with us. They know where. They have been destroying our hunting and fishing land. Our Elders have lived on the land a long time; they know where to go. They know where everything is. That is why we need Elders involved in all communication. You also have to have Indigenous Elders involved in all these consultation policies and decision-making.

Another Knowledge-keeper similar said, "I think they [indicating governments and industries] should sit together regularly and talk with our people for immediate remediation. So let's do it together or at least let us know the way passes through our territories."

In addition to discussing with Elders and Knowledge-keepers, Indigenous leaders play an important role. For instance, one of the Knowledge-keepers said,

> I don't know many political issues. I think it's up to our leaders. And if our leaders aren't on it, then we were out. We're always left in the dark, no matter what. And it's always up to our leaders to be able to push forward and do everything that we can do because that's what we voted them in there for. Right? It's they who can help us because not everyone is going to educate themselves about water and all that stuff. Right?

The Balance between Development and Environmental Protection

Community-based consultancy is explained as a balance between protection and development. Development should not be above their environment, but their environmental rights should be first priority over development. For instance, a Knowledge-keeper explained,

> As far as developments, it's a balance for us. When you come into a territory, there's already a balance existing there for a thousand years. And then somebody comes and says, well, I want to put a pipeline here. I want to drill here. I want to put a diamond mine here. Well, that upsets the balance. So what do we do? Just try and offset that. Somebody is going to lose something. Somebody is going to give up something so that this thing can happen. And that's where the trouble is. Where do we find that balance? Right? Big companies come to say, if you just tell us, we've got to write your cheques for a billion dollars, we'll do it as long as we know because we've got to know we want certainty. What will it cost us for development? For us, there really is no price to treat. It's too much. We cannot be sold for money. We can't put a price tag on it. Our Treaty rights can help us to make balance.

Duty to Consultation and Collaborative Work

Many community members explained that it is the government's responsibility that they create policies that make industries follow community consent. The community also discussed prior consent and community-engaged consultancy are not their choice but their legal responsibility according to Treaty obligations and UN Indigenous declarations. As the community discussed, the governments failed to complete their legal obligation. For instance, a Knowledge-keeper explained that

> The duty to consult and accommodate community needs is the government's legal responsibility that has been long overdue. Now we're stuck right now. We want governments to fulfill their obligations; if they had done so earlier, the pipeline spill disaster would not happen. Now we are struck, our water, land, our health got contaminated.

Another Knowledge-keeper explained that the duty of consultancy is not just taking advice for the communities but not implementing them.

> The consultation is just to be consulted and ask for advice. We have to sign off on these things when there is any sign of consultation and review they are implementing. Many consultancies are not signing off, and we are not seeing any actions that they have been working on these.

> When we just say, okay, you can consult us. But we have not gained any change or activities. We want you to do right. There has to be something a little more truth to it. Consultation needs to be meaningful to us. We have to have that right to stop anything that kills our water and land.

Sufficient Funding

Many community members explained that funding was deficient for the community and community-led consultancy. In many cases, there is no funding at all for the community. Without government funding for the communities, there would not be any meaningful consultancy. One of the Knowledge-keepers explained,

> Imagine the cost of measuring each impact for it [indicating pipeline spill]. But there is no consultation at all; there is no funding for consultancy. We went to see the impact, but there is no funding for consultancy to discuss with our members and governments. We can't have the province coming in and saying, well, we've looked at the impacts for you, and they are done.

Funding is also explained as necessary for hiring communities' lawyers and researchers to assess and measure their own impacts. For instance, one of the Knowledge-keepers explained that "we were demanding that you [indicating governments and industries] just give us the money so we can hire our own. This is their mess, they must provide funding." Similarly, another Knowledge-keeper explained why sufficient funding is needed: "you have to be self-sufficient and independent to protect us and our mother environment."

7 Traditional Healing

In this chapter, we shared our learning experience regarding how traditional healing became an important aspect of healing from pipeline disasters. As we know, the pipeline spill disaster is not new. We also shared how the community would like to use their healing process to create their future energy sustainabilities. It is important to note that our intention is not to explain the meanings of traditional healing for Indigenous people, nor are we trying to explain how they use their traditional healing in their everyday practice. We are sharing our learning reflections, focusing on the importance of traditional healing in learning Indigenous energy sustainabilities as part of our responsibility as Elders and Knowledge-keepers suggested.

Traditional Healing and Disaster

Traditional healing is an important part of Indigenous energy sustainabilities. It is explained as part of everyday practice. Meanings of traditional healing vary from person to person, from Elder to Elder, from Knowledge-keeper to Knowledge-keeper, from family to family, from community to community, and from land to land. Traditional healing is also explained as holistic, including spiritual, emotional, physical, and cultural. Indigenous traditional healing processes are not limited only to humans but also to non-humans. Traditional ceremonies refer to land-based healing interconnected with their land, water, animals, plants, insects, and so on. Community members discussed how land-based healings are referred to as traditional ceremonies, songs, dances, spiritual prayers, drumming, and fire. For instance, one of the leaders said he uses traditional healing every day as he observed how the pipeline spill disaster created genocide to the many underwater lives, water, land, and animals. He said, "whenever I recall this pipeline spill disaster, I become traumatized; even talking on this, I become frustrated as I do not see hope." He also explained how traditional healing has been helping him to recover and be strong for achieving their rights, "I've seen fires [indicating traditional spiritual fire] take out a whole, you know, wiped out everything when it comes back even stronger when running away." Another Knowledge-keeper explained the meanings of healing for the communities,

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"Healing is part of our Indigenous identity who we are in this land. Healing offers strength, hopes, and dreams during a difficult time, such as the recent pipeline spill disaster."

As community members discussed, traditional healing is to bring our own people out here and bring healing to them spiritually, mentally, and physically and use the space to make our people strong. Like the pipeline disaster, many disasters are happening to our Indigenous people. We want to do more healing to put the First Nations back into our children' lives, meaning our culture; before people have our culture, they'll be strong, they'll be able to stand on their own two feet, and we'll have a strong nation to learn to take care of ourselves and take care of our resources, taking care of the land.

- Taking Responsibility with Singing and Dancing
- Traditional Healing as Guideline
- River as Healing
- Follow Treaty Guidelines
- Taking Care of Land, Water, Plants, Insects
- Healing for Physical, Mental, Spiritual Health
- Healing for Traditional Medicine, Plants

Taking Responsibility as Singing and Dancing

Singing and dancing were explained as important ways to heal and understand how to take responsibility for self, land, and water. Many communities used to sing and dance to heal during pipeline spill disasters on their land, water, and Indigenous people. Their tradition is still ongoing; they do healing every day. Since disaster impacted seven generations, their everyday traditional healing has been healing them to be strong and take on responsibilities. For example, one of the Elders explained how their traditional dancing and singing helped them to understand who they were and their responsibilities towards their land. He said,

> If we take care of our land, then the land will take care of us. It's an opportunity for us to use our values and our teachings and our conceptions of wellness and how to achieve that to support our community members during difficult times. In short, I would see those projects, especially the ones proposed to run through this territory, as a threat to us reclaiming and self-determining our own health. We need to heal to be strong and take responsibility to oppose them.

Traditional Teacher

Traditional healing is explained as a teacher, guidance, self-reflection, and family member. One of the women Knowledge-keepers explained that

> The traditional healing is our teacher that I used to go to, and my healing always tells us to put our tobacco down. Like we used tobacco as a sacred medicine sacred tool, put your tobacco down and smoke your pipe. A pipe carrier provides a guideline for whole communities' healing and how to take responsibility.

Another Knowledge-keeper explained how a pipe carrier is their teacher.

> If you're a pipe carrier smoker. So it's all traditional, all spiritual". Our pipe carrier helps to understand the importance of our Mother Earth. Because of pipe carriers' thinking and guidance, we get spirits. My grandfather was a pipe carrier; he got his spirit from his grandfather. And if we ask them our former generation, they help us clean up this Mother Earth. It would work.

This knowledge-keeper also explained how their pipe carrier helped them understand their future.

> My grandfather, as a pipe carrier, was telling me that there is no way we can stop the pipeline. There's no way we can stop the government. He said, put your tobacco down. That they don't have a spill or that they. Have more means of being careful of. Having you clean that clean-up. That's his way of thinking, he's used traditional power, traditional pipe and tobacco.

Another Knowledge-keeper explained how their spiritual connection with land and water helps them to take responsibility to protect themselves.

> We're here to survive to hear, to sustain. We're here to protect, Not just the mother earth, but, you know, nature, the environment. We are here to protect Mother Earth. We're here to survive. We need to survive as a people. We never give our rights away.

Similarly, another Elder explained why all Indigenous and non-Indigenous people take responsibility to build spirituality with their land and water.

> Earth will heal itself. Humans will never survive it. Humans will die off. The earth will return. She [indicating earthing particularly local river] will be just fine. We're a little bit arrogant to think that in all this climate change stuff and everything that's going on. To think that we have we could have such a big impact to repair. She will be just fine on her own. If you go back to that site [indicating contaminated river site for pipeline disaster] now, you will see the plants flourish, and the animals got impacted. Who is suffering? We are all suffering. A human will never survive in there.

Healing and Taking Care of Land, Water, Plants, and Insects

Community members explained how their traditional healing helped them to understand the importance of all non-humans and their lives, and also take responsibility for land, water, plants, and insects. For instance, one of the Elder said,

> No matter where we are in the world as Indigenous peoples, we share a lot in common. Food, humour, past times, landscapes, struggles. As Indigenous peoples, along with other things our traditional healing, we are doing our best at protecting our Mother Earth and strengthening our relationship with her. No matter where I cross paths with my Indigenous brothers and sisters, I'm comforted by them, the elders, the food, the songs, the ways of life, the bodies of water, and the landscapes.

Another Elder explained how they are spiritually connected with all non-human beings, such as their river water, many living under and above river water, plants, insects, and animals. He expressed that the river is a healing and spiritual place for the communities.

> Our river is a secret place to us. There are many traditional and real stories associated with our river. And some of the traditions that we have in relation with all these areas. We know that there is any spiritual significance to that river we do have. Close ties to some of those, and definitely there are part of our culture.

Similarly, a Knowledge-keeper explained how river water, animals, and insects are spiritual land to them and protect spiritual connections.

> When we did a study on our forestry, see where the mining site's going to be. We did a study of all our traditional areas where we hunted and there along the roads and then most of them, their significant sites and spiritual sites along that river. I have the maps; well, was pointing out that the river has been part of this community for a long time and will probably continue in the future. So this has to be protected. You can see on our maps there that the river our border goes across the river. That's what I thought I was talking about. We're one of the few bands that actually have the river rights.

Treaty Rights and Natural Resource Management

Many community members explained that Indigenous traditional healing and Treaty rights are deeply interconnected. Many Elders suggested that they cannot be separated from each other. For instance, an Indigenous Elder explained,

Our traditional healing and treaty rights are connected. The oil spill impacted our traditional healing. It is more impacting as Canada's governments and industries are not respecting our treaty rights. Essentially what happened was we signed a treaty. We shared our land; we were promised to leave as we were able to hunt fish traps and traditional gatherings. We didn't know that governments would not respect their promises. So from the government's perspective, they just wanted to get these treaties signed so they could implement an act, the parliament, that would move forward to governor people as wards of the state. But in the treaty, we didn't think of it that way. From our perspective. Our rivers, land, water, everything is our spiritual place.

8 Communities' Visions/ Perspectives on Policy Recommendations

In this chapter, we shared learning experiences from the community perspectives on building communities' energy sustainabilities with their Treaty rights, community capacity building traditional knowledge, culture, and practice. As community members explained, community perspectives on their visions are important for developing communities' energy sustainabilities. Community members also discussed how those community Elders', Knowledge-keepers', and leaders' perspectives come first once governments and industries consider community visions/recommendations for their policy change and/or development. According to community members' stories, some of the following themes are important (Table 8.1). We summarize communities' visions/recommendations for meaningful implications of Indigenous energy sustainabilities.

Figure 8.1 shows how and why we need to Decolonizing ways of knowing and doing energy sustainabilities from and within Indigenous perspectives.

Information Access

The lack of the right information at the right time has been critical for many Indigenous communities in Canada.

All the community members expressed that they never get the right information at the right time. Thus, for all the communities, one of the important visions is to get the right information on time to get involved at the very beginning. Right information access can help the community to prepare and act on time to deal with the disaster. The community also discussed that if they had the right information initially, they would be able to suggest and prepare how to minimize the negative effects on their land, water, and health. One Elder explained the importance of information access to the right as follows:

> You ask a question regarding our concerns. We should be notified in the right way; we do not know anything that happened; we are blank. That

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Table 8.1 Themes and Sub-Themes Communities' Visions/Perspectives on Policy Recommendations

Information Access	Right Information at Right Time
	Create Community Information Storage
	Regular Community-Meeting
	Ongoing Conversation
	Add in Educational Curriculum
Consultation Process	Community Consultation Funding
	Guide by Elders and Leaders
	Follow Treaty Responsibilities
	Community-Based Mapping
	Community-Based Research Labs
	Ongoing Community-Based Impact Assessments
	Respect Elders' and Knowledge-Keepers' Perspectives
	Engage Youths
	Respect Diverse Perspectives
	Protecting Water, Environment, and Land
Negotiation Process	Ongoing Conversation
	Guide by Elders and Leaders
	Follow Treaty Responsibilities
	Signing Consent
	Ongoing Consent
	Different Negotiation According to Community to Community
Community Capacity Building	Youth Engagement
	Funding Support
	Legal Support
	Haring More Indigenous
	Develop Educational Curriculum
	Develop Traditional Knowledge-Based History
	Adding in Education Curriculum
Redefining Concepts from Community Perspectives	Treaty
	Development
	Sustainability
	Consultation
	Impacts
	Negotiation
	Land and Water
	Science
	Research
	Balance between Development and Protection
Sustainable Development	Land and Water Protection
	Treaty Responsibilities
	Economic Opportunity
	Creating Possibilities
	Haring Indigenous Youths
	Consultation Predictability
	Sustainable Pipelines
	No Pipes in Water and Scared Areas
	Balance between Development and Protection
	Centring Land and Water Protection
	Centring Plants and Traditional Area Protection

(*Continued*)

Table 8.1 (*Continued*) Themes and Sub-Themes Communities' Visions/ Perspectives on Policy Recommendations

Building Sustainability	Follow Treaty Responsibilities
	Respect Elders and Knowledge-Keepers
	Owning Research
	Developing Research Lab
	Community Capacity Building
	Community Lead Impact Assessment
	Collaborative Decision-Making
	Centring Community Needs
	Knowing Elders as Scientists
	Balance between Development and Protection
Consent Signing Process	Community Elders
	Community Leaders
	Provincial Government Representatives
	Federal Government Representatives
	Industries Representatives
	Researchers
Overcoming Challenges	Discuss with Elders
	Discuss with Leaders
	Community Meetings
	Right Information at Right Time
	Transparent Communications
	Media Attention

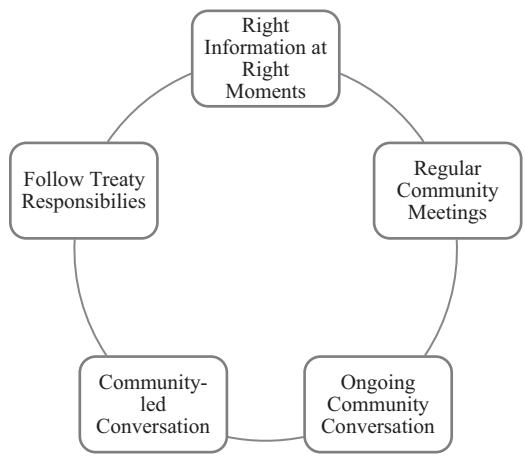

Figure 8.1 Communities' Visions/Perspectives on Policy Recommendations.

should be through the province what affect in our river. We do not know anything. Who knows if there will be many spills in future. Maybe two or three of them will break tomorrow or ten years or now. How we will know, I would be a huge impact on our area here.

One of the Elders suggested how Indigenous people need to create community-led information storage so that community can get access to true information and act on time. He said,

> we should have information access to all the water systems in First Nations in the province. We need to make sure that we are doing our own source of water protection with the right information. But it has to be a template already existing for other First Nations. If we have our own information access, when we do our water protection plans from other sources, we would be able to know where there are potential risks.

Regular Community-Meeting

Regular community meetings are one of the top priorities for all the communities. Most community members explained that they did not have a single meeting. Many community members expressed that they did not even know what happened to their water, land, and health. Still, they suffer from various health issues right after the pipeline disaster. They also expressed that community members were always open to any form of a community meeting. Unfortunately, there was no interest shown from any agency, particularly from local, provincial, or national governments and industries. As an Elder explained, "We have opened our door. We're talking about relations. We're talking about abuse and the control of our own water. So, coincidentally, we are over here. We are open doors here. I'm very honored to be part of that." Nelson: we do not know what's going on. We like to talk to working groups through consultation with external entities or provincial or federal people. Let's be honest in our conversation. Many community members also explained that regular meetings with community members are not only helpful for the community to get informed, but also helpful for governments and industries for collaborative plans and action in building meaningful consultations for energy sustainabilities. One of the Knowledge-keepers explained,

> Most of the time they [indicating governments and industries] don't do it. They just go ahead and do whatever they want. It would be nice to have meaningful consultation through ongoing meetings with communities. It is. It seems like we're always last. Whenever we get impacted, we always keep in dark areas with no information or wrong information. It seems like we're always left behind. It seems like we're always left out. We want to have regular meetings.

Another Knowledge-keeper is an ongoing conversation, and meetings are crucial for meaningful consultation. He said,

> So when you're talking about what is consultation. Consultation needs to work together with regular conversation; otherwise, it will not work for us. The two groups [indicating First Nations and Canada Crown] have to come together to work. Otherwise, we got nothing.

Another Elder said, similarly,

> Both. Government and companies. They should come here to our community. Our doors are open for all. We as First Nations, have been left out of everything since white men came here. We want to be part of it. Plain and simple. We want to be upfront, we want to lead That's what we want for our future.

A Knowledge-keeper explained how governments and industries could do meetings with communities by saying,

> Letters should be written to our leaders and our community council. You know, it should be done. Let's discuss this and let's see how the people downstream from wherever they're going to build a pipeline or get and see how going to see reality.

Adding Community Perspectives on Sustainability Education Curriculum

Many community Elders expressed that they want their future generations to learn about this disaster and their visions of building energy sustainabilities. They explained that their future generations hope to reclaim their energy sustainabilities from and within their learning. We discussed some of the community perspectives on Indigenous energy sustainability visions in the following.

Decolonize the Meanings of Impacts in Environmental Education

Most of the communities' Knowledge-keepers, Elders, and leaders suggested sustainability education needs to include decolonizing the meanings of sustainability education's impact from and with Indigenous perspectives. The community discussed the current form of environmental impact reviews in EE. They considered the current environmental impact created by Western colonial processes. The colonial way is a minimalist colonial view, such as impact only for a limited time (within a few days of the spill). This colonial perspective focused on narrow perspectives of impact, such as how

much colonial research restricted water areas without considering the holistic nature of water interconnected with land, plants, and animals. Western environmental researchers from industries, governments, and academia tended to focus on only a few places when collecting river water for testing within a few days of spills. Communities *live* by the river and have everyday interaction with it. Nor did the Western perspective of environmental impact include community perspectives and concerns.

Most of the communities' Knowledge-keepers, Elders, and leaders suggested that we decolonize the impact of education regarding learning what happens and how to act based on what is happening. The meanings of Indigenous sustainability education differ significantly from those of Westerners. Their values are holistic and based on everyday knowledge and practice. For instance, pipeline spills impact not only water but everything human (i.e., physically, mentally, spiritually, culturally) and non-human (i.e., water, soil, plants, insects, animals, medicinal plants). Therefore, the decolonial implications of impact in sustainability education include everything living and non-living. Redefining the meanings of impacts from and within Indigenous perspectives will help Indigenous people, now and future generations, in taking responsibility for protecting their land and water. One of the Elders said, "The impact of the pipeline spills is still ongoing, it will be continued for seven generations, and our children need to learn these."

Decolonize the Meanings of Disaster in Environmental Education

Most of the communities' Knowledge-keepers, Elders, and leaders discussed that most of their children and youth do not know about the pipeline disasters and their impacts on their land, water, and health. They also explained that the meanings of disaster to Indigenous people are very different from the Western meaning and Western disaster research. They recounted how most Western researchers from universities, industries, and governments failed to include Indigenous perspectives in explaining disasters in their study. According to many Elders and Knowledge-keepers, disaster needs to be seen as holistic. Examples were provided, including how pipeline spills created many disasters and cascading disasters through food chains and webs of life through impacts on water, animals, food, sustainability, and many more. Communities' Elders, Knowledge-keepers, and leaders want EE educators to teach the diverse meanings of the disaster from Indigenous perspectives. They referred to these disasters as genocides on their traditional medicinal plants and spiritual animals.

Decolonize the Meanings of Communication in Environmental Education

Community Knowledge-keepers, Elders, and leaders argue that none of the agencies (referring to governments and industries) communicated with Indigenous communities properly and in a timely way. In many cases,

communities explained that both governments and industries wanted to hide the disasters. Whereas communities wanted to inform their children of the truth of pipeline disasters with true meanings of communication, governments and industries did not do so. As a result, many communities were left behind and left out of all forms of communication and governmental decision-making during and after the cleaning process.

Poor communication increased many disasters. For instance, governments disseminated misinformation during and after a pipeline spill; they denied the true extent of the spill. They did not develop collaboration with communities or even communicate with them. Therefore, it was suggested that communities need to be part of any decision-making process to lead the disaster resilience process. Being part of the decision-making process would ensure better, more informed, and timely communication and an ability to influence the future, its outcomes, and impacts.

Reclaiming Community-Based Monitoring in Education

Communities shared their perspectives on how they want to see the employment and advancement of education, such as through community-based consultancy. The communities want their children to learn that the community is at the centre of decision-making, knowledge assembly, and dissemination. A relational perspective advances the meaning and importance of community-based consultancy. Community perspectives are central, as all three communities want community-based consultancy with their community members; their communities want to lead, guide, and collaborate.

Indigenous education can bring self-determination to the communities. For instance, a Knowledge-keeper explained that "you have to be self-sufficient, independent. Colonization has taken that away from us. So even when people get a job, they're still not independent in their heads. We need to educate young people to get out there, start working."

Ongoing Consultation Process

Ongoing consultations with community members, leaders, and Elders are important visions for developing communities' energy sustainabilities. As many community members explained, while communities' visions vary according to Elders, leaders, and members, ongoing consultation helps bring collaborative perspectives.

Ongoing Community Consultations with Elders

One of the important community visions is ongoing community consultations with community leaders. One of the Elders explained why ongoing consultancy is important and community leaders can guide it.

> I think it's up to our leaders. And if our leaders aren't on it, then we were out. We're always left in the dark no matter what. And it's always up to our leaders to push forward and do everything that we can do because that's what we voted them in there for. It's them that have to help us because not everyone will educate themselves about water and all that stuff.

Similarly, another Elder explained Elders as their strength.

> I think the governments and industries should have many consultancies with community Elders. the government and companies should be a lot of consultation with the elders. They know, the history, everything. They know the history of the treaties and how we got here, where we were from. The elders, what we see, that is our strength.

Other Elders similarly explained "You know, I think we should sit together regularly and talk and talk about upcoming projects or immediate remediation So let's do it together or at least let us know way passes through our territories."

Ongoing Community Consultations with Leaders

The community also explained that ongoing consultancy with community leaders is important for responsible governments and industries. One of the leaders explained,

> that community leaders can make sure that they're in a safe location if they monitor pipelines. And then there are all kinds of along the pipeline; there are pumps and batteries. And there's not just a straight pipe. There are all kinds of different things. So each one of those monitoring makes sure that there are no leaks there. Leaders know all these doctors by consulting with community members.

Ongoing consultancy with Elders is an important vision for the community to build their energy sustainabilities. One of the women Knowledge-keepers says,

> Our elders should be consulted because they've been on Mother Earth longer than you and I combined. And I had one of my elders die up in Sandy Bay and he told me, you know they have to consult with us. Our elders know more than them [indicating governments and industries]. They [indicating governments and industries] have to consult with our elders. Our Elders have lived on the land a long time, and they know where to go. They know where everything is. That is why we need Elders involved in all communication.

Another former leader explained the important role of a community leader to inform general members and follow Treaty responsibilities.

> As being Chief in the past, it is very important that when you [indicating governments and leaders] are going to move ahead with a project, you're going to get started getting involved in engagement and consultation, that you're able to meet with your band members, those that are utilizing the land or elders or whatever the case may be. Because when you sign any type of contribution agreement yearly, it says that your responsibilities these funds are given to you for the health and welfare of your band members. So when it comes to aspects of leaders' engagement and consultation.

For instance, the leaders explained consultancy is as critical for both community and governments,

> I was elected to ensure that things are done right with people according to our treaties, not just my people but the land around us. The Treaty Six territory that we signed Treaty on that like it as Chief, we stand up and protect that no more damage be done. Even one chief stands up alone because other chiefs are not as educated or spiritual as cultural. A lot of them don't even talk our language anymore. Certainly, many of them have never had the opportunity and benefit from growing up with their elders to know the teachings and the real responsibilities of leadership. So it's very much a lonely position to speak up on these things because it's easy to sideline you when you're all alone. And the great majority that doesn't know what you're losing is easy to specify.

Follow Treaty Responsibilities

All the communities suggested that all stakeholders would follow Treaty responsibility, including governments, industries, and all First Nations. The community explained that their Treaty rights could help better negotiations to protect their land, water, and people.

> Negotiations started with the treaty, but unfortunately, governments got greedy and didn't care about these other things. So it's a very messed up system that we're in. And until we get to a legal avenue from treaty rights, where true measures and a true path forward are identified and honourably followed, we will never have an opportunity to ask these other questions.

A leader explained how following Treaty responsibility could help the community and enrich Canada's land and water resource management strategies.

> The root responsibility is to follow treaty responsibilities. First Nations have full rights on their land and water in Treaty rights. It doesn't matter if we become rich from the development projects. When the environment is destroyed, you're destroyed too. It's not just poor people. It's not just Indians. We are going to suffer; our future generations are going to suffer. All people are going to suffer. It is high time that all people should start listening to that message [indicating treaty rights]. Unfortunately, the only people that are speaking up are First Nation people. So it's time for those people who love the land. They love to have their children and grow up in a safe, healthy country. It's time for them to get together and say we will not be blindly misled anymore. So I hope that enough people in Canada can get together and force to protect treaty rights. I hope all people will get together to force governments and industries not to destroy our water and environment for greedy projects. So I do have great concerns, but I never give up hope. I pray a lot, and I go to many ceremonies to pray for all people, pray for Mother Earth, and pray for our children and our grandchildren.

Children Learning Treaty Responsibilities

All the communities suggested that their children needed to know how Treaty rights violence is a historical issue for all stakeholders, including governments and industries. Treaty rights violence consists of the failure to honour, respect, and fulfil treaties. Environmental sustainability education in many Indigenous communities' schools failed to bring truthful education regarding Treaty rights violence in communities. Communities suggested that "from the very beginning, treaty rights were overlooked during pipeline development, spills, and after the spill." Elders and Knowledge-Keepers believe that "if the government would follow the Treaty and respect Treaty rights in the first place, there would not be any spill, nor would the community have faced this disaster." In the Treaty, all solutions were provided. Therefore, communities think that "Treaty rights violence is a significant issue for Indigenous people and the Treaty has all the solutions regarding what to do and how to do it" and "our children need to learn all of these."

Community Capacity Building

While we discussed community perspectives on their energy sustainabilities, they expressed that their community capacity building is one of the critical visions. The theme of community capacity building is explained with many subthemes, including youth engagement, community-based impact assessments, a community-led research lab, respect for Indigenous Elders, and Knowledge-keepers' perspectives.

Youth Engagement

Youth engagement is an important aspect of communities' visions for energy sustainabilities. For instance, one Elder explained, "I think we really talk about capacity building within our community, strengthening our community." The community capacity is also deeply interconnected with youth engagements. Similarly, another Elder explained how youth engagement is important for community capacity building by saying,

> when you promote capacity building when you promote the ability to internally admit your people become stronger. This is how you do it. You give them that answer. You lay out a framework within the young people, within the youth, and that's it.

Ongoing Community-Based Impact Assessments

Community-based impact assessment (CBIA) is a major community vision for building Indigenous energy sustainabilities. Community members explained that the CBIA could be helpful in several ways, including following community-based mapping, developing a research lab in the community, building youth capacity, bridging gaps between Western and traditional knowledge, and ongoing community-led monitoring. For instance, a Knowledge-keeper explained, "I think we should be invited to building community-based mapping and monitoring, In fact, everybody in the community should be involved community-based impact assessments." Another Knowledge-keeper explained how the CIA could help bridge gaps between Western and traditional knowledge by saying,

> I think both governments and industries should help us develop our capacity in our assessment. The provincial government monitors these things and makes the rules and regulations. And if they're not making it harsh enough regulation, then they should be held responsible. If they need to go back and review their legislation or what regulations they have and make them stronger. But if they're going to have weak regulations and should also be responsible for cleaning up, you know.

Another Knowledge-keeper explained how CBIA could help protect communities from future disasters.

> Through community engagement, we would make sure that they [indicating governments and industries] watch their pipelines closely like every day, not just once a month. If we don't monitor them [pipelines], there will be more wrong information and more disasters.

Community-Based Research Labs

When we discussed CBIA with community members, we were told that they wanted to see a research lab in the community so that the people could know how to do research by themselves. Elders and Knowledge-keepers want their youth to engage in learning monitoring from Western research. Through the community-based research lab in the community, they also want to bridge between community knowledge and Western knowledge. For instance, a Knowledge-keeper explained that

> Probably more intelligent water testing. If they [indicating western researchers] could have found a program for communities downstream to send in water samples themselves if they could share their findings with us and share our findings with them. I'd feel a lot better about that.

Respect Elders' and Knowledge-Keepers' Perspectives

Community members explained that one of their visions is to respect their Elders' and Knowledge-keepers' perspectives for research, policy developments, and project programmes. For instance, one member explained that scientists, governments, and companies need to respect our traditional Knowledge-keepers and leaders. We were out if our leaders weren't involved in our consultation process. We're always left in the dark, no matter what. And it's always up to our leaders to push forward and do everything that we can do. Our Elders and Knowledge-keepers have proper knowledge about how to help us because not everyone is going to educate themselves about water and all that stuff. Right. Other people cannot do other things.

Protecting Water, Environment, and Land

Protecting Indigenous water, environment, and land is one of the most important communities' visions for developing energy sustainabilities. Community members explained there is nothing on top of their land and water. Profit and/or development should be over land and water. One community Knowledge-keeper explained that protecting our land and water is our first responsibility. For me, the pipeline should not be in the river. You need to place it somewhere else, do not put it in the water. Water is life. Everything is connected with water. Wildlife (birds, deer, moose, and others), plant life, and human life are connected with water. It's a huge impact. This is a big delta.

Another Elder similarly explained,

> In the context of the oil spill, I want my river back. OK. I ideally don't just want my river back that I had on July 20th, 2016. I would like my river back to what it was when it wasn't called Saskatchewan; this is like

> that treaty. I want that water back. The river was called the big project with the north.

An Elder said, similarly,

> We're here to survive, hear and sustain. We're here to protect, not just the mother earth, but, you know, nature, the environment. We are here to protect Mother Earth. We're here to survive. We need to survive as a people. We never give our rights away.

No Pipes in Water and Scared Areas

The community explained that they did not want to cross any pipeline over the water and were scared of land to protect them. Such as an Elder explained

> that First Nations don't like the pipelines going through land because this is the land that we hunt on and fish on it. This is our livelihood. We like our wild meat, and our animals drink out of the water. If river water gets polluted, what's gonna be happened in their system? Right? It's not good to eat. Right? And it's all because of broken pipelines like that, you know, or factories putting their chemicals into our water, into our health. Right?

Legal Support

Legal support is an essential vision for community-led environmental sustainabilities. Many community members explained that First Nation communities need legal support as it has been missing from the very beginning. For instance, an Elder said,

> Everything that the governments do, the federal, provincial, the municipal government. It's illegal because they haven't consulted with us. Not only that, it's not about consultation, not about telling us we're going to do this. I believe we do not have the right to go ahead and do whatever the Huskey [indicating energy industries] want to do in 6 territory. That's my firm belief. The biggest problem that we have is that First Nations people do not have to assess legal support.

Another leader explained that they need legal support to confirm that the community has the power to fight for their land and water rights.

> Need the Indigenous definition of the concept of Fiduciary in the legal system. The government of Canada does not see that they have a fiduciary obligation to First Nations. OK. They won't define fiduciary.

> For me, a fiduciary means that our rights and interests come first. Even ahead of theirs, in this instance, on the oil spill, on any damage to the environment, how we'll have our rights and interests come first. They haven't gone right.

Indigenous legal support, as explained, is important for achieving their rights to governments. One of the leaders said,

> I think we should go and meet at the World Court First Nations against the government of Canada. Because Canada has laws right now, but they don't listen to our Treaty rights. We need legal support to protect our water and land.

Redefining, Rethinking, and Relearning

Community members explained that many non-Indigenous people from governments and industries have misconceptions about Indigenous communities' meanings of development, Treaty rights, and many more Indigenous terms. Community members' vision is that governments provide educational opportunities to educate, redefine, rethink, and relearn their peoples and industries. An Elder explained how non-Indigenous people have misconceptions about Indigenous Treaty rights.

> When we signed the treaty, we agreed to share the land and the resources, and we're not anti-development. Okay? But when you agreed to share the land, resources, and governments, did we mean to monetize them? Our land and water are not for profit, Right? Everything is wrong here.

Another Elder similarly said,

> I totally believe that nobody's ever going to change my mind. Elders have released a treaty, and we agreed to share it. They didn't say we would give up our treaty for cash. They didn't say we would give up our half. We never agreed to be governed. We agreed to be treated as equals because we signed a treaty as equals. That's all it is.

Similarly, the community discussed how to redefine the concepts of development, impact, challenges, and disaster, as we explained in our previous chapters.

9 Leading Change

Leading change in Indigenist methodologies involves developing and recognizing the skills, knowledge, aptitude, attitude, and perseverance to develop good working relationships with Indigenous communities, leaders, and individuals (De Padua & Rabbitskin, 2017). However, most leadership definitions and studies are developed and perpetuated in the Western context (Yuki, 2010). More than 95% of leadership studies are North American in origin and 73% are based in the United States, with less than 2% being Indigenous (Zhang et al., 2012). More Indigenist leadership scholarship and research are required.

Leadership is practised individually, but based on both a relational (person to person) and contextual (specific to social and cultural systems) circumstances (Zhang et al., 2012). Indigenous leadership considers the growth of Indigenous people into positions of leadership and the roles Indigenous leaders play and the ways they play those roles (Zhang et al., 2012). This chapter explores and documents Bill Marion, one "water warrior's" life of water leadership, and the important role of Indigenous water leadership in decolonizing structures and advancing Indigenous rights in the future.

Bill Marion, a James Smith Cree Nation Elder, has championed water, Indigenous water rights, and sustainability throughout his life. Bill commenced working as manager of Public Works/Water and Wastewater Utilities for James Smith Cree Nation in 1985 and has continued in this role to today. Because of his leadership and hard work, Bill has been privileged to sit on all the committees provincially and nationally concerning water over the years. Bill set up environmental standards for First Nation operators to ensure water quality is maintained in drinking water systems on reserve. Over the years, Bill has had a lot of involvement and work in helping and training Indigenous water operators. Having operators who know what is happening in the community water and sewer system is very important. These people ensure water quality and infrastructure requirements are met and ensure certain standards are maintained. Having people outside of the community perform these tasks is a challenge as they generally infrequently perform monitoring and reporting functions. Further, they are unaware of

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changes in water quantity due to hydrological flows, climate variability, or local events which local workers can observe and react to.

Bill Marion's investigative work surrounding water discovered in 1992 that a mine across the river was depleting the Mandrill aquifer. Maps from the University of Saskatchewan show that the Mandrill aquifer is under the James Smith Cree Nation and is depleting; potentially, the Empress Group aquifer 340 feet down below James Smith Cree Nation is also depleting. Bill also has concern about Rio Tinto (the mining company) located nearby, because once an aquifer is depleted it doesn't always refill – and Rio Tinto's plan is to deplete half the aquifer. As a result, James Smith Cree Nation is concerned about sink holes and what happens after the mining company leaves the area. If Rio Tinto depletes the aquifer 600 feet below James Smith, there may be other environmental impacts in addition to sink holes. So, both the James Smith people and Bill Marion worry that if both aquifers are depleted and collapse; what will be the implication? Further, what degree of uncertainty is there which might prevent action to address this issue?

In 1992 Bill organized a "Water Conservation Workshop" at James Smith Cree Nation and in attendance were the Department of Indian and Northern Development (C. Bowman), Jim Rogers and Ester Kienholz of Environment Canada, Gary Tenaschuck of Water supply and waste water treatment, SaskWater, James Ransom, Environmental Unit, Assembly of First Nations, Alec Johnson, E.H.O., Medical Services, Prince Albert, B.C.C.S. Grade 12 Class, three Elders, and one health board member. Due to Bill's every expanding understanding of water and water advocacy, in 1993/1994 he successfully obtained a water bylaw for James Smith where all water on the James Smith reserve land belongs to the James Smith Cree Nation, which includes ground water and surface water. A Fishing bylaw was registered with Indian and Northern Affairs Canada (INAC), a federal government department. Uniquely James Smith Cree Nation owns the land beneath the river bed.

In 1997 the James Smith Cree Nation Chief and Council were concerned about water at that time. After living on these lands, a long time, protection of water quality was something James Smith was trying to develop. As a result, Bill started working on a water framework and ever since has developed and expanded on this framework (the fishbone detailed below). James Smith's initial activities started with their own source water protection planning. Bill Marion's leadership wasn't restricted to actions within his local community.

In 1997 Bill formed the First Nation Water Association, because of his passion and concerns surrounding water in his First Nation and its quality. With this he established a relationship with a North American certification authority for training and meeting water quality standards on reserve. In 2001 Bill Marion went to a freshwater summit in Ontario and received a lot of information on water acts, policy, etc. After this, the Federation of Sovereign Indian Nation of Saskatchewan (FSIN) asked Bill, as a technical

expert, to attend a national forum to develop water resource legislation. At this time, the participating governments were trying to incorporate provincial law which was difficult as James Smith Cree First Nation is not subject to provincial jurisdiction.

In 2001 the Assembly of First Nations nominated Bill Marion to participate in a Summit on Freshwater Security in the Mohawk Territory of Wahta organized by Dennis Mills for the Parliament of Canada. The Summit focused on issues of freshwater quality, imports and exports of bulk water shipments, drinking water, and transboundary water quality issues. In 2002 Bill Marion prepared a First Nations Water and Wastewater Systems Certification and Classification Report. This included background, a certification programme constitution, certification standards, Canadian Water and Wastewater Association information, Operator Certification Standards USA, a 1998 First Nation facilities classification, Model Act and Regulations, and Circuit Rider Training Program. In 2003 Bill made a presentation of his knowledge about Indigenous water and its protection to the Indian Claims Commission in Ottawa. A community development plan and a preliminary investigation for water supply, sewage disposal, and roadway requirements for James Smith were presented.

William Marion (known as Bill at this community) developed the Cause and Effect Diagram (Fishbone), which was copyright in 2009. James Smith is one of the only First Nations which owns its river bottom that is formally documented. This framework was developed as something to represent First Nations, and community talking about development, its impacts, and climate change.

In 2011 Bill prepared a rebuttal against Indian and Northern Affairs Canada/Federal Government and their "Proposed Water and Wastewater Legislation and Consultation Process Leading to the Development of a Water and Wastewater Regulatory Regime for First Nations" with the Introduction of Bill S-11, an Act Respecting the Safety of Drinking Water on First Nation Lands. This objection documented that the proposed water legislation excluded the principles of Indian treaties within the legislative process, restricted First Nation representatives from referencing and implementing the principles of Indian treaties within the legislative process, and thereby contradicted s. 35 of the Constitution, infringing upon Constitutional lawmaking.

Bill has finished in 2021 a "Visioning workshop" – a three-year research project with the University of Saskatchewan. This workshop was eye-opening as people talked about policy and identified the shackles holding Indigenous people down all these years. The Indian Act negatively impacted First Nations and prevented capacity building. For example, First Nation people couldn't leave the reserve without the consent of their Indian Agent. First Nation people have a difficult path and will continue to work hard in the future. SFIN started here at home in James Smith doing a pilot on water regulations, but it is something Bill Marion has been doing all along since the start of his "Water Warrior" career in 1985. But Bill Marion's leadership

and work is not over yet. New water threats have emerged and are emerging, and James Smith Cree Nation looks to the Treaty relationship.

The treaties and use of the land by farmers were understood to be only to the depth of a plow. Although discussions of Treaty between First Nations and government representatives include acknowledgement that white settlers were coming to farm in the Indigenous lands, the Cree in Treaty 6 understood this quite differently from the English. One person recounts:

> My father was present for the first signing of the treaties. He would indicate with his hands approximately one foot in depth: "that is the depth that is requested from you, that is what the deal is, nothing below the surface that will always belong to you."
>
> (Neu & Therrien, 2003: 75)

Further the 1930 Natural Resource Transfer Agreements contradicted the Treaty. The Saskatchewan Natural Resources Act, S.C. 1930, c. 41, ostensibly transferred Saskatchewan's Crown lands and natural resources (including water) from the federal government to the provincial government, without Indigenous consent or consultation.

Husky built a pipeline under the Saskatchewan River over 60 years ago, without James Smith's consent. This construction conflicts with the treaties because of this oversight. A Husky Energy Pipeline ruptured near Maidstone, Saskatchewan, on July 21, 2016 due to riverbank destabilization (Saskatchewan Cities' Water…, 2016). Two hundred twenty-five thousand litres of crude oil was released into the North Saskatchewan River, upstream of the James Smith Cree Nation (Saskatchewan River Water…, 2016), and eventually made their way to the James Smith Cree Nation. Bill Marion immediately noticed the spill. Bill Marion stated:

> I was checking every day and finally the oil spill came here. I could tell because I saw bubbles coming and I looked in water and could see things - particles falling and flowing through the water. What I was seeing was really the oil spill. The actual spill in Maidstone maybe over 350 kilometers away, but could see it here, being owner of that river bed.

The Husky Oil Spill impacted James Smith Cree Nation's water, fishing, hunting and trapping, and drinking water supply. This pipeline spill is an illustrative case study of the harm of not including Indigenous leaders like Bill Marion, of not engaging, listening, and hearing Indigenous leaders and Elders in the building of pipelines and the process of disaster response, recovery, and planning. Although all of these aspects are equally important, this chapter focuses on Indigenous leadership in development and planning.

Indigenous traditions and, most importantly, Indigenous people and their worldviews offer a rich wealth of oral and written history that has

contemplated the interconnection of all things and the complex system of the Earth in which we are living. While alert to the dangers of appropriation and generalization (thereby losing the rich diversity of Indigenous practices), "Indigenous people can teach the world how to care for the planet" (Morin, 2015). As Bill Marion's leadership demonstrates, Indigenous sustainability activities are not new. Indigenous worldviews or onto-epistemologies, together with colonization, have contributed to numerous environmental actions by Indigenous people to protect the Earth. Historically, there have been many conflicts and Indigenous acts of resistance in Canada over natural resources, including forests and water (Baijius & Patrick, 2019; Maclean et al., 2015). The Environmental Justice Atlas documents 64 cases in Canada, including conflicts over mineral extraction, hydro dams, coal mining, and recreational resort expansion (Environmental Justice Atlas, 2021). While Canadian Indigenous peoples have long been stewards of the land advancing environmental justice, at least since 2008, Indigenous peoples have actively occupied a dual role in also combating climate change and demonstrating climate change leadership (Etchart, 2017), protesting development of the Alberta oil sands for health and climate change reasons (Tenenbaum, 2009), mining using the process of fracking (Parfitt, 2017), as well as building and relicensing pipelines (Hurlbert & Rayner, 2018).

The primordial relation of Indigenous people is with Mother Earth. The Assembly of First Nations expression of Indigenous laws and practices considers the Earth and our relations to it and describes it as "Honouring Earth":

> From the realms of the human world, the sky dwellers, the water beings, forest creatures and all other forms of life, the beautiful Mother Earth gives birth to, nurtures and sustains all life. Mother Earth provides us with our food and clean water sources. She bestows us with materials for our homes, clothes and tools. She provides all life with raw materials for our industry, ingenuity and progress. She is the basis of who we are as "real human beings" that include our languages, our cultures, our knowledge and wisdom to know how to conduct ourselves in a good way. If we listen from the place of connection to the Spirit That Lives in All Things, Mother Earth teaches what we need to know to take care of her and all her children. All are provided by our mother, the Earth.
>
> (AFN, 2020)

One Indigenous Knowledge-keeper expressed the universal nature of this:

> The root responsibility that First Nations have and always lived up to is respect for Mother Earth. It's not just poor people. It's not just Indians. Are you going to suffer? It's all people. And it's time that all people should start listening to that message.

This conception of inter-relatedness is markedly different from a perspective wholly focused on leadership as an exercise of human agency. Leadership in the 21st century has much to learn from Bill Marion and the Indigenist methodologies. Burdon argues the opposite, that the centrality of human agency should be acknowledged in the new geological epoch of the Anthropocene instead of constructing a non-Anthropocentric ethics (Burdon, 2020). He argues that wilderness ethics and ecological integrity can no longer provide accurate frames of thinking, given the current state of ecological degradation or planetary reality. We as Indigenous, and non-Indigenous authors disagree. While we agree with Burdon that fresh thinking is called for to deal with the uncertainty, we argue this fresh thinking has existed in Indigenous knowledge from time immemorial.

In Indigenous law a person's agency is differently perceived. The responsibility of a person extends to the power and agency they possess. Where this power ends, is where collective responsibility begins (Napolean et al., 2020). Indigenous leadership and practices are diverse. They can't be overly generalized, as practices are a collaborative construct of the Indigenous people that practise them, and practices can't easily be codified into rules (Tamanaha, 2000). Leadership is not only a question of human agency, but Indigenist leadership is one of the interconnections, interrelatedness, the structure and agency of all people and all things, in which knowledge and practice are held by Indigenous Knowledge-keepers. While many Indigenous people are cognizant of their communities' need to be involved in economic development, leaders balance environmental protection and these principles of interrelatedness in development decisions (Artelle et al., 2019).

Indigenous practices are premised on networks of relations and the people who are the subjects and agents of these networks (Nedelsky, 2013). One Indigenous Knowledge-keeper expressed it as:

> For us, everything is impacted. And this is not just for First Nations. This is for all people, our people. Our quality of life… It comes from the land, the water, all the plants, all the animal lives that exist in the whole evolutionary chain. You have to look at how we look at life overall. The impacts are to everything around us. …All the animals, the wildlife, the fish, the insects, all the plants all impacted.

The interconnectedness informs what is sometimes termed Indigenous knowledge around sustainability, traditional ecological knowledge and its interplay with sharing and access to resources. Sustainable strategies held by Indigenous communities are part of this worldview that identifies the problem and determines pro-social solutions to collective action problems [for an example of this in respect of Indigenous communities, hunter-gathering lifestyles, sharing (reciprocated and non-reciprocated), and food security, see Ziker et al. (2016)]. It is not that Indigenous people have lived in the time of the Anthropocene and have the solutions, it is that their Indigenous

knowledge and leadership allow them to envision the common resource of our world, the "Mother Earth," and provide teachings and learning on how to share the Mother Earth sustainably. Indigenous knowledge offers what in the world of Elinor Ostrom are behavioural approaches to collective action problems that entail understanding "the effects of structural variables on the likelihood of organizing for successful modes of collective action" (Ostrom, 2010). Indigenous traditions are not trite or easy, but complex, based on legal traditions that include intentional and deliberative collective processes to change practices over time, transform implicit practices into explicit practices and law, and create precedent and a formal memory archive (Napoleon, 2009).

Environmental solutions link trust, reciprocity, and sharing. This is not to say Indigenous people have all the answers; as John Borrows notes, trying to understand all our environmental troubles through Indigenous knowledge can potentially compound our confusion as what was successful in one time and place may not be translated appropriately to other settings. "Self-interest and cultural blindness to the potential dangers of one's own group's practices can be found everywhere; and a healthy degree of scepticism should also accompany any groups claim to a better path of environmental preservation" (Borrows, 1997). But Indigenous contributions are not just evidence of better practices; to be fully appreciated institutional change is needed. In 1997 Indigenous leader John Borrows pointed out that for transformational change, there must be change in people and ideas, the ground upon which decisions are made, and the integral application of Indigenous legal knowledge in decision-making.

The United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP) is advancing international Indigenous leadership, law, and rights. Duties of "consultation" are raised to requirements of "consent," and in so doing the Right to Free, Prior, and Informed Consent (FPIC) for Indigenous peoples is introduced. Canada became a signatory in 2016. Article 32.1 provides FPIC is to be obtained prior to the approval of any project affecting Indigenous lands or territories in connection with the development, utilization, or exploitation of mineral, water, or other resources (Boutillier, 2017; Medhora, 2017; Morales, 2017). UNDRIP moves beyond the conception of the State granting and distributing rights to people in a Rawlsian distributive conception of justice (with the state as arbitrator of conflict and protector of individual rights) and embraces recognition justice (Rawls, 1971). Recognition is key in engaging with the "other" when two groups have fundamentally different ontological positions, aims, and goals (Taylor, 1998). Recognition in accordance with Indigenous practices doesn't aim to overcome each other's position, but rather to recognize and respect difference, leading to more meaningful engagement and justice (Maciel, 2014). UNDRIP opens a window for advancing parallelism and honouring the traditions of Indigenous leadership.

This chapter argues for the recognition and advancement of Indigenous leadership, imagined through principles of honouring Earth through interconnecting relationships, time, and trust. Not to engage in transformative re-thinking of our relationship with Earth, in the words of John Borrows:

> … when everything is settled, will the environment be able to reproduce itself? Will we not only lose the healing plants like the jewel weed, but also the ability to restore the word of the fish, deer, and Anishinaabe? Will the pressure of living between competing legal boundaries also erase the living space of the current generation of Neyaashingmiing? And what of those beings sleeping in the rocks on the beach, and the people buried by the lagoon on the shore? What of their participation? Will the stories their presence could tell to the seventh generation of my children be forever silenced? Will our participation, like theirs, be left to lie sleeping between the water and the rocks?
>
> (Borrows, 1997: 468)

This is not to argue that Indigenous people have lived in the time of the Anthropocene and have the solutions. Instead, it is argued that their Indigenous knowledge and leadership allow them to envision the common resource of our world, the "Mother Earth," and provide teachings and learning on how to share Mother Earth sustainably. Indigenous insights offer intentional and deliberative collective processes that change practices and law over time, transform implicit law into explicit law, and create legal precedent and a formal memory archive (Napoleon, 2009).

For Bill Marion his work is not yet done. While the Treaty outlines responsibility, UNDRIP is a tool to recognize and respect the responsibilities set out in Treaty. Early, informed, participatory, and ongoing consent in developments that impact Indigenous lands as well as hunting, fishing, and trapping lifestyles is a necessity. But economic opportunity in relation to Mother Earth's resources for Indigenous people is the future and was envisioned in the Treaty relationship that allowed settlers coming to Canada to farm to "the depth of a plow." Bill Marion's vision of the future is for truly collective decision-making and community lead impact assessments that are prepared and enacted by First Nations with full capacity. Bill Marion's leadership vision creates the space for this and relations with universities and water institutions help build capacity.

Summary

What to Do from Indigenous Scholar

- Indigenous land back
- Treaty responsibility (Treaty rights are in the centre of reconciliation)

- Treaty rights should be considered as laws
- Learning from Elders as they hold diverse, unique
- Learn colonial history and ongoing colonization
- Build bride between Indigenous and Western worldviews
- Reconnect with land and water

What to Do from Cree Elder

- Transparency for all, including federal, provincial, and local governments, and industries
- Indigenous leaderships
- Continuous consultancy
- Elders' and Knowledge-keepers' voices
- Self-sufficiency
- Working collaborative
- Continuous forms of negotiations
- Treaty responsibilities
- Community capacity building
- Water should not be treated as commodity
- Indigenous water governance

10 Conclusion

Our task in writing this book was to document results of our study that:

- Identify community-led consultation practices for addressing pipeline leaks and energy management;
- Develop a community-led test, evaluation, and risk evaluation framework for addressing pipeline leaks and energy management that will inform community and business relations, policy, regulations, and legislation; and
- Explore community-led solutions anchored in sustainable energy management politics that support Indigenous communities' and organizations' attempts to negotiate benefits from industrial projects on the one hand, while defending traditional land use and environmental integrity on the other.

This book offers a new approach to disaster risk response, very different and separate from traditional technocratic disaster risk responses that are developed by emergency response planners and responders without community involvement. These results were amassed via an Indigenist research framework consisting of ceremonies of learning and reflecting, unlearning, and unpacking issues of power, voice, and possibility (Datta, in press). In this way these results document bottom-up, community-developed participatory disaster responses that are not confined simply to reactive responses to pipeline leaks. Such a limitation in study scope would have offended our epistemology rooted in Indigenist worldviews, honouring and reflecting Indigenous knowledge, culture, and ways of being, based on building trustful relationships between Indigenous and non-Indigenous peoples. In employing a relational methodology and celebrating ceremony with research participants, we recognized multiple worldviews, ways of knowing, and realities that respect Indigenous peoples, their land rights, and self-determination. Our research questions and discussions could not be limited to a simple "compartment" or box such as simply post-pipeline leak disaster response. Participants were interested in discussions surrounding relations, colonization, development of energy, energy sustainabilities, water, and land.

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In addition, we focused on relational accountabilities at all stages of the research, from exploring aspects of post-pipeline leak disaster response as well as pre-planning, preparation, as well as relations and practices that lead to pipeline leaks and the resultant impacts and damages of these on communities and people. Our research spanned five (2018–2022) years, several Cree communities in Saskatchewan, many Indigenous knowledge keepers and communities in sustained ceremony, dialogue, community and group meetings, and correspondence. Our research team consisted of a settler scholar of colour, a settler scholar, and an Indigenous scholar.

In this book we document our journey reviewing existing scholarship surrounding Indigenous sustainability issues surrounding pipeline spills and leaks together with impacts on drinking water and Indigenous communities in Western Canada (Chapter 1), our study participants' identification of the impacts of pipeline leaks and spills (Chapter 2), and the disasters wreaked on land and community (Chapter 4) as well as challenges surrounding the disasters (Chapter 5). This information formed a solid foundation of Indigenous peoples' foundational practices and framework for addressing pipeline leaks and energy management into the future. It is clear we cannot build a relational path into the future without a clear, truthful, understanding of Indigenous peoples' past and present.

Community-led solutions and a community-led framework that informs and heals relations going forward cannot be built and sustained solely on a simple five-year research project and book such as this. Building energy sustainability and capacity into the future will require an ongoing, all-encompassing effort into the future. This humble book shares our knowledge so far, allowing others to join, augment, and participate in the dialogue into the future. The most important aspect is that future solutions be Indigenous led. Here we discuss our finding in relation to our three objectives:

1 Identify community-led consultation practices for addressing pipeline leaks and energy management

   Research participants were unanimous that respectful relations, iterative, ongoing communications, and exchanges were the most important practices for the development of Indigenous community-led disaster management in relation to pipeline spills and energy sustainabilities. The Calls of the Truth and Reconciliation Commission (2015) and the United Nations Declaration for the Rights of Indigenous Peoples (2008) are rights-based, legislated requirements foundational for Indigenous-led practices. However, participation in Indigenous community cultural days, pow wows, and festivals is the practice for relation building, development of communication, and advancement of understanding. Such engagement is necessary for potentially establishing a strong relationship, enabling the exchange of cultural ceremonies and practices. It may be that not all people advance to this stage of sharing, trust, and understanding; or stated another way, some may require more time and

exchange for the development of the necessary relations of trust and reciprocity. With trust and reciprocity, the additional research methodologies of relevance (of Indigenous knowledge and ways of knowing) and responsibility (towards participant communities) can be built.

Previous academic literature has recommended the creation of an Indigenous community council or other representative body based on terms of reference developed by the community (those in proximity or adjacent to pipelines). Interaction with this Indigenous community council must be respectful and on a nation-to-nation basis. In addition, building a coordinated network of researchers, communities, representative organizations, and government would assist in not only capacity building, but the necessary representativeness for Indigenous-led cross-sectoral, cross-sectional, and longitudinal studies in this area. With this, a database and management system for collating information on pipeline leaks related to drinking water in Indigenous populations could be co-created with community-generated and -endorsed indicators. This group would source the necessary interdisciplinary team to undertake such study and capacity building and obtain/leverage necessary funding and support.

Replication of colonizing structures and ideas will not advance Indigenous-led pipeline and energy justice, garner creative Indigenous disaster response, and advance energy sustainabilities. Instead an Indigenous-led initiative deconstructs the concept of not only "duty to consult" but also environmental "impact." Both of these have narrowed communication interchange, flows, and learning in the past. Expansion to include ideas such as seven-generation thinking, holistic earth and human system thinking, respect for all flora and fauna, as well as the land, water, and also peoples' mental, physical, and spiritual health in consideration of energy development "impact" is essential (Chapter 2).

Acknowledging the human-created nature of pipeline leaks – from root causes including energy usage and dependency to infrastructure failure (not the misnomer of "accident") – and the severity of pipeline leaks was an essential practice our participant communities stressed. The language used was a "human-created disaster" or "human-created genocide against their land-water, health and sustainable ecosystems" (Chapter 5). Indigenous Knowledge-keepers were most disturbed by the lack of communication. First there was no knowledge about the existence of the pipeline. When and how it crossed the river was surprising and shocking to participants. During and after the spill there was also a lack of information, and in fact misinformation, which included denial of the spill and existence of oil in the river. This miscommunication included not only company representatives but also energy industry leaders and academic researchers. Limited and selective sampling generated mistrust in science, industry, and government. This, together with the

lack of information during the cleanup, and if in fact there was any cleanup, generated panic, fear and scared the community.

Effectively, the pipeline spill acted as a fulcrum, focusing thoughts, emotions, and feelings in relation to not only pipeline leaks but the entire area of energy sustainabilities. The spill was the human-generated genocide that resulted in a breakdown of community trust with government, industry, researchers, scientists, and, of course, the energy system and its sustainability. Building capacity and engaging with Indigenous Knowledge-keepers as researchers was a practice participants foresaw as remedying the situation. Indigenous Knowledge-keepers living in proximity and relation with the water would not only assist in the research and the cleanup process but re-establish trust in Indigenous communities. Such a practice would be one small but essential start in addressing broken Treaty responsibilities, and recognizing the UN Rights of Indigenous peoples.

2 Develop a community-led test, evaluation, and risk evaluation framework for addressing pipeline leaks and energy management that will inform community and business relations, policy, regulations, and legislation

Community perspectives are not fixed; variation between communities occurs. But broad acknowledgement by all community members was what Elders, Knowledge-keepers, and leaders thought was essential to hearing all voices in the collaboration with Western researchers, governments, and industries. Essential consultancy practices included participation and guidance through these Elders, Knowledge-keepers, and leaders, within the framework of Treaty responsibilities.

To be meaningful, collaborative knowledge is essential. Indigenous knowledge needs to be central to collaborative knowledge. Building collaborative knowledge requires relation building of Elders, Chiefs, and community and in this way a rethinking of what science is, its meaning, and how it is practised. Living together, including humans and non-humans (i.e., land, water, animals, insects), is the meaning of sustainable ways. Scientific knowledge is Indigenous traditional knowledge which includes relational and spiritual practices. Indigenous Elders and Knowledge-keepers carry essential knowledge from generation to generation. The dissemination of this knowledge is not a one-way communication flow, but an iterative ongoing conversation, as Indigenous knowledge is not static but expanding and evolving.

Establishing a balance between development and environmental protection is possible, but development should not be prioritized over the environment and environmental rights should be a first priority. Through consultation, collaboration, and Treaty relations, this balance can be established, achieved, and sustained. The development and environmental balance are not capable of one, all-encompassing or consuming definition that is applied independently, sporadically, and in

isolation of the Indigenous people and their community. It is like a living growing plant that nurtures and is nurtured by the land and water – here the Indigenous people, Elders, Knowledge-keepers, and leaders.

Traditional healing is essential in the risk evaluation framework. Traditional healing brings healing to people spiritually, mentally, and physically, and establishes strong people able to stand on their own two feet, taking care of themselves and each other, resources, and the land. Several components were identified by participants including:

- Taking Responsibility with Singing and Dancing
- Traditional Healing as Guidelines with a Traditional Teacher
- River as Healing
- Follow Treaty Guidelines
- Taking Care of Land, Water, Plants, Insects
- Healing for Physical, Mental, Spiritual Health
- Healing for Traditional Medicine, Plants

Further exploration of these components and their place in a risk evaluation framework is warranted, led by Indigenous peoples.

3 Explore community-led solutions anchored in sustainable energy management politics that support Indigenous communities and organizations' attempts to negotiate benefits from industrial projects on the one hand, while defending traditional land use and environmental integrity on the other

Indigenous community-led solutions include information, and lots of it – a multitude of information flows, openness, and transparency. But Indigenous ideas didn't stop at this. The ongoing conversation has to include everyone and also has to be part of education curriculum. Ideas for gathering this knowledge included not only standard consultation, guides, advancement, and acknowledgement of Treaty responsibilities, but also community-based mapping, community-based research labs, and community-based cumulative impact assessments.

Indigenous politics are based on guidance by Elders and leaders and follow principles that respect Elders', Knowledge-keepers', and community members' perspectives. Respect for diverse and different perspectives is also essential. The process of negotiation, discussion, and engagement will differ according to the community.

Decolonizing meanings of important concepts including consultation and environmental impact were important, but not thought of as simple. Structural, historic, and enduring barriers exist, preventing the full achievement of community-led solutions and reconciliation of the benefits of industrial projects versus traditional land use and integrity. Community-based research labs and engagement of community members in science are fundamental in this process. Redefining, rethinking, and relearning can't occur without a fundamental rethink of the paradigm of Indigenous community-led disaster management and energy sustainabilities.

Leading change is not a new skill for Indigenous people. Strong leaders, especially water leaders, exist in Indigenous communities. Indigenous leadership itself must also be decolonized and developed with an Indigenous methodology and relational understanding. Water champions such as co-author Bill Marion at the James Smith Cree Nation offer guidance and experience in water and development and find the balance of industrial project benefits and the defence of traditional land use and environmental integrity. Passionately working in the area for over four decades Bill has developed capacity on the ground in relation to preservation and establishment of water quality for Indigenous people. Building technical capacity through training programmes as well as the formation of Indigenous water institutions such as the First Nation Water Association (formed in 1997) demonstrates Bill's lifelong dedication and commitment. The fish bone diagram (Chapter 9) demonstrates an enduring and historical understanding of cause and effect, now termed cumulative effects of development and impacts on water, and the First Nation relations with Treaty, jurisdiction, and the Royal Proclamation of 1763. The most important relation of Indigenous people is with Mother Earth and the land and water are key elements. Solutions including trust, reciprocity, and sharing inform relations and dealings and more recent laws including the United Nations Declaration of the Rights of Indigenous Peoples and the right to free, prior, and informed consent add weight to enduring Indigenous principles, now part of mainstream Canadian law. While our research participants and ourselves summarized what Indigenous scholars and Cree Elders can do, here is what non-Indigenous people can do:

Celebrate and practise ceremony with Indigenous peoples
Learn about, engage with, and embrace the treaties and our shared responsibilities
Learn from Indigenous Elders
Learn about the colonial history and ongoing colonization
Reconnect with land and water
Advance transparent, open, and respectful relations with Indigenous peoples, leaders, and institutions

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Index