The Importance of Indigenous Peoples in Climate Change and Energy Governance

by

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Abstract

Indigenous peoples in northern Canada are already experiencing significant climate change impacts. Young Indigenous people will inherit serious climate effects that threaten their physical and mental health, as well as ancestral traditions. It is these same young people that live in communities faced with social decay as a result of colonialism. Understanding how climate action can be a mechanism for positive youth development and resilience to environmental and social challenges is important for communities. Many of these same communities continue to be reliant on diesel systems despite the understanding that fossil fuels contribute to climate change. Given the challenges of relying on such an imported, carbon-intensive fuel, communities have expressed interest in renewable energy as a tool to address their energy insecurity. With this context in mind, this thesis explores (1) the benefits of Indigenous youth in climate governance and, (2) Inuvialuit values and decision-making experiences with energy systems in Inuvik and Tuktoyaktuk, NT. This thesis was inspired by principles of decolonized and community-based participatory research which led to collaboration between the student and the research communities at every stage of the research project. Fourteen semi-structured interviews were conducted with Indigenous youth and key informants that participated in a series of culturally appropriate climate action activities. Semi-structured interviews were also conducted with 23 energy stakeholders, including Elders, community members, researchers, and government officials. Both sets of interviews were transcribed and analyzed with a conventional content analysis approach to identify key themes. The research finds that there are significant benefits to including Indigenous peoples in governance processes, including providing opportunities for skill development as well as increasing the likelihood that decisions will reflect the needs of the communities impacted. This thesis contributes to the literature on Indigenous youth in climate action and renewable energy in the Arctic.

Preface

This thesis is an original work by Makenzie MacKay. These research projects, of which this thesis is a part of, received research ethics approvals from the University of Alberta Research Ethics Board. Project Name “Renewable Energy Technology in Northern and Western Canada”, Pro00080881, June 12, 2018 - June 11, 2019 and Project Name “Tracking Change @ COP24”, Pro00085621, October 1, 2019 - September 30, 2020.

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INTRODUCTION

1.1 Introduction

Climate change poses serious threats to humankind. Indigenous communities will experience significant impacts threatening their culture, food security, and safety (Dowing and Cuerrier, 2011). Many of these changes have manifested themselves earlier and more prominently in the Canada's North (Berkes and Jolly, 2002) and youth around the world will see lifelong impacts on their physical and mental health (Sanson, van Hoorn, and Burke, 2019). Youth are deeply concerned about climate change and are emerging as important stakeholders in climate governance as a way to protect their futures (Sanson et al., 2019). Indigenous youth may play a particularly interesting role because they possess both Indigenous and youth perspectives of climate issues. Despite the knowledge that fossil fuels contribute to climate change, most northern communities are still reliant on diesel systems and are exploring renewable energy as a tool to reduce reliance on outside energy sources. Using case study research with Indigenous youth engagement in climate action and values and decision-making experiences of Inuvialuit peoples in Inuvik and Tuktoyaktuk, NT, this thesis provides insights on the benefits of local involvement in climate change and energy governance.

1.2 Objectives

An emerging area of research focuses on how youth are resilient to socio-economic challenges in their communities and how youth can participate in governance issues that are important to them, such as climate change (MacDonald et al., 2015). This body of work remains limited. Most literature on Indigenous values in energy has been limited to southern contexts (Necefer, Wong-Parodi, Jaramillo, and Small., 2015; Rakshit, Shahi, Smith, and Cornwell., 2019) and discussions of energy in the north has been limited to technical and economic considerations. This thesis builds on previous research on arctic energy security and Indigenous community renewable energy (Krupa, Galbraith, and Burch., 2015).

Objective 1 – Identify the benefits of Indigenous youth in climate governance; and
Objective 2 - Explore Inuvialuit values of and decision-making experiences with renewable energy in the northern communities of Inuvik and Tuktoyaktuk, NT.

1.3 Setting & Background

The research for this thesis is linked to two larger research projects. The youth activism paper is tied into Dr. Brenda Parlee's "Tracking Change" project that seeks to highlight the voices of Indigenous peoples and subsistence fishers in the Mackenzie, Mekong, and Amazon freshwater basins. The energy work is connected to the University of Alberta's Future Energy Systems interdisciplinary research project.

1.3.1 Tracking Change Youth @ COP24

The Tracking Change research project, led by Dr. Brenda Parlee at the University of Alberta, hosted a Youth Knowledge Fair (YKF) in May 2018. The YKF is similar to a traditional science fair but it differs in that it allows the students to utilize Traditional Knowledge as the foundation for understanding climate change. A subsequent trip brought six of these young Indigenous participants (between the ages of 12-20) to European policy spaces where they spoke about how climate change is impacting their communities. They travelled from their small, remote communities located across northern Canada, including Mayo, YK, Dene Tha, AB, Tuktoyaktuk, NT, Tetl'it Zheh (Ft. McPherson), NT, Lutselk'e, NT, and Ft. Smith, NT. The youth presented to groups at the United Nations Educational, Scientific, and Cultural Organization headquarters in Paris, France, as well as the Conference of Youth 14 and Indigenous Caucus meetings associated with the Conference of Parties 24 meetings in Katowice, Poland. This research is focused on the positive youth development that occurred as a result of their climate change activism. It was the author's first-hand observations of the youth's positive development that was the catalyst for this research.

1.3.2 Energy in Inuvik and Tuktoyaktuk, NT

Inuvik (68° N, 133° W) and Tuktoyaktuk, NT (69° N, 133° W) were the partner communities for the energy research. Inuvik has a population of 3,243 and 2,080 of these identify as Aboriginal (Statistics Canada, 2017a). Tuktoyaktuk is home to 898 people, 815 of

which identify as Aboriginal (Statistics Canada, 2017b). These are two of the six communities that make up the Inuvialuit Settlement Region (ISR), along with Aklavik, Paulatuk, Uluhaktok, and Sachs Harbour (Inuvialuit Regional Corporation, 2020). Dr. Parlee had worked on a series of research projects with the Inuvialuit over the course of her career and during these collaborations people emphasized the economic, logistical, and environmental challenges of diesel reliance. In 2014, Tuktoyaktuk Mayor Darrell Nasogaluak was told by a resident, "that this winter there's going to come a time when [I'm] either going to have to buy home heating fuel or groceries." (CBC News, 2014). It was these community calls to investigate energy security that served as the spark for the project.

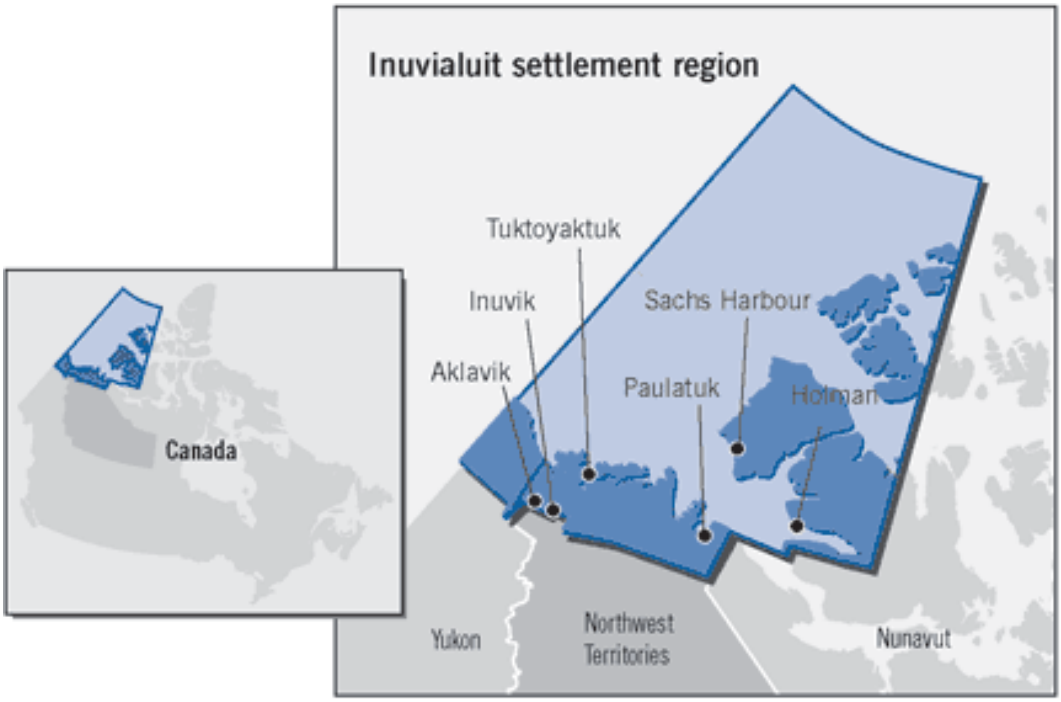


Figure 1. Map of the Inuvialuit Settlement Region (Office of the Auditor General of Canada, 2007).

1.4 Overview of the Literature

Successful development of climate change mitigation and adaptation policies, as well as renewable energy systems requires an understanding of governance. Governance is "a government's ability to enforce rules, and to deliver services" (Fukuyama, 2013) but can also include non-government actors such as civil society groups, individual citizens, and industry

(Goldthau, 2014). Some groups have a more difficult time participating in governance systems, whereas other types of actor groups are deeply involved, and their perspectives are meaningfully incorporated. Indigenous peoples have been long recognized as one group that should be consulted about decisions that impact their territory. However, studies of environmental assessments have found that the Duty to Consult Indigenous peoples does not always lead to decisions that the community supports (Baker and Westman, 2018; Newman, 2017), although co-management approaches to natural resources have more positive results (Christensen, Ehrlich, and White, 2007; Mabee and Hoberg, 2006). Indigenous peoples are important governance actors and can significantly contribute to policymaking if given the meaningful opportunity to do so. Climate change research has found that climate adaptation policy is unlikely to be effective if it does not take into account the cultural realities of those it effects (Adger, Barnett, Brown, Marshall, and O'Brien, 2013). Energy scholars have found that projects that see bottom-up decision-making processes with community leadership see more positive outcomes than conventional, centralized processes (Walker and Devine-Wright, 2008) and that policies can have differential benefits or consequences for actors (Wirth, 2014). Thus, while the literature emphasizes the importance of local involvement in governance processes, Indigenous peoples are still largely excluded from meaningful engagement that would see their perspectives incorporated in decisions. Indigenous communities continue to express a passionate desire to be active, respected governance actors, but overall this remains to be seen. With this context in mind, the following sections review literature as it relates to Indigenous youth involvement in climate action and skill development that allow them to be governance leaders in the long-term, as well as community and Indigenous experiences with renewable energy projects.

1.4.1 Youth & Climate Action

There is a growing body of literature on climate change impacts and governance approaches to managing adaptation and mitigation. In recent years scholars have started to pay more attention to youth involvement in decision-making about climate change (Fisher, 2016) and positive youth development as a result of participating in causes they care about (Erbstein, 2013). This section reviews relevant literature as it relates to youth in general (exercising agency to improve resilience to climate change; the importance of social capital in collective action) as well as scholarship specifically related to Indigenous youth (cultural continuity; value of network

resources for improving outcomes with marginalized youth populations). These theories are connected through their demonstration that youth benefit by taking leadership roles in causes they care about and that social capital is critical for successful activism. The research and argument presented in Chapter 3 is placed at the intersection of the following concepts.

Youth psychology and environmental education literature has highlighted youth agency, the ability to take action in shaping one's own life, in climate activism is a way that young people can cope with the stress of climate change induced impacts and challenge the current system (Sanson et al., 2019; O'brien, Selboe, and Hayward, 2018; Fisher, 2016). Participation in decision making regarding climate change adaptation and mitigation strategies can offer young people "psychological protection" by creating hope, feelings of power, and increased resilience to challenges (Hart, Fisher, & Kimiagar, 2014*).* The importance of including youth actors in climate change issues has been recognized by the United Nations Convention on the Rights of the Child (United Nations General Assembly, 1989). Individual characteristics (e.g. emotional coping behaviours, bigger-than-self values such as empathy, adaptability, and creativity), interpersonal skills (conflict resolution, team work and cooperation), and social and civic engagement capacity (volunteering in community groups, activism, speaking out about issues, lobbying politicians) have been identified as key characteristics for adapting to climate change in resilience (Masten and Cicchetti, 2016) and positive development research (Hawkins, Letcher, Sanson, Smart, and Toumbourou, 2009; Lerner, Almerigi, Theokas, and Lerner, 2005; Leman et al., 2017). Many of these traits contribute to success in exercising one's agency and being a leader.

Self-continuity is the concept that over the course of one's life, despite changes undergone, the person feels that they have maintained some sameness overtime. Each person's life story is different but they are all shaped by a combination of social, individual, and cultural influences (Landau, Greenberg, and Soloman, 2008). Psychologists have found that those with higher levels of self-continuity tend to have better mental health (Dunkel, 2005). Erikson (1950) argued that self-continuity is particularly important for adolescents as they "search for a new sense of continuity and sameness" as they transition into adulthood (p. 261). Without some sense of personal continuity an adolescent may find it difficult to navigate the challenges of moving

into adulthood (Dunkel, 2005). Culture may be seen as a landscape for which individuals can situate themselves (Landau et al., 2008). It provides a moral system, answers to cosmological questions, and creates continuity through tradition, ancestry, and kinship (Landau et al., 2008). Continuance of culture can be seen through Elders sharing wisdom and teaching youth Traditional Knowledge, and youth actively seeking opportunities to learn from their Elders (Whyte, 2014). Chandler and Lalonde (1995; 1998) have theorized about how cultural continuity can contribute to self-continuity, and by extension reduce suicide rates in Indigenous youth. Many Indigenous peoples view climate change as a threat to their cultural continuity (Whyte, 2014). At present, climate policy does not adequately reflect these cultural dimensions. It is unlikely to be truly effective because it does not connect to what matters to people within cultural groups (Adger et al., 2013).

Social capital is a term that emerged from the work of sociologist Bourdieu (1986) who proposed that people consciously create ties with others because of the potential benefits those networks could later yield. Social capital is evident if the networks used in collective action result in useful goods and services that would otherwise be absent (Castle, 2002). Collective action- people working as a group to achieve a goal- requires networks of people sharing information. It is through these connections that actors can make change and be involved in decision making (Adger, 2003). Social capital can be further broken down into two forms: bonding and bridging/networking. Bonding social capital are ties within a socioeconomic group (often based on family and locality) whereas bridging or networking social capital are ties that are external to the main group (Adger, 2003). Fundamentally, social capital theory is a way we can understand how individuals use their relationships with others to benefit themselves and their communities, as well as contribute to the public good (Adger, 2003). A combination of bonding and bridging/networking social capital allows for communities to address issues and take advantage of new opportunities (Woolcock and Narayan, 2000). Varga and Zaff (2018) present a "web of support" framework which visually depicts an individual's access to social capital. This paper specifically examined how social relationships and resources promoted adolescent development. Chapter 3 employs the web of support framework to understand the importance of social capital for youth development in the context of climate action.

There is a rich body of literature regarding social capital and positive youth development. Positive youth development is the notion that adolescents are active agents in their own development and can be assets to their communities (Zeldin, Camino, and Calvert, 2003). In this context social capital can be understood as, "high-status institutional resources embedded in social relationships and social structure" (Stanton-Salazar, 2011, p. 1068). Relationships between youth and adults are key for adolescent development (Erbstein, 2013; Varga and Zaff, 2018). Some of this work has been specifically focused on marginalized and vulnerable youth. Effectively engaging with marginalized youth requires adults that have local understandings of the cultural contexts from which young people come from (Erbstein, 2013). Support from "adult allies" that not only support youth directly, but also connect them with their personal and professional networks have been found to be critical. This is especially relevant when youth are developing the skills needed to be leaders in addressing challenges in their communities (e.g. public speaking, project planning, organization, meeting participation) (Erbstein, 2013). When low-status youth (those in placed lower on the social hierarchy due to class, race, or gender) "overcome the odds" it is usually due to interactions with people in their network that allow them to tap into services, organizations, and resources which they would otherwise find difficult to access (Stanton-Salazar, 2011). It is important to recognize that effectively tapping into social capital that will benefit vulnerable youth is not an individual task; it requires networks of people, communities, and institutions (Erbstein, 2013).

1.4.2 Indigenous Peoples & Community Renewable Energy

The urgent need to transition to less carbon-intensive energy systems has led to a rich body of work on energy governance structures and decision-making processes. Governments, utilities, communities, and everyday citizens increasingly recognize that transitioning to renewable energy is not just about economics or technical capacity; understanding social interactions and interests, as well as energy regulations and policies are also critical (Goldthau, 2014). This portion of the literature review discusses energy governance in general, before proceeding into an exploration on community renewable energy approaches and Indigenous participation in renewable energy projects. Chapter 4 is situated in this literature on bottom-up approaches to decision-making that reflect community values.

Energy literature has defined energy governance as the "institutions, mechanisms, and processes through which economic, political, and administrative authority is exercised" (Goldthau, 2014, p. 135). Thus, governance is not just about formal, institutionalized governments, but can also include many non-government actors. Goldthau and Sovacool (2012) argue that energy is a unique governance challenge because, "energy is the lifeblood of the economy and human existence, in that, energy is deeply embedded in other sectoral and policy contexts" (p. 232). Multi-level energy governance has been defined as a polycentric approach that combines scales and different stakeholders to make decisions that are more reflective of the needs and desires of specific geographic regions (Goldthau, 2014). It is an innovative approach that prioritizes understanding and meeting the needs of local contexts. The greatest controversy with the multi-level governance approach (energy or otherwise) is scale- while it creates flexibility to meet local interests and needs (Hooghe & Marks, 2003) it does mean there can be a lack of standards and consistency across jurisdictions (Goldthau, 2014; Goldthau and Sovacool, 2012). Despite some of the challenges, multi-level governance approaches to renewable energy are well suited to reflect the diversity of real life, reduce costs for consumers, and improve the resilience of communities (Goldthau, 2014). Examples include analyses of the United Kingdom (Winskel, 2007; Smith, 2007), Germany's use of wind power (Fuchs and Hinderer, 2014), transitioning to renewable energy systems in Asia (Kunchornrat and Phdungsilp, 2012; Marquardt, 2014), and solar development in the United States (Li and Yi, 2014).

One way of understanding multilevel governance in renewable energy is through the lens of community renewable energy. Community renewable energy approaches are considered to be an essential approach for transitioning to decentralized energy systems and have more positive energy outcomes than traditional approaches (Wirth, 2014; Walker and Devine-Wright, 2008). There is a recognition that government policy and programs can affect the success of community renewable energy, so understanding the interconnectedness and relationships between state and community is critical (Markantoni, 2016). Community renewable energy recognizes that there needs to be an understanding of the contextual factors that affect the success of projects. Local capacity to execute technical functions, fund projects, and navigate complicated policy arrangements can be barriers to community renewable energy projects (Walker, 2011). There is little consensus in defining community renewable energy and definitions can relate to legality,

physical rationale, or economics (Walker and Devine-Wright, 2008). It is this diversity that has brought about confusion and disagreement between scholars about what constitutes renewable energy (Walker, Devine-Wright, Hunter, High, and Evans, 2010). However, the fluidity of the term has been beneficial in allowing energy initiatives to flourish even if they do not fit within an ideal model or definition of community renewable energy (Walker et al., 2010). Energy policy can have differential benefits between actors, favouring some more than others and drastically affecting the types of projects that are pursued (Wirth, 2014; Provance, Donnelly, Carayannis, 2011). Thus, the institutional policy context should be kept in mind when trying to understand community renewable energy.

Renewable energy social science literature has recognized that Indigenous communities are a demographic that has been difficult to access for research purposes (Sovacool, Axsen, and Sorrell, 2018). Recent scholarship has pointed to the benefits of renewable energy for Indigenous communities, including long-term economic benefits, reliability, and energy autonomy (Stefanelli et al, 2019). It has been noted that Indigenous peoples' interest in active participation in energy systems diverges significantly from government and utilities approaches to energy and policy practices (Karanasios and Parker, 2016). Successful renewable energy projects in communities must see a shift in technical-driven solutions to better reflect the vision of the community (Krupa et al., 2015) and cultural views that often emphasize environmental protection (Necefer et al., 2015). Thus, the shift in power and decision-making authority that is discussed in the multi-level governance literature may be a useful way of framing renewable energy governance with Indigenous peoples. There is a need for utilities to shift towards policies that grant Indigenous peoples more inclusion and flexibility in energy systems (Lovekin and Heermea, 2018).

There has been a body of literature focused on Indigenous community renewable energy in the Canadian context (Krupa et al., 2015; Krupa 2012; Rakshit et al., 2019; Karanasios and Parker, 2016). It is important to note that the work on Canadian Indigenous communities has focused on communities in the southern parts of the country with First Nations in Ontario and British Columbia, and there is limited published work related to energy systems of Inuit communities.

1.5 Overview of the Thesis

This thesis consists of five chapters. Chapter 1 introduces the thesis and includes a summary of relevant literature, significance of the work, and objectives. Next, Chapter 2 explains the methodology utilized for the research, namely the approach to working with Indigenous communities, data collection and analysis, as well as findings verification. In Chapter 3 an exploration of the positive outcomes Indigenous youth can experience as a result of participation in climate change activism is presented. Chapter 4 investigates community values and decision-making processes of community renewable energy in the Canadian arctic. The thesis concludes with a summary and suggestions for future research.

References

Adger, W. N. (2003). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography 78(4)*, 387-404.

Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, *3*(2), 112-117.

Baker, J. M., & Westman, C. N. (2018). Extracting knowledge: Social science, environmental impact assessment, and Indigenous consultation in the oil sands of Alberta, Canada. *The Extractive Industries and Society*, *5*(1), 144-153.

Berkes, F., & Jolly, D. (2002). Adapting to climate change: social-ecological resilience in a Canadian western Arctic community. *Conservation ecology, 5*(2), 18.

Bourdieu, P. (1986). The Forms of Capital. In J. Richardson, (Ed.), *Handbook of Theory and Research for the sociology of Education*. Greenwood.

Castle, E. N. (2002). Social capital: An interdisciplinary concept. *Rural sociology*, *67*(3), 331-349.

CBC News. (2014, October 22). 'It's affecting everyone': fuel prices jump 22% in Tuktoyaktuk. *CBC News.* Retrieved from: www.cbc.ca

Chandler, M. J., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural psychiatry*, *35*(2), 191-219.

Chandler, M. J., & Lalonde, C. E. (1995). The problem of self-continuity in the context of rapid personal and cultural change. In A. Oosterwegel & R.A. Wicklund (Ed.) *The self in European and North American culture: Development and processes*, 45-63. Springer, Dordrecht.

Christensen, V., Ehrlich, A., & White, G. (2007). Involving Canada's indigenous peoples in environmental impact assessment: co-management through the Mackenzie valley environmental impact review board. In *the annual conference if the International Association for Impact Assessment, Seoul, Korea: June* (pp. 3-9).

Downing, A., & Cuerrier, A. (2011). A synthesis of the impacts of climate change on the First Nations and Inuit of Canada. *Indian Journal of Traditional Knowledge, 10*(1), 57-70.

Dunkel, C. S. (2005). The relation between self-continuity and measures of identity. *Identity*, *5*(1), 21-34.

Erbstein, N. (2013). Engaging underrepresented youth populations in community youth development: Tapping social capital as a critical resource. *New Directions for Youth Development*, *2013*(138), 109-124.

Erikson, E. H. (1950). Childhood and society. New York: Norton.

Fisher, S. R. (2016). Life trajectories of youth committing to climate activism. *Environmental Education Research*, *22*(2), 229-247.

Fuchs, G., & Hinderer, N. (2014). Situative governance and energy transitions in a spatial context: case studies from Germany. *Energy, Sustainability and Society*, *4*(1), 16.

Fukuyama, F. (2013). What is governance?. *Governance*, *26*(3), 347-368.

Goldthau, A. (2014). Rethinking the governance of energy infrastructure: Scale, decentralization and polycentrism. *Energy Research & Social Science*, *1*, 134-140.

Goldthau, A., & Sovacool, B. K. (2012). The uniqueness of the energy security, justice, and governance problem. *Energy Policy*, *41*, 232-240.

Hart, R., Fisher, S., & Kimiagar, B.(2014). Beyond projects: Involving children in community governance as a fundamental strategy for facing climate change. In UNICEF Office of Research (Ed.), *The challenges of climate change: Children on the frontline* (pp. 92–97). Florence, Italy: UNICEF Office of Research.

Hawkins, M. T., Letcher, P., Sanson, A., Smart, D., & Toumbourou, J. W. (2009). Positive development in emerging adulthood. *Australian Journal of Psychology, 61*, 89–99.

Hooghe, L., & Marks, G. (2003). Unraveling the central state, but how? Types of multi-level governance. *American political science review*, *97*(2), 233-243.

IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Inuvialuit Regional Corporation. (2020). Communities. Retrieved from: https://www.irc.inuvialuit.com/communities

Karanasios, K., & Parker, P. (2016). Recent developments in renewable energy in remote Aboriginal communities, Newfoundland and Labrador, Canada. *Papers in Canadian Economic Development*, *16*, 109-118.

Krupa, J. (2012). Identifying barriers to aboriginal renewable energy deployment in Canada. *Energy Policy*, *42*, 710-714.

Krupa, J., Galbraith, L., & Burch, S. (2015). Participatory and multi-level governance: applications to Aboriginal renewable energy projects. *Local Environment*, *20*(1), 81-101.

Kunchornrat, J., & Phdungsilp, A. (2012). Multi-level governance of low-Carbon energy systems in Thailand. *Energies*, *5*(3), 531-544.

Landau, M. J., Greenberg, J., & Solomon, S. (2008). The never-ending story: A terror management perspective on the psychological function of self-continuity. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives*, 87-100.

Lerner, R., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development: A view of the issues. Journal of Early Adolescence, 25, 10–16.

Li, H., & Yi, H. (2014). Multilevel governance and deployment of solar PV panels in US cities. Energy Policy, 69, 19-27.

Lovekin, D. and Heermea, D. (2018). *Indigenous clean energy must be built on trust and respect.* Retrieved from The Pembina Institute: https://www.pembina.org/blog/indigenous-clean-energy-shift

Mabee, H. S., & Hoberg, G. (2006). Equal partners? Assessing comanagement of forest resources in Clayoquot Sound. *Society and Natural Resources*, *19*(10), 875-888.

MacDonald, J. P., Willox, A. C., Ford, J. D., Shiwak, I., Wood, M., Government, R. I. C., & IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Markantoni, M. (2016). Low carbon governance: mobilizing community energy through top-down support?. *Environmental Policy and Governance*, *26*(3), 155-169.

Marquardt, J. (2014). A struggle of multi-level governance: promoting renewable energy in Indonesia. *Energy Procedia*, *58*, 87-94.

Masten, A. S., & Cicchetti, D. (2016). Resilience in development: Progress and transformation.

In D. Cicchetti (Ed.), *Developmental psychopathology* (3rd ed, pp. 271–333). New York, NY: Wiley.

Necefer, L., Wong-Parodi, G., Jaramillo, P., & Small, M. J. (2015). Energy development and Native Americans: Values and beliefs about energy from the Navajo Nation. *Energy Research & Social Science*, *7*, 1-11.

Newman, D. G. (2017). Political Rhetoric Meets Legal Reality: How to Move Forward on Free, Prior, and Informed Consent in Canada. *Macdonald-Laurier Institute Paper Series*.

O'brien, K., Selboe, E., & Hayward, B. M. (2018). Exploring youth activism on climate change. *Ecology and Society*, *23*(3).

Office of the Auditor General of Canada. (2007). 2007 October Report of the Auditor General. Chapter 3 – Inuvialuit Final Agreement. Retrieved from: http://www.oag-bvg.gc.ca/internet/English/parl_oag_200710_03_e_23827.html

Provance, M., Donnelly, R. G., & Carayannis, E. G. (2011). Institutional influences on business model choice by new ventures in the microgenerated energy industry. *Energy Policy*, *39*(9), 5630-5637.

Rakshit, R., Shahi, C., Smith, M. A., & Cornwell, A. (2019). Energy transition complexities in rural and remote Indigenous communities: a case study of Poplar Hill First Nation in northern Ontario. *Local Environment*, *24*(9), 1-16.

Sanson, A. V., Van Hoorn, J., & Burke, S. E. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201-207.

Smith, A. (2007). Emerging in between: The multi-level governance of renewable energy in the English regions. *Energy policy*, *35*(12), 6266-6280.

Leman, P. J., Smith, E. P., Petersen, A. C., & SRCD Ethnic–Racial Issues and International Committees. (2017). Introduction to the special section of Child Development on positive youth development in diverse and global contexts. *Child development*, *88*(4), 1039-1044.

Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design. *Energy Research & Social Science, 45*, 12-42.

Stanton-Salazar, R. D. (2011). A social capital framework for the study of institutional agents and their role in the empowerment of low-status students and youth. *Youth & Society*, *43*(3), 1066-1109.

Statistics Canada. (2017a). *Inuvik, T [Census subdivision], Northwest Territories and Northwest Territories [Territory]*(table). *Census Profile*, *2016 Census*. (Statistics Canada Catalogue no. 98-316-X2016001). Ottawa. Retrieved on February 2, 2020 from Statistics Canada: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E

Statistics Canada. (2017b). *Tuktoyaktuk, HAM [Census subdivision], Northwest Territories and Northwest Territories [Territory]* (table). *Census Profile*, *2016 Census*. (Statistics Canada Catalogue no. 98-316-X2016001). Ottawa. Retrieved on February 2, 2020 from Statistics Canada: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E

Stefanelli, R. D., Walker, C., Kornelsen, D., Lewis, D., Martin, D. H., Masuda, J., Richmond, C.A., Root, E., Tait Neufeld, H. and & Castleden, H. (2019). Renewable energy and energy autonomy: how Indigenous peoples in Canada are shaping an energy future. *Environmental Reviews*, *27*(1), 95-105.

United Nations General Assembly. (1989). Convention on the Rights of the Child.

Varga, S. M., & Zaff, J. F. (2018). Webs of support: An integrative framework of relationships, social networks, and social support for positive youth development. *Adolescent Research Review*, *3*(1), 1-11.

Walker, G. (2011). The role for 'community' in carbon governance. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(5), 777-782.

Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean?. *Energy policy*, *36*(2), 497-500.

Walker, G., Devine-Wright, P., Hunter, S., High, H., & Evans, B. (2010). Trust and community: Exploring the meanings, contexts and dynamics of community renewable energy. *Energy Policy*, *38*(6), 2655-2663.

Whyte, K. P. (2014). Indigenous women, climate change impacts, and collective action. *Hypatia*, *29*(3), 599-616.

Winskel, M. (2007). Multi-level governance and energy policy: renewable energy in Scotland. *Governing Technology for Sustainability*, 182.

Wirth, S. (2014). Communities matter: Institutional preconditions for community renewable energy. *Energy Policy*, *70*, 236-246.

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The world bank research observer*, *15*(2), 225-249.

Zeldin, S., Camino, L., & Calvert, M. (2003). Toward an understanding of youth in community governance: Policy priorities and research directions. *Social Policy Report*, *17*(3), 1-20.

Chapter 2:

METHODOLOGY

2.1 Introduction

This research was developed in collaboration with research partners, namely the Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Tracking Change Traditional Knowledge Steering Committee. Working in close partnership with community members and those that the research effects is key in ensuring the project will be meaningful for those involved. Partnership with these organizations, as well as community members and research participants, also aided in interpreting data and verifying final results.

The focus of this thesis is rooted in community calls for understandings of: (1) youth involvement in climate change activism, and (2) local energy security in the Inuvialuit Settlement Region. These topics have been highlighted as important by Steering Committee members from Dr. Parlee's Tracking Change project as well as Inuvialuit research partners that have participated in past projects. Thus, this thesis is a direct result of community calls for investigation.

2.2 Methodology

2.2.1 Decolonizing Research

Scholars have acknowledged that there have been significant power imbalances between researchers and Indigenous peoples. Indigenous communities have often been treated like research subjects rather than as active participants and partners in developing and conducting the research (Wilson, 2008). Their knowledge has been misrepresented and appropriated (Ball and Janyst, 2008; Battiste and Youngblood Henderson, 2000). For this reason, it is unsurprising that research "is a dirty word" for many Indigenous communities (Smith, 2013). Research has been a process that has exploited Indigenous people, culture, knowledge, and resources (Smith, 2013). Historical trauma along with institutional and personal racism leads to challenging tensions

between outsiders and the communities they seek to do research with (Chavez, Duran, Baker, Avila, and Wallerstein, 2003). Decolonizing approaches to research are those that seek to address these power inequities and centre projects around the voices of Indigenous peoples (Smith, 1999).

2.2.2 Community-Based Participatory Research

I was greatly inspired by the Community-Based Participatory Research (CBPR) literature that seeks to address unethical research approaches that have been exploitative to communities. At its core, CBPR is based on the principles of equal partnership, community ownership, co-authorship, and is rooted in a meaningful desire to do research that is rooted in the needs and desires of the community (Fletcher, 2003). It can be understood as an ongoing process of research decision-making between the researcher and community (Castleden, Morgan, and Lamb, 2012). Researchers are tasked with building authentic relationships with communities that lead to partnerships in planning, conducting the research, verifying results, and disseminating the findings (Israel, Eng, Schulz, and Parker, 2005). Unlike traditional research approaches that are top down, CBPR shifts power towards collaboration and partnership (Minkler, 2004). CBPR requires a longer-term approach with ongoing communication with the community and returning as often as possible. One community-based researcher remarked that they spent an entire year "drinking tea" to build trust with the community and design a project (Castleden et al., 2012). CBPR is considered the best practice when seeking to do research with Indigenous peoples (Fletcher, 2003; Wilson, 2008; Castleden, et al., 2012; Stiegman and Castleden, 2015).

2.2.3 Place-Based

Scholars recognize that research protocols and cultural and institutional expectations differ between university researchers and Indigenous peoples. Traditional scientific research methods may not be able to meet the expectations and goals that community members value (Davidson-Hunt and O'Flaherty, 2007). For example, studies that merely document on-the-land knowledge would not adequately support the transmission of knowledge from Elders to youth. Place-based approaches to research, that emphasizes learning from the land, allow for knowledge developed through the research to be transferred to others in the community (Davidson-Hunt and O'Flaherty, 2007). These land-based understandings are particularly important for young

Indigenous peoples who benefit from place-based educational approaches (Chinn, 2012) and other community members that view the land as a teacher (Brooks, 2008). As Hawaiian scholar Manulani Aluli Meyer so eloquently writes,

> "Land is our mother. This is not a metaphor. For the Native Hawaiians speaking of knowledge, land was the central theme that drew forth all others. You came from a place. You grew in a place and you had a relationship with a place. This is an epistemological idea ... One does not simply learn about land, we learn best from land (Meyer 2008, p.219)" (Tuck, McKenzie, and McCoy, 2014, p.9)

2.2.4 Collaborative Learning

Collaborative learning can be broadly defined as a, "situation in which two or more people learn or attempt to learn something together" (Dillenbourg, 1999, p.1). It is an approach to dealing with others in groups that emphasizes respect, sharing responsibility, and consensus building rather than competition with others (Laal and Ghodsi, 2012). In studies of collaborative learning in classrooms, the approach is seen as a way for students to get to know each other and develop social skills needed for cooperation and conflict resolution (Cohen and Cohen 1991), as well as the creation of social support systems (Cohen and Willis, 1985). In comparison to more individualistic ways of learning, collaborative learning can result in higher student achievement, empathy for others, self-esteem, and supportive relationships between group members (Laal and Ghodsi, 2012). It seems that collaborative learning can yield positive personal benefits for students beyond greater understandings of issues.

2.2.5 Case Study Research

A case study approach was determined to be the most suitable method for the research. Case study work is not intended to be a study of an entire situation or population. Rather, case study research allows for the examination of real-world activities, particular issues, events, or units of analysis (Noor, 2008). Case study research is particularly useful when trying to understand a particular problem in-depth (Noor, 2008). It allows the researcher to construct the project around the importance of the phenomenon rather than an existing theory or framework

(Eisenhardt & Graebner, 2007). The flexibility of case study research allows the voices and priorities of community members to be the driver of the work. The method has been critiqued for reasons including: not being generalizable, valuing theoretical research more than practical knowledge, and that case studies contain significant bias. However, these have been deemed "misunderstandings" (Flyvberg, 2006). It is important to remember that robust, holistic social science requires the use of multiple qualitative and quantitative approaches; case studies being one of them (Flyvberg, 2006).

2.2.6 Conventional Content Analysis

Conventional Content Analysis (CCA) is a useful tool for a researcher that wants to describe a phenomenon or experience. This approach utilizes inductive reasoning to pull out key themes and insights from raw data rather than using pre-identified categories (Hsieh and Shannon, 2005; Zhang and Wildemuth, 2009). Once analysis is complete, theories relevant to the data are then considered in the discussion section of a study. An advantage of CCA is that one gains information directly from interviewees rather than making their responses fit within preconceived categories (Hsieh and Shannon, 2005). One limitation of this method is that the researcher can miss important categories, ultimately meaning that findings are not representative of the data (Hsieh and Shannon, 2005). I address this challenge through preliminary result verification efforts.

2.3 Research Approach

2.3.1 Research Scoping

We investigate Indigenous peoples' relationships with climate change and energy through two areas of focus: (1) Indigenous youth and climate change activism, and (2) renewable energy development in the Inuvialuit Settlement Region. Funding was originally secured to investigate the energy question after Inuvialuit research partners highlighted this concern to Dr. Parlee. I was invited to participate in the project as the focus of my thesis, although the thesis has since expanded to include the youth component.

My involvement in the energy project began during the scoping phase. Scoping the project's objectives, research questions, and deliverables in partnership with community members is an important part of CBPR. My relationship with people in Inuvik, NT began in October 2017 when I made a short trip to the community to introduce myself to local organizations and leadership. During this trip I spoke with people at the Inuvialuit Regional Corporation, Inuvialuit Hunters and Trappers Committee, Gwich'in Tribal Council, and Gwich'in Renewable Resources Board. At this stage of the project we were considering working with both Inuvialuit and Gwich'in stakeholders, although we ultimately decided to work with Inuvialuit communities due to ongoing Gwich'in politics at the time.

Next, I visited Inuvik in June 2018 to attend the Arctic Energy and Emerging Technologies conference. There I was able to speak with people representing government, industry, non-profits, as well as individual community members about their concerns with energy. It was during this trip that I also met with the Inuvik Community Corporation to discuss the potential of focusing the research on renewable energy at traditional land-use camps (although we shifted the focus away from this due to logistical challenges). Furthermore, I, along with another Future Energy Systems student from the Faculty of Engineering, hosted a public workshop about wind power in Arctic communities. This was an opportunity for community members to share input and ask questions. Four community members attended (likely due to the nice weather outside and people's desire to go out on the land) and we held useful discussions that later informed the interview guide. See Appendix A for promotional poster.

It was during this trip that I began building relationships with community members in informal settings. I visited with vendors and shoppers at the weekly Arctic Market and volunteered at the John Wayne Kiktorak (Inuvik Warming) Centre that provides a safe place for homeless people struggling with addiction. I also spent time with Kaidynce Storr, a young Inuvialuit student that participated in Dr. Parlee's "Tracking Change Youth Knowledge Fair" (hosted in Edmonton in May 16-18, 2018). I trained Kaidynce in using Microsoft PowerPoint and Excel software, trying to "give back" to my host community by developing youth capacity.

On June 21, 2018 I accompanied Dr. Parlee to an Inuvialuit Game Council meeting in Tuktoyaktuk, NT. During this trip I met with staff and board members and it was through some of these discussions that we decided to expand the scope of the research to include energy issues in Tuktoyaktuk. I was also fortunate that the meeting was on National Indigenous Peoples Day which meant there was a lively community celebration happening. It was very exciting that my first day in Tuktoyaktuk was one where the whole community gathered at the baseball diamond to share food, watch traditional games (high kick, tea making), and participate in Inuvialuit dancing. Dr. Parlee also introduced me to her friend and long-time research partner, Elder Frank Pokiak, who was I was able to work with in August 2019.

In August and September 2018, I made a final scoping trip to the Inuvialuit Settlement Region. Much of this time was spent in Tuktoyaktuk where I had more conversations with community members about their energy concerns and what they would like to see in the project. Oddly enough I had a pre-existing family connection in Tuktoyaktuk that proved to be instrumental in getting involved with the community. Sister Fay Trombley is my Great Aunt's ex-husband's sister and has operated the Catholic Mission in Tuktoyaktuk for the past 15 years. Although she is a non-Indigenous outsider she has since become well respected and accepted; receiving the Polar Medal in 2018 and has had Elders say, "you are Inuvialuit". I lived with Fay during my time in Tuktoyaktuk and built relationships with community members by volunteering at the Thrift Store and Food Bank she runs.

The youth project emerged out of my involvement in the Tracking Change youth trip to Europe. I was asked to serve as a chaperone and support the lead trip organizer. The significant growth I observed of the youth on the trip sparked my interest in exploring the positive development within a more formal research context. Furthermore, many of the youth participants that I had kept in touch with reiterated what an incredible experience it was and how much they benefited from participating. The Tracking Change youth events were designed with Dr. Parlee's previous scoping activities with the Tracking Change Steering Committee in mind. More specific scoping related to the Tracking Change @ COP24 youth trip was based off of my own experiences and reflections through my participation as a chaperone, as well as discussions with other trip organizers.

2.3.2 Participant Recruitment

Participant recruitment for the energy portion of this research was done through a snowball sampling method. Snowball sampling requires the researcher to ask study participants to refer them to other people that might be useful for the researcher to speak with (Biernacki and Waldorf, 1981). It fundamentally relies on social contacts between people (Bryman, 2004). While this method does not provide a representative sample of a broad population, it is useful when trying to understand perspectives of a specific group of people on a set topic (e.g. ex-drug addict experiences with treatments) (Biernacki and Waldorf, 1981). In the energy study we began with a list of potential participants that was developed throughout the scoping stage. I also utilized Dr. Parlee's connections in Inuvik and Sister Fay's network in Tuktoyaktuk to identify potential interviewees.

Interviewees for the youth research were recruited based on their participation in the Tracking Change @ COP24 trip. The focus of the project was specifically on the experiences of the youth on the trip and their chaperones/loved ones, so there was no need to use snowball sampling to expand the participant list. I was part of the youth trip to Europe, so I already had existing friendships with the participants. The pre-existing connection made it much easier to try and recruit people for the study because we already had a rapport and a level of trust.

Once a potential interviewee was identified I contacted them, told them about the project, and asked if they would be interested in participating in an interview. Interviews were scheduled for a time and place that was convenient for the participant and ranged from in offices to kitchen tables. Participants were given the plain language research summary sheet (Appendix B; Appendix C) and I responded to any questions or requests for clarification. Next, I reviewed the consent form (Appendix D; Appendix E) with participants who were given the option to fill it out either before or after the interview.

2.3.3 Data Collection

Semi-Structured Interviews

Semi-structured interviews were conducted for both the energy and youth interviews. This type of interview is conversational and allows participants to expand on things they consider important (Longhurst, 2003). Semi-structured interviews allow the researcher to ask interviewees the same set of questions for consistency, but also afford the flexibility to use prompts and follow up questions to get people to expand on their thoughts (Leech, 2002). It is especially useful when applying a case study approach (Noor, 2008). I prepared separate interview guides for the energy and the youth interviews based off of associated scoping discussions. However, I did adjust the language used depending on who I was speaking with. For example, rather than using jargon like "net-metering" I would rephrase it to "making your own power and selling extra to the Power Corporation". Making these slight changes in wording were necessary to ensure participants understood the question and did not get discouraged by being asked about terms they were not familiar with. In addition to interview questions, youth participants in the climate action research were led through a social network mapping activity where they discussed important supports in their lives and significant encounters during the Europe trip. Key informants were asked about the youth's social network and events that they thought were important to the youth's development. These responses supplemented the digitized drawings seen in Figures 2-5. Interview guides can be found in Appendix F and Appendix G.

Webs of Support

Varga and Zaff (2018) present a new framework for understanding social capital as it relates to youth development, namely, "webs of support". This model "actualizes how relationships and resources optimally operate to promote more accurate examinations of how adolescents gain the developmental supports necessary to thrive" (p. 2). Whereas the majority of literature focuses on independent relationships between youth and adults, this approach allows for a more holistic examination of social capital. Webs of support consider: (1) youth agency and characteristics, (2) relationships between all adults and peers within the web, (3) support provided by actors, and (4) variation in importance of adults (Varga and Zaff, 2018). Through this exercise we are able to explore how youth are supported and influenced by their peers and other adults. The framework highlights the examination of "cores" which are clusters of strong ties in different contexts (e.g. school, family, work, extracurriculars). Understanding youth webs of support is a useful tool for policymakers to understand interactions between cores and develop

ways to strengthen ties that will lead to positive development (e.g. strengthening ties between family and school cores may lead to academic success). We utilize the webs of support framework in Chapter 3.

2.4 Consent & Ethics

2.4.1 Ethics & Northern Research Licensing

Research for both projects was done in accordance with ethics terms outlined in our University of Albert Research Ethics Board approvals. The University of Alberta follows procedures outlined in the *Tri-Council Policy on Ethics*. Ethics approvals for the youth project and energy research can be found in Appendix H & I.

All researchers that wish to do work in the Northwest Territories are required to obtain a Northern Scientific Research License (Aurora Research Institute, 2019). After our scoping trips we applied for this license in relation to our energy research (Appendix J). Neither a Northwest Territories Scientific Research License or a Yukon Scientists and Explorers License was required for the youth research because of pre-existing licenses for Dr. Parlee's "Tacking Change" project.

2.4.2 Research Agreement

No research agreement was signed between myself and the communities of Inuvik and Tuktoyaktuk. Interviews did not discuss Traditional Knowledge. A research agreement would have been created had the research asked about sacred knowledge or spirituality. Further, because Dr. Parlee had worked with the communities and leadership for a number of years there was already a pre-existing relationship and level of trust with the community. The youth-focused project was placed under an existing research agreement that was created for Dr. Parlee's Tracking Change project (Appendix K).

2.4.3 Consent

Obtaining informed consent from participants is critical in conducting ethical research. Interviewees for both projects were given a plain language summary of the study and they had

the opportunity to ask questions. Participants were given the choice of signing the consent form before or after the interview, depending on their preference. I made sure to reiterate that interviewees were under no obligation to participate in the study and were not required to answer any questions they did not feel comfortable with. Furthermore, I explained that participants would have the opportunity to review, revise, and remove their transcripts should they choose. All participants for both energy and youth interviews granted me written consent. Consent forms can be found in Appendix D and Appendix E. Interviewees indicated whether or not they wanted their name tied to their quotes. All youth research participants gave consent for the public use of their names, as can be seen in Chapter 3. Seven of the energy interviewees indicated they wanted to remain anonymous. In order to maintain anonymity for those 7 participants, all quotes in Chapter 4 are linked to numeric identifiers rather than names. No interviewees were adamant that their name *must* be used publicly, so I decided this was the best approach to take.

2.4.4 Compensation

It is recognized that gifting honoraria is a culturally-sensitive way of having respectful relationships with Elders and knowledge holders (Pete, 2016). Thankfully our project funding allowed us to pay honoraria for both energy and youth interviews. Interviewees in Inuvik and Tuktoyaktuk were offered a $100 gift card to the Northern Store in thanks for their participation. This represents a minimal value in the communities due to the extremely high cost of food in the High Arctic (e.g. a box of Cheerios is $22 in Tuktoyaktuk). Youth research interviewees were offered a $50 cash honoraria which was paid via etransfer. This approach was utilized because many interviews were over the phone and I was unable to purchase gift cards useful in small communities. Honoraria claim forms were filled out in accordance with University of Alberta finance procedure.

2.5 Analysis & Validation

2.5.1 Analysis

All transcripts were printed and read several times before coding began. By reading through the content multiple times I was able to compile a list of major themes that emerged across the transcripts. I then returned to each transcript and highlighted the themes that were

present. The coding process was done separately for both the energy and youth transcripts. Once I completed the on-transcript coding I consolidated the codes into core themes and subthemes. This was an important step because I had far too many codes to conduct a meaningful analysis (e.g. energy transcripts resulted in 30+ codes that were ultimately consolidated into 13 themes). Finally, I used Microsoft Excel to create a master spreadsheet with the interviewee's numeric identifier, quote, theme, and subtheme. This was a useful way of organizing the data because it allowed me to easily search for quotes relevant to the themes I was writing about. The quotes included in the thesis were selected for their eloquence, humor, and reader impact.

2.5.2 Verification

Verifying preliminary results and allowing community members to contribute their own interpretations is an important part of CBPR (Fletcher, 2003). The first stage of the verification process was sending transcripts back to participants that way they could review what they said. I highlighted the quotes I intended to use in the paper that way interviewees would have a better idea how their information would be used. They were given 30 days to make changes to their transcript or remove their data from the study.

To further verify my interpretation of the energy data (i.e. to make sure the story I tell in my thesis is accurate to people's experiences) I hosted verification workshops in Tuktoyaktuk and Inuvik in August 2019. I hired Kaidynce Storr as my Community Research Assistant who helped me plan, promote, and facilitate these workshops. These presentations were an opportunity to share preliminary findings about the energy research and get feedback from community members. The Inuvik workshop was hosted in the Aurora Research Institute (3 attendees) and the Tuktoyaktuk workshop was held in the Kitti Hall community centre (30 attendees). Both presentations were well-received and attendees agreed with my interpretation of the data. Promotional materials can be found in Appendix L.

Verification for the youth project was less in-depth because participants were not located in one location. Once I completed a draft of the youth paper I made an Infographic that clearly explained what the paper was about and the conclusions I made. I sent this to participants and gave them 2 weeks to review and send in feedback if they wished. I opted for this visual,

Infographic approach to verification because interviewees include young people and those with limited time to read a long paper. This verification activity may also be seen as a way to keep the young engaged with the research process and include their perspectives in the final paper. The verification infographic can be found in Appendix M. A draft of the youth paper was also sent to interviewees for final comment.

2.5.3 Community Research Assistant

No community research assistant was hired during the scoping or data collection portions. This is because I made many connections myself through Dr. Parlee's government contacts and networking at the Arctic Energy and Emerging Technologies Conference. However, I did hire Kaidynce Storr, a youth I met with during previous trips and trained in Microsoft programs, to assist me with the verification stage. Kaidynce assisted me with putting on two public presentations (one in Inuvik and one in Tuktoyaktuk) where I shared the preliminary findings about local energy issues and she spoke about her experiences during the Tracking Change Europe trip. Because she was has lived in the region her whole life she had strong insight related to what kinds of incentives would get people to the workshop (e.g. gift cards to Northern, fresh cookies) and how to advertise (e.g. Facebook, posters in the convenience store).

Kaidynce was also tasked with was assisting me in the creation of a community "deliverable". Given that she was involved in the Tracking Change @ COP24 youth trip we decided to create something related to that experience. We decided that a storybook about youth experiences with climate activism would be an effective way of communicating the youth research. Furthermore, we also consider this to be a meaningful "give back" for those involved in the energy research because it may be inspirational for youth in the community. Kaidynce had expressed interest in studying English at University so she took lead on developing the plot for the book and describing the illustrations she felt would be suitable. Upon completion of the book (anticipated for March 2020) Kaidynce will be listed as a co-author and may assist with distributing it in the Inuvialuit Settlement Region.

2.6 Data Management

2.6.1 Storage & Ownership

In most cases interviews were audio recorded although I took notes in the two instances where energy project participants did not want to be recorded. Once an interview was recorded it was transferred to my password protected computer and the audio file was immediately deleted upon completing the transcription.

Relevant information such as interviewee names and contact information, as well as details about the interview (i.e. location) was recorded in an Excel spreadsheet. Each interviewee was assigned a numeric code to ensure the confidentiality of their identity and the secure Excel spreadsheet was the only document that linked their data with their names.

Transcripts were printed and the hardcopies were used for the analysis. These were stored in my locked filing cabinet in my locked office. Upon defence of this thesis the transcripts will be moved to a locked filing cabinet in Dr. Parlee's office where they will be stored for five years, in accordance with our ethics approvals. Transcripts will be destroyed after the five-year period.

2.6.2 Benefits

Individuals benefited through participation in that they received an honoraria payment. They also have the additional benefit of being able to express their thoughts, feelings, and insights as it relates to energy issues and youth experiences in climate activism.

Participants in the youth project will each receive a copy of the storybook deliverable I co-authored with Kaidynce. We also intend to send copies to schools and government offices in the youth participant's communities. This storybook may be perceived as a benefit because it is an alternative form of communication that is accessible to people of all ages and education levels. Furthermore, there are limited storybooks that feature Indigenous kids as the heroes of the story, so this book may be more relatable to young people in the North.

2.7 Limitations

My pre-existing relationship with the youth participants and chaperones on the trip to COP24 has both advantages and disadvantages. It was beneficial in that I already had rapport

with interviewees. However, my friendships with interviewees also meant there is the risk that participants felt pressure to give certain responses or opted to leave out things they would have discussed if the interviewer that was a stranger. Finally, my experiences and observations on the trip were used to inform the interview guide. This meant I was able to prompt youth to expand on certain things because I had familiarity with the trip itinerary. The limitation of this is that I might have focused too much on certain aspects. I addressed this by utilizing the semi-structured interview guide that provided me the flexibility to ask follow-up questions without getting too far from the research objectives. The verification stage also addresses this concern.

2.8 Researcher Positionality & Insider-Outsider Tension

I am a non-Indigenous woman born and raised in Regina, SK on Treaty 4 Territory. I became interested in working with Indigenous peoples after taking a course during my undergraduate degree that focused on the impacts of colonialism on First Nations, Metis, and Inuit peoples. My interest in sustainable energy systems was fostered while on a field school in Iceland hosted by the University of Reykjavik. Much of my experience in environmental studies has been in a university-setting which is in contrast to community members that have learned about environmental systems by spending time on-the-land. My background means that I come from a very different geographic and socio-economic context than many of my community partners. Thus, I was forced to navigate these cross-cultural differences and be adaptable in the field.

While completing my thesis fieldwork I was constantly aware that I was perceived as an outsider. In two instances I was met with apprehension and anger on a part of a few community members when I expressed interest in speaking with them. This was the first time in my life when I was the minority. I have come to view it as a significant insight to the lived experience of many of my loved ones that experience racism on a daily basis. Upon reflection, these challenging encounters with some community members exposed me to the insider-outsider tension that has been highlighted widely in the CBPR literature. I feel like I truly experienced the highs and lows, successes and challenges that come with doing this type of community-based research.

References

Aurora Research Institute, 2019. About Licensing Research. Retrieved from: https://nwtresearch.com/licensing

Ball, J., & Janyst, P. (2008). Enacting research ethics in partnerships with indigenous communities in Canada: "Do it in a good way". *Journal of Empirical Research on Human Research Ethics*, *3*(2), 33-51.

Battiste, M., & Youngblood, J. (2000). *Protecting Indigenous knowledge and heritage: A global challenge*. UBC Press.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, *10*(2), 141-163.

Brooks, L. (2008). The Common Pot: The Recovery of Native Space in the Northeast. Minneapolis, MN: U of Minnesota Press.

Bryman, A. (2004). *Social research methods* (2nd ed.). Oxford: Oxford University Press.

Castleden, H., Morgan, V. S., & Lamb, C. (2012). "I spent the first year drinking tea": Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer/Le Géographe canadien*, *56*(2), 160-179.

Chavez V., Duran B., Baker Q.E., Avila, M.M., Wallerstein, N. (2003.). The dance of race and privilege in community-based participatory research, In M. Minkler & N. Wallerstein (Ed.). *Community- Based Participatory Research for Health*. San Francisco, Jossey-Bass.

Chinn, P. W. (2012). Developing teachers' place-based and culture-based pedagogical content

knowledge and agency. In *Second international handbook of science education, 24*, 323-334. Springer, Dordrecht.

Cohen, S., & Willis, T. (1985). Stress and social support and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Cohen, B.P. & Cohen, E.G. (1991). From groupwork among children to R & D teams: interdepence, interaction and productivity. In Lawler, E.J., Markovsky, B., Ridgeway, C. & Walker, H. (Ed.), *Advances in Group Processes*. Greenwich, Connecticut; USA. JAI Publishing.

Davidson-Hunt, I. J., & Michael O'Flaherty, R. (2007). Researchers, indigenous peoples, and place-based learning communities. *Society and natural resources*, *20*(4), 291-305.

Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative-learning: Cognitive and Computational Approaches*. Amsterdam: Pergamon, 1-19.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *The Academy of Management Journal*, *50*(1), 25-32.

Fletcher, C. (2003). Community-Based Participatory Research Relationships with Aboriginal Communities in Canada: An Overview of Context and Process. *Pimatisiwin: A Journal of Aboriginal & Indigenous Community Health*, *1*(1), 27-61

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, *12*(2), 219-245.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, *15*(9), 1277-1288.

Israel, B. A., Eng, E., Schulz, A. J., & Parker, E. A. (Eds.). (2005). *Methods for Community-Based Participatory Research for Health*.

Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia-social and behavioral sciences*, *31*, 486-490.

Leech, B. L. (2002). Asking questions: Techniques for semistructured interviews. *PS: Political Science & Politics*, *35*(4), 665-668.

Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key methods in geography*, *3*(2), 143-156.

Meyer, Manulani Aluli. 2008. Indigenous and Authentic: Hawaiian Epistemology and the Triangulation of Meaning. In Denzin, N,, Lincoln, Y., and Smith, L (Eds.), *Handbook of Critical and Indigenous Methodologies,* (pp. 217-232). London: Sage.

Minkler, M. (2004). Ethical challenges for the "outside" researcher in community-based participatory research. *Health Education & Behavior*, *31*(6), 684-697.

Noor, K. B. M. (2008). Case study: A strategic research methodology. *American journal of applied sciences*, *5*(11), 1602-1604.

Pete, S. (2016). 100 Ways: Indigenizing & decolonizing academic programs. *Aboriginal policy studies*, *6*(1).

Smith L.T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books

Smith, L. T. (2013). *Decolonizing methodologies: Research and indigenous peoples*. London: Zed Books

Stiegman, M. L., & Castleden, H. (2015). Leashes and lies: Navigating the colonial tensions of institutional ethics of research involving Indigenous peoples in Canada. *International Indigenous Policy Journal*, *6*(3).

Tuck, E., McKenzie, M., & McCoy, K. (2014). Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research. *Environmental Education Research, 20*(1), 1-23.

Varga, S. M., & Zaff, J. F. (2018). Webs of support: An integrative framework of relationships, social networks, and social support for positive youth development. *Adolescent Research Review*, *3*(1), 1-11.

Wilson, S. (2008). Research is Ceremony: Indigenous Research methods. Winnipeg, MB: Fernwood Publishing.

Zhang, Y., & Wildemuth, B. M. (2009). Qualitative analysis of content. *Applications of social research methods to questions in information and library science*, *308*, 319.

Chapter 3:

YOUTH ENGAGEMENT IN CLIMATE CHANGE ACTION: CASE STUDY ON INDIGENOUS YOUTH AT COP24

3.1 Introduction

Climate change is having significant impacts on Indigenous peoples including youth of the territorial and provincial norths of Canada (Macdonald et al., 2013). Many Indigenous youth in northern Canada are already vulnerable to stress as a result of the colonial histories and socio-economic marginalization; as a result they struggle with a variety of social, economic and health and environmental challenges (Marsh, Cote-Meek, Young, Najavits, and Toulouse, 2016; Chandler and Lalonde, 1998; Musto, 1990).

A key area of emerging research focuses on how youth are resilient to these challenges and can develop stronger roles and voices in local-global governance; among the key issues that have galvanized youth in northern Canada and globally is that of climate change (MacDonald et al., 2015). This chapter explores climate action as a mechanism for positive youth development. Drawing on the narratives of 4 Indigenous youth who attended the Tracking Change Youth Knowledge Fair and trip to COP24, the chapter aims to contribute to a better understanding of the opportunities to improve learning outcomes related to climate change and the environment, increase engagement in local communities, and create leadership skills in climate action and related local-global forums. Specifically, the chapter answers three key questions related to the role of youth engagement in climate change education and knowledge sharing events. How did the learning opportunities created by the Tracking Climate Change Youth Knowledge Fair and COP24 meetings matter? How were youth supported by their communities and in turn contribute back to their communities? How did their participation in these climate action activities matter in the context of youth leadership? By answering these questions, the paper aims to contribute to the literature on youth well-being and create insights about the benefits of Indigenous youth engagement in climate governance.

3.2 Literature Review

Greta Thunberg of Sweden sparked an international "Youth Climate Strike" movement that calls on governments and world leaders to take significant steps to combat climate change (Thunberg, 2019). Her one-person school strike has transformed into an international movement that has seen millions of young people and their adult allies from 185 countries take to the streets in protest (Global Climate Strike, 2019). Greta was named Time's Person of the Year (Alter, Haynes, and Worldand, 2019).

Young Indigenous peoples have also engaged in activism for decades. Take for example Helena Gualinga, an Ecuadorian teenager from the Sarayaku Indigenous community. Helena's passionate words about the contributions of oil and gas development to climate change were highlighted in her speech at COP25 in Madrid, Spain (Ecuador Times, 2019). Canadian Indigenous activist, Autumn Peltier, has been involved in environmental activism and water protection since she was 12-years old. She was named Chief Water Commissioner by the Anishinabek Nation when she was 14-years old and nominated for the 2019 International Children's Peace Prize (The Canadian Press, 2019). These young leaders have been activists long before Greta gained notoriety, but do not received as much widespread media attention or recognition as their Swedish counterpart.

While the impact of Greta Thunberg, Helena Gualinga and Autumn Peltier on climate change policy has been important, it is perhaps their impact on addressing hopelessness of youth about the state of our environment that is their great gift. Studies have found that although many young people show an interest in global problems, they experience feelings of hopelessness, pessimism, and helplessness (Eckersley, 1999; Tucci, Mitchell and Goddard, 2007; Ojala, 2012). Although some amount of worry can be motivating, excessive feelings of hopelessness can have troubling implications for the well-being of youth, particularly those who are already struggling with other kinds of social anxieties or issues of discontinuity of self. Indigenous youth are among those who are potentially most at risk in the struggle against hopelessness; many live in communities characterized by poverty, unemployment, limited social and health supports, and cultural discontinuity (Adelson, 2005; Chandler and Lalonde, 1998; Fast and Colin-Venzina, 2019).

3.2.1 Learning Outcomes – Climate Change

Climate change is a complex issue with many dimensions that affect the well-being of youth. In arctic communities, opportunities to learn about both the science and Indigenous knowledge related to climate impacts has been relatively limited. At the same time, public awareness about the "threat" and "stresses" of climate change has increased exponentially. The disconnect between knowledge and tools to cope and adapt as well as increasing "worry" about climate futures has seemingly led to increases in anxiety and stress among youth.

Climate related education is considered a useful strategy for addressing hopelessness and motivating action. At present, it is suggested that youth have a relatively limited understanding of both the causes and potential adaptive strategies available to address climate change (Corner et al, 2015). However, simply sharing "information" about climate change is not the only solution, particularly for Indigenous youth. Research on climate change education for example, demonstrates the critical importance of teaching and learning opportunities that weave together an increased understanding of key issues of climate change with narratives of hope and opportunity (Ojala, 2012). Culturally appropriate, place-based education and exposure to new opportunities for cross-cultural learning are among the strategies considered wise practice for Indigenous youth (Simpson, 2002; Castagno and Brayboy, 2008; Chinn, 2012). Collaborative learning, where students problem solve together, is also an important approach and can lead to more cooperation, higher academic achievement, and greater self-esteem (Cohen and Cohen, 1991; Laal and Ghodsi, 20120. It is in this context that the Tracking Climate Change Youth Knowledge Fair was organized in 2018 and students were invited to carry out research in their own communities about issues of climate change in the Mackenzie River Basin. By carrying out the work themselves and engaging family, science teachers, community members (including elders) in the research process, students were able to take responsibility for their own learning and utilize both conventional kinds of science as well as Indigenous Knowledge from their communities.

3.2.2 Community Supports and Networks

The social dimension of climate change education and adaptation is another important foundation for understanding the experience of Indigenous youth in the Tracking Climate Change gathering and COP24 meetings. It is well known that people overcome stress, trauma and other life challenges by drawing from the social and cultural networks and practices that constitute communities (Kirmayer et al., 2009). This is particularly true in many remote and Indigenous communities where strong kinship networks and social connections have been the basis for resilience to other kinds of economic, health and environmental stresses (e.g., variability in wildlife valued as food).

For youth, family can be a particularly important source of strength and capacity to learn and cope with stressors including those associated with climate change. "Family protective factors may increase prosocial behaviour and resistance to the negative effects of crises or stress by providing a stable yet flexible and supportive environment" (Kirmayer et al., 2009). Just like youth and their individual resilience may be informed and shaped by families, so too the family unit and its behaviour in the face of stress, are shaped by the cultural norms and practices of its community and broader society. In that way individual social relations are interconnected with culture and identity-making which is particularly important during adolescent years. Research with Sami youth is particularly insightful about these linkages:

> For Sami youth, cultural continuity seems to play a significant role in community resilience and in building and maintaining social networks. These networks are maintained by kinship and extended family and extended godparent (fa´ttar) traditions, such as traditional wedding ceremonies, yoik, and naming traditions. In Sami communities for example, "the key to relational resilience seems to be enculturation, that is, the degree to which youth are embedded in Sami and local cultural traditions and in the practice of cultural values and ceremonies" (Nystad et al., 2014).

Youth with strong social networks including continuity of social and cultural networks are characterized by lower rates of suicide and other kinds of social illness (Chandler and Lalonde, 1998; Nystad et al., 2014). In addition to being in better health, social networks and culture are a source of strength or social capital that can add to youth resiliency.

One framework for understanding community as a resource that supports individuals and families is social capital – "collective asset in the form of shared norms, values, beliefs, trust, networks, social relations, and institutions that facilitate cooperation and collective action for mutual benefits" (Bhandari and Yasunobu, 2009). But the influence of community and social capital on individual knowledge and behaviour is not unidirectional. Like a bank, individuals can contribute to, or draw from, their social capital at various stages of life and in different contexts. Access to social capital and networks has been identified as an important way to "overcome the odds" and improve outcomes for marginalized youth, such as Indigenous youth (Stanton-Salazar, 2011). While much research has focused on the importance of community to the resilience of youth, few studies have focused on the contributions of youth, including Indigenous youth, to social capital and resilience of their communities to climate change. Our research explores the ways in which youth engagement in learning about climate change through the Tracking Climate Change knowledge fair and the COP24 meeting are supported by but also contribute to their families and communities.

3.2.3 Leadership

Many youth have played a limited role in decision-making, particularly in northern communities; it often assumed that youth have little to contribute in policy spaces (Bostrom, 2000). In recent years, stereotypes of youth apathy towards government have also increased. However, deeper study of youth motivations to engage in politics reveals a different kind of narrative. Although there is widespread skepticism about formal political parties, distrust in political figures and a general sense of alienation from mainstream politics, much research suggests young people have a strong interest in 'cause-oriented' political and social movements (Harris et al., 2010; O'Brien et al., 2018). Leadership skills such as organization, public speaking, negotiation, and meeting participation are essential for those that want to take part in community change efforts (Erbstein, 2013). The climate action movement has created new ways

of thinking about the power and voice among youth including Indigenous youth. Through this research, the aim has been to understand more about how youth voices about climate change and its impacts on their lives, communities, and environments can contribute to better decision-making. Conversely, how can participation in climate action activities lead to the development of youth leadership skills.

3.3 Setting

The Tracking Change traditional knowledge research project, led by Dr. Brenda Parlee at the University of Alberta, created two events that provided Indigenous youth from Northern Canada the opportunity to get involved in climate activism. A "Youth Knowledge Fair" (YKF) was hosted in May 2018 and brought together youth from across the North to present posters on how climate change is impacting their communities (Tracking Change, 2018). Youth were tasked with making the posters and put them together using local and traditional knowledge, as well as western science. Six of these youth participants were invited to present their posters in European policy spaces as a result of their strong performance at the YKF.

Students travelled to Europe to present their research posters and speak to policy makers about how climate change is impacting their communities. First, youth went to Edmonton, AB and spent several days refining their posters and practicing their presentation skills. Next the group travelled to Paris, France where the young people spoke at the United Nations Educational, Scientific, and Cultural Organizations (UNESCO). They then presented at the Conference of Youth (COY) 14 in Katowice, Poland which is the youth component of the Conference of Parties (COP) 24 meeting (Conference of Youth 2020). While in Katowice the young people also spoke at two Indigenous Caucus meetings, shared dinner with Government of Canada representatives, and were interviewed by several news agencies. Please see Appendix N for the trip itinerary.

The YKF and trip to Europe are particularly interesting in the realm of youth development due to the challenging circumstances faced by some in Indigenous communities. Intergenerational trauma, a result of colonialism and residential school, has contributed to high rates of Indigenous suicide (Elias, Mignone, Hall, Hong, Hart, and Sareen, 2012; Chandler and

Lalonde, 1995;1998), substance use disorders (Marsh, Cote-Meek, Young, Najavits, and Toulouse, 2016; Marsh, Coholic, Cote-Meek, and Najavits, 2015), and incarceration (Chartrand, 2019). Due to the seriousness of these issues there are growing opportunities to engage with youth and improve their outcomes (Indigenous and Northern Affairs Canada 2019). The Tracking Change events responded to community interest in having more youth engagement opportunities.

3.4 Approach and Methods

The impetus for the research began with the development of the Tracking Climate Change Youth Knowledge Fair in May 2018. During this event, 40 youth (Grades 10-11) from the Mackenzie River Basin, carried out climate change research in their own communities (16) in Alberta, Saskatchewan, British Columbia, Northwest Territories and Yukon. The intent was to create opportunities for youth to learn from their own community members and other sources of knowledge about the impacts of climate change in their region. Posters were created by each student who then traveled to share their work at the University of Alberta. Similar to other kinds of science fairs, the intention was to showcase youth talents, creativity and innovation. However, given the strong focus of the Tracking Change project on Indigenous Knowledge, the knowledge fair was unique in celebrating the value of cultural worldviews, values and knowledge systems of the Dene, Cree and Inuvialuit students who participated. During the fall of 2018, six students who had participated in the youth knowledge fair were invited to share their work and participate in the COP24 meetings in Katowice, Poland. They attended and presented their work to the Canadian Council of UNESO in Paris as well as the Council of Youth (COY) in Katowice. A key question following both the knowledge fair and the travel to Paris and Katowice was, what was the benefit of the events to the youth involved?

To answer these questions, fourteen (14) interviewees were completed: youth (4), coordinators (2), teacher chaperones (2), family member chaperones (2), and community members that were involved in some way in supporting youth (4). The interviews were carried out with careful consideration of ethics procedures for vulnerable persons, specifically youth under the age of consent (Study ID: Pro00085621). The interviews were audio recorded and transcribed to identify key themes and sub-themes.

The data is presented in a chronology that follows from the early period of youth engagement in the planning and their participation in the youth knowledge fair and COP24 events to post event reflection. Webs of support (adapted from Varga and Zaff, 2018) that visually depict sources of support for the youth, as related to their participation in the Tracking Change trip to COP24, are also presented. These figures were created by combining information from the semi-structured interviews with a mapping activity completed by the youth participants. The diagrams the youth completed were transposed into a digital format using Microsoft PowerPoint. A limitation of the web of support method is that youth may not be engaged with the type of activity, which may mean the figures illustrated are not accurate. One of the youth participants remarked "this is lame" but completed the exercise anyway. Supplementing the youth drawings with information from key informant interviews helped to address this limitation. It is important to note that the webs of support do not differentiate between the enduring, long-term relationships of family and friends and the temporary acquaintances met during activism. The diagrams presented in this paper are simple and are not intended to consider the difference in significance and frequency of youth relationships. A discussion follows which aims to unpack the benefit of their participation in terms of individual learning, family and community networks (benefits of/to social capital) and contributions to leadership and good decision-making.

3.5 Results

The Tracking Climate Change Youth Knowledge Fair was inspired by guidance from elders and leaders of the Tracking Change project who, concerned about limited educational opportunities for their children and grandchildren, emphasized that the project, "should do something for the youth". The knowledge fair in 2018 followed a 2015 and 2016 fair, all of which had a strong and similar focus on engaging high school students in telling their own stories about environmental issues, creating opportunities for youth-youth and community-community learning among students across the Mackenzie River Basin. Although the youth knowledge fair might have ideally been held on the land or in a northern community, budget limitations meant that the event could only be held at the University in Edmonton. Although there were limitations, holding the event at the university created the space for youth to learn about the opportunities of post-secondary education.

3.5.1 Learning Outcomes – Climate Change

The event organizers at the University of Alberta requested that a summary of why students wanted to participate was submitted to confirm their genuine interest and commitment. The support of family, friends and teachers was important to ensure youth were confident enough to write their own story about why they wanted to participate. Many young people were motivated to participate and learn about this topic for different reasons.

> Before, I didn't really care about the land I guess, and that kind of sounds harsh but I didn't care. I didn't really know what was happening. I felt like learning about climate change - it really changed how important [the land] is to people and to respect the land. -Kelsey Lockhart, youth participant

> Well I always hear stuff on the news like "oh climate change" and all that stuff but I figured "holy crap I actually have a chance to say something about it". That someone will listen. That people will listen. So I figured I'm going to try with this, so, went from there. -Ryan Schaefer, youth participant

> At the beginning there were quite a lot of students interested then when they were asked to write something, then they start to drop [out]. Richard he said "oh it would be a good opportunity for me" he wrote and he gave me [the story] and then we picked him. -Dawitt, teacher/chaperone

> [Students] are not interested in the extremely academic parts of the [science] course… so when I mentioned it to them they were very excited about it and the prospect of maybe going to Edmonton… I kind of opened up the project [opportunity] for everybody to do this research. There were students that really wanted to go - you could tell. I selected the student, who was interested and from the work that was produced. He was super excited about it. -Nashra Kamal, teacher/chaperone

> I interviewed local people around my community. My Uncle Kurt Schaefer, Ken Mantoniak, Louie Bolliak who have been fishing and out on the river for years, doing it for a long time. I also found a [report] about the Slave River and like the stuff that's going on. So I took stuff from that and I also took what other people who I interviewed told me and I put it all together basically. So it was a bit of local knowledge and stuff from like a PDF all together. So I had a bit of like actual research and that firsthand type of thing. Like what people actually see on the land. -Ryan Schaefer, youth participant

The opportunity to learn and share knowledge with others was important to many students. As noted by one chaperone, the students live the impacts of climate change in their day to day life.

> His Dad lives off the land. So he sees everything like permafrost melting, he sees the big sinkhole in the Dempster Road. He sees like how the climate is changing. He sees it because he lives it, he lives it. --- he doesn't even need too much research because, I mean, he could see the impacts of climate change in his own life. Day to day. -Dawitt, teacher/chaperone

A key insight from the 2018 trip was the complexity of issues and themes that were covered by the student work. However, a secondary insight was around the emotional experience and motivations behind student research topics. As noted earlier by one of the chaperones, the climate issue is not something separate from the youth experience, "he lives it".

> I think Richard's stories about the land were very impactful. Cause they really spoke from the heart; you could really almost feel his passion... [And Kaidynce told] the story of the belugas going inside the harbour when they normally never go due to climate change. I feel like the stories were so real and like they really showed a new perspective we're not used to. And I am sure there were a lot of youth [that] were listening to such an honest and

> truthful ways of displaying change. That I think everyone could like relate at a very deep level. To the stories. -Laura Gaitan, chaperone

Other emotions shared included frustration.

> It was it was kind of upsetting that climate change not only effects my reserve but like everywhere else. I've seen similar issues like how the waters being affected - how people are restricted from hunting because of the diseases that animals carry. And it was upsetting and was a real eye opener for me that made me want to pursue this activism. -Paige Chisaakay, youth family member

Youth noted that they felt like they were actually listened to by the different audiences and groups they spoke to and had the opportunity to learn from others. Participants were both students and teachers.

> I think it's everyone's chance to learn. Not just the youth, not just people listening. It's every single individual who's in that room, we're all learning. So that's the big idea right? Is always to seek knowledge and learn and better ourselves and we can't better ourselves if we don't learn the information that that may not be at our fingertips? This is the idea. This kind of knowledge is easily Googleable. -Nashra Kamal, teacher/chaperone

> [At the] United Nations in Paris, they were quite impressed by our youth from Canada. And [in attendance] it wasn't just any employee it was like the top United Nations people that were there. They actually listened. -Kevin Ahkimnachie, family member/chaperone

> I was very happy that the people present [at UNESCO] were really engaged. - I was pleasantly surprised at how the adults were paying attention to the youth. -Laura Gaitan, chaperone

> It was nice. People were actually listening… I've told the story a couple of times in Mayo and no one listened. And then it's nice when people are listening and paying attention. -Gavin Winter-Sinnott, youth participant

> All the people who were there, they seemed like they really listened. – Kelsey Lockhart, youth participant

> … it's kind of a wake-up call for the adults that may or may not think climate change is real… So to hear that from the youth is very eye opening. -Kevin Ahkimnachie, family member/chaperone

The small group who traveled together became a kind of supportive family. That created opportunities for everyone to learn from one another.

> It was an emotional trip for sure. But it's funny, you're right. We did become a family. As a group with the chaperones, with the students, and while they were presenting - I remember myself tearing up. Like "oh my gosh" I got the shivers because I was like "this is so powerful and they're so… they're sharing everything that they know and they're so passionate about it" I was moved and I thought it was a growing experience for everybody. Not just the kids, the chaperones as well. We all were learning so much from [each other]. -Nashra Kamal, teacher/chaperone

The cross-cultural, international nature of the trip provided an opportunity for new learnings of the world as well as the scope of environmental problems. Conversations, storytelling, and attending presentations provided greater understandings of climate change impacts.

> She said that she gained more knowledge, so I think that it's important that she gained more knowledge. Not just from like an Indigenous perspective but a perspective from all over the world. -Paige Chisaakay, youth family member

> Well [meeting people] and getting to talk to them about the things that they face with climate change and how similar some of these [impacts] are to them. I met one lady, I forget where she was from, but she was telling me that she has exactly the same problems that we have here in Canada - it was so interesting getting to talk to these people about things that they experience and that I never knew happened around the world. -Portia Morin, youth participant

While youth felt they did have a strong voice in talking about climate change impacts in their communities, chaperones emphasized the importance of not over-burdening them with a sense of responsibility for solving the problems.

> You have to take into account that they're like under 18. You know? So like there's [only] so much they can say… Like even if it's well intentioned I think the audience [should be aware of youth abilities], because it's such a heavy subject. We can sometimes forget that they are still youth. They're not policymakers. -Laura Gaitan, chaperone

> You know also it was a bit of a burden on the youth because they [Indigenous caucus] were asking them questions like, "how can we help?" and I felt like… well those questions can be very useful or they can be very heavy loaded because youths they don't necessarily have the answers, you know? We can't say "this is a policy change that needs to happen so that my community doesn't like sink in the ocean". -Laura Gaitan, chaperone

> The issues they were involved with - you cannot teach it. You can't teach it. It is like part of their life and they were showing it [to the world]. I was really inspired by the youth. Because the youth are the future. They are the ones who [will] take over the world. -Dawitt, teacher/chaperone

> I think it's all about putting value on their connection to their community and their knowledge. And I think that that there isn't enough value placed on young people being out fishing and connected to the land and giving fish to Elders. Like that has been taken away and diminished but when people do those kinds of things they understand like the broader impacts and. He's just doing it because it's how [he's] raised, not because it fits into a climate change project. -Joella Hogan, community member

> I think in a way we're not just sharing the knowledge we're celebrating the knowledge that's being shared - giving it a platform to be shared amongst others, we would be lucky to be witness to it. It's so authentic and it's raw, it's real, I think it's very powerful… -Nashra Kamal, teacher/chaperone

3.5.2 Family and Community Connections

Youth became involved in the knowledge fair through various connections in their communities including friends, high school teachers, leaders, and family members. Learning about the opportunity from someone close to them or a known and respected person in a position of trust was important.

> I was playing basketball in the gym and my mom told me that [our friend] Joella knew about this project to work on so I said yeah… Joella told my mom, my mom told me and then I made a poster, went on the trip. -Gavin Winter-Sinnott, youth participant

The Youth Knowledge Fair was a unique opportunity for youth to build relationships and support one another. It required them to carry out research in their own communities. The learning environment of the youth knowledge fair was characterized by a kind of cultural safety where youth felt comfortable to share their ideas. One teacher commented that it was great to see the celebration of what youth know and the value of creating a platform for them to share their knowledge.

> I think that [Youth Knowledge Fair] was [an] excellent starting point. I remember Ryan saying one of the students that came was his cousin, like he was related to him, and I think that's the theme of the North, it's like a very family style outlook and I think that first event kind of represented that because there was a lot of representation from the North and I really like how it catered to Indigenous students and [felt] like you were celebrating what they knew and you were giving them that platform to share their knowledge, right? So in that respect I really liked that part of it. That setup was great I think. And I think it helped to bring confidence for a lot of the students. -Nashra Kamal, teacher/chaperone

The opportunity for youth to get to know each other and "discover connections" was a noteworthy aspect of the learning process according to the knowledge fair organizer.

> …you don't always recognize how we're connected and how our lands are connected and our knowledges are connected… the students could tell stories and they could point to photos of their aunties or Chiefs or community members or sisters. They could sort of bring the posters to life and I loved that. A few of them went to town and had like all kinds of crafts and foods. But even if they didn't the way they spoke was a highlight. -Carrie Karsgaard, trip and knowledge fair organizer

The success of the students in the youth knowledge fair had reverberating effects in the student peer groups and their communities.

> It's nice because a lot of our students don't have opportunities like this. So it was it was amazing like the whole school was kind of talking about Ryan having this opportunity to go to Edmonton and share his culture and the idea of even going to Poland wasn't even there yet. Like "oh I get to go to Edmonton!". -Nashra Kamal, teacher/chaperone

> I think people are just proud when young people get to leave the community and go and attend something like this. It's pretty special -Joella Hogan, community member

The fact that both boys and girls participated, was an important strength and opportunity for young men to grow and develop.

> I really notice - in our community anyway –it always seems like it's girls that are getting more attention to travel and do these kinds of projects and I think it was nice to see a young guy get this… I think also like sometimes men's roles in hunting and fishing and on-the-land things is diminished. So it's empowering young men to have a bigger voice and connection. -Joella Hogan, community member

Community members rallied around the youth as they prepared to go on the trip to Europe. Beyond assisting with the creation of posters they offered encouragement and support to the young people.

> They were extremely proud of him. I was proud of him… [it was not only me], but the whole community. We didn't know if there would be any financial support so, the community contributed. The whole community fundraised, they helped, they contributed. They were saying "he's a voice for us. He's a voice of our community". We have a local radio [station] - it's called CBQM. They were fundraising through CBQM, they were talking [about] how proud they were - he was a hit. Believe me, he was a hit. And a lot on Facebook, they were congratulating him. -Dawitt, teacher/chaperone

The connections between the youth and their chaperones were important. Chaperones were mentors and emotional supports to help youth navigate the stresses of travel and engaging in global events.

> …and I think having a chaperone for each student was really really valuable, both for the moments when students just needed space or someone who knew them to deal with something that's happened… let them feel supported and [know] they were a part of the group. -Carrie Karsgaard, trip and knowledge fair organizer

As described by one participant, it was great to have the opportunity to learn from one of the chaperones and problem solve together.

> I kind of remember [doing a bad presentation] when we were at UNESCO cause my poster wasn't really all together. But once I was with Dawitt he really helped me talk it all together… When we had to break into groups and work with other people or whatever. Other adults. I worked with Dawitt and he like really showed me how to put it together. I had all the facts there, I just had to figure out how to like word it out. So Dawitt really helped with that. -Ryan Schaefer, youth participant

> …he was underestimating himself but his community was encouraging him. You will be okay, you will learn, like it will be an eyeopener. And it was really was. -Dawitt, teacher/chaperone

> Like right before they were going to go to Paris, they were going to be presenting. It was great kind of feeling that buzz. And then even though I wasn't doing the presentation part I was getting excited; everyone was kind of on this adrenaline. -Nashra Kamal, teacher/chaperone

Youth built relationships and connections with other Indigenous delegates, especially a prominent activist by the name of Elder Bruce Kendall Goldtooth and a Maori group from New Zealand. They were inspired, listened to, and validated by these people. Many of these connections were not superficial but were raw and emotional.

> The elder he came and he shook [the student's hand]… and then he said "I know this hand, and where it came from. It came right from the land." You know it was rough, it was you know like a person who lives off the land, and he said like he was like touching like his own hand. -Dawitt, teacher/chaperone

> And it just felt like there was grief and there was a sense of urgency to their stories but like this is happening now and we're doing the best we can but like there's [only] so much you can do when the ice is so thin that something that you cannot travel on a skidoo. - I feel like we were really seeing the limits of humanity in their stories. Like our humanity was really well explained in our stories… Like our deep connection to nature and how it can really shape and define our life. Like the things that we can do and the things we can't do. -Laura Gaitan, chaperone

> I think that one [Indigenous caucus meeting] was very meaningful because it was like - - they were all Indigenous so they got it, and they [understood] the pain. They were very receptive to like the pain that the youth were displaying. Like at UNESCO it was interesting but people were like "woah woah" like that is so cool "youth talking" they were like listening in that [Indigenous caucus] meeting we could go on a deeper level and they were like "oh yeah. Like this is happening. It is really devastating. It's really sad. Like we are losing our culture we are losing our knowledge" and the Indigenous delegates can really relate. -Laura Gaitan, chaperone

An important outcome of these new relationships and connections was the feeling that people cared about them and the issues.

> I thought it was really cool to see…. kids around the world presenting their problems with climate change. It kind of showed that we had it a little easier

than they did. But I was thinking like “holy man, people actually care about this”. I see it on the news and it’s like nobody really else cares about it but when you go to all these giant conferences and people actually go and talk about it and stuff and it really surprised me to see how many people actually do care about it. -Ryan Schaefer, youth participant

I think [I was the most inspired by] the Maori group. I loved them. And I’m still kind of like you know friends with them. Sometimes here and there I talk to them. But yeah I was so inspired by them and how they would talk to us. And I loved it when they when we went to this one place in Katowice and they sang to us there. I loved that. I don’t have the video but it was so beautiful. -Portia Morin, youth participant

Connectivity of social media and conventional press coverage allowed for networking across borders.

I know when they posted on social media or however it came out that he was going to Poland, people were like so excited for him, right? That he’s like taking this community issue and going around the world and the work that he put into it. -Joella Hogan, community member

I was sharing lots of things like through the Tracking Change posts that were going on - I was always sharing those in the community and at the time I was also doing the First Nations social media so then I’d re-share from like the First Nation page too that way more people saw it. -Joella Hogan, community member

[When I saw the social media posts] I just thought it was amazing that she had that opportunity to go to Poland, speak about our community, speak about climate change, environmental issues. And she’s so young. I was really proud of her. And so was our family. And our community. And I’m

just glad that she got that opportunity to go speak about issues that we face. -Paige Chisaakay, youth family member

They got interviewed a lot and I'd be curious to know what they thought about that and how they felt about that. And including for a Finnish journal. And the articles pretty good and then they're also in an article by one of the New Zealanders which is also pretty good. So they must've been communicating well because I never read anything about them and think "boy that's way off base". *laughs -Carrie Karsgaard, trip and knowledge fair organizer

The [community's response] was big… everybody was congratulating him and even me. [It was about] the awareness that he brought. He really didn't know he would have that impact but I mean the awareness he brought [was important]. Like it was the talk of his hometown, in Inuvik and even on CBC [radio]… and in Yellowknife again after the trip.. So it was like huge. The elders in the community they were saying "we're very proud of him". -Dawitt, teacher/chaperone

3.5.3 Leadership

Exclusion of Indigenous peoples and youth in policy processes, as well as the value of their perspectives, was highlighted as a key reason for increasing leadership and involvement.

Well I think Indigenous peoples are really pushed to the side in most cases so we don't have a [chance to] speak, when we do have the chance to speak we're kind of kind of put down for it…. I think that's why it's important that Indigenous youth need to be heard, need to gain more knowledge on this. -Paige Chisaakay, youth family member

> …not a lot of people take time to realize that youth are powerful with the way we use our minds. We're powerful with the way we contribute and receive our knowledge. So yeah I think that's why a lot of youth need to be more involved. They need to- even if you don't know or think they know a lot of things, you know? A lot of people are interested in different types of things and it takes a while to figure out what you're interested in and what you're not interested in. -Portia Morin, youth participant

An important opportunity and outcome of the participation in the COP24 meetings as well as in the knowledge fair in Edmonton was confidence building which, as described by a chaperone, comes from learning to trust oneself.

> I think Ryan learned to trust himself. He kind of gained confidence as he went along. Like before he was - like in a panicked state. He was very nervous about having to present and trying [to] meet people that have power and making deals in the world, right? He was very apprehensive about it and I had to just go along and support him. [He also got support from] just the people that we presented to - like complete strangers. I think as they went along he just became more confident with what he was saying, more sure of himself. So I think this is an excellent confidence building opportunity for him. -Nashra Kamal, teacher/chaperone

Youth supported and inspired one another. The Tracking Change trip peer group created its own kind of internal confidence.

> I wasn't the first to do the presentation so when I saw the other kids doing it I thought I gotta be able to do it too then. -Gavin Winter-Sinnott, youth participant

> …everyone sort of recognized that Richard was a leader in the group. He's a little bit older than everybody else and really really connected with his

> family and the land and loved sharing that. And so that was inspiring to listen to him for myself and also to watch how he inspired the other youth I think. -Carrie Karsgaard, trip and knowledge fair organizer

This cultural safety and the social support surrounding the youth knowledge fair and Europe trip seemed to translate into confidence in speaking and talking about issues of importance. As said by one teacher, it was almost like the student "released the lion within".

> I was flabbergasted… The passion, the seriousness - oh my goodness. I know Richard was a little bit passionate but when he saw Aboriginal kids from other communities and their passion, it was kind of like the "lion from within" [comes out]. Like I mean, before they really didn't want to do that much and we didn't know [how it would go] at the beginning… But when they saw all the kids working and the issues, they were like really really very encouraged. And they were like really passionate. -Dawitt, teacher/chaperone

> So I think giving him the chance to like completely just take him out of his comfort zone [was] really kind of a stressful situation but because he had supports in place he was successful. And I think that was great for him in the future [because] he might have to do something daunting like that again. But he knows that he has done it before. He was able to go in front of all these people and talk to them, right? So maybe with another serious task he might be able to do the same thing. -Nashra Kamal, teacher/chaperone

> **…** she really blew me away when she was talking in Paris. I was really surprised the way she just carried herself. Yeah. I was really proud of her. -Dennis Drygeese, family member/chaperone

One youth presented his poster in his community and saw a real-world response before leaving for Europe.

> Yukon Energy put on a public meeting to talk about what was going on at the lake. And then I brought my poster and told them where I was bringing the poster [to Europe] to talk about [the water levels]. And then a couple weeks after that the water levels started to rise up and rise up, rise up. -Gavin Winter-Sinnott, youth participant

Students and chaperones were surprised and inspired by the confidence, eloquence, and passion that the youth developed on the trip. Their strong leadership in climate activism has created interest in continuing activism and involvement in the environmental field.

> He couldn't believe himself. Like how he performed. -Dawitt, teacher/chaperone

> Every time I'm a part of the climate strike it feels really good. People you know you have these people who stand with you. -Portia Morin, youth participant

> There was a huge Peel Watershed meeting in the community and Gavin came and I think he even asked a question which is good because not very many young people go to those kinds of meetings. - he also stepped up to [work] on the Renewable Resources Council [which] was looking for young people. Because he's connected to the land and the people and he knows stuff he cares about what's going on and just to have a youth voice on there. … but you have to be confident and I don't think that many young people have [that confidence] but he did - he's not that shy to speak up when it's something important to him. -Joella Hogan, community member

> …now he's studying renewable resources and that's pretty exciting too. I'm pretty sure he's probably the only one in his program that's attended any kind of event or project like that. And that's kind of significant. Like

> someone joked in our community, “he should be teaching those classes” right? Just to have that kind of experience at his age already is pretty significant. -Joella Hogan, community member

Many interviewees made comparisons between the Tracking Change youth and Greta Thunberg. The youth’s leadership in climate action inspires other young people to get involved in their communities and causes they are passionate about.

> … like given the right circumstance they could have been one of the Greta’s. Giving the biggest speech at like United Nations like Greta. Richard would have done it if he was given such an opportunity. -Dawitt, teacher/chaperone

> …they’re creating that ripple effect… [we need] youth champions in communities. But how do we support them? How do we bring them out to be to be heard more? -Sharlene Alook, community member

> …there are lots of youth who are inspired because of him. And they were even asking me if there is [going to be another event like this] in future - they want to be a part of it. -Dawitt, teacher/chaperone

> It was great to see Portia up there and Greta and the youth. There are many other youth in Treaty 8 that I’ve worked with and they are the Greta’s and they are also Portia’s but they are speaking on their own Territories and they have presented in front of our- you know it doesn’t have to be in front of a legislature to express that you have a concern. They do it everywhere else. They do it anywhere in front of our Elders, in front of our leadership, and they want to be heard. -Sharlene Alook, community member

Community members welcomed the youth back with open arms. One student was even congratulated by well-respected conservationist Francois Paulette.

> Being at the airport… it was very emotional. His mom and dad were there and they were just such proud parents and so like overjoyed - I definitely teared up a little bit… So I think he came back with his shoulders up. Like he [had] his chest high, he was feeling like had accomplished a lot and I think there were other community members, like even Francois Paulette I think had also approached him and I think he's very well-known in [the] environment conservation world. He's from the Ft. Smith, Ft. Fitzgerald area and he reached out to him and was you know congratulating him and a lot of people in the community were as well. And going to school like everyone was so proud of him… He did an awesome job representing Ft. Smith and I think he kind of knew that too. -Nashra Kamal, teacher/chaperone

Interviewees noted the significant challenges that youth are inheriting. One grandmother shared a story which emphasized the importance of culture in the youth's ability to take leadership roles in addressing issues.

> [The prophet] was saying that when there are forest fires and deforestation in the boreal forest of northern Alberta people [will be] scared and afraid and they won't know where to go. The road [will be] cut off and [people] won't be able to see where they are… And you have to talk to the young people- he [the prophet] said that the young people have to hear our language, our stories, and to know who they are and where they are going. -Molly Chisaakay, Elder/family member

3.5.4 Webs of Support

The final part of the results section provides a stylized summary of the webs of support associated with the youth that participated in the Tracking Change events. Figures 2-5 are digitized versions of a mapping activity that the four youth participants did as part of their interview. The red lines and symbols are actors that the youth explicitly identified as important to

them, whereas the blue lines are actors that key informants stated were important to the youth. Thus, these figures are a combination of hand drawn maps by the youth participants and the feedback and input of their loved ones. The four nodes displayed in the figures were selected due to their relevance in preparing for the trip to COP24, experiences whilst in Europe, and the aftermath from the Tracking Change events. These nodes were selected because they create insights on important actors and events as related to the youth's activism. Webs of support are presented for the four youth participants because this paper is focused on understanding the importance of networks in their development.

There are several key takeaways from these webs of support. First, each web of support illustrates the significance of family and friends. As part of the mapping activity the young people were asked to indicate how people in their life support them in different ways. The concentration of colourful symbols in each family/community network indicates the importance of each actor to the young people. Parents and friends were identified as important sources of support and knowledge about the land, with Western ways of learning (i.e. schools) being less important to their understandings of the environment. These local actors were critical in giving youth the knowledge and emotional support to take on the challenge of being activists.

While the Tracking Change delegation node was temporary in nature (lasting approximately 2 weeks) it is relevant that each youth indicated that "everyone" on the trip was a source of support while on the trip. Ryan (Figure 3) remarked that "everyone became a family" and Gavin (Figure 4) said felt connected to other youth on the trip because they had the "same values" and similar on-the-land experiences. Chaperones were discussed as a useful support when it came to preparing the youth's research poster and presentation. The youth mentioned that when they were feeling nervous about presenting they leaned on each other- they saw that their fellow delegates were sharing their stories and that made them feel like they could do it as well. This aspect of the webs of support may indicate that the positive student-student, student-chaperone relationships were important for the young people's participation in Europe.

One particularly interesting insight is related to the Europe node where the students and interviewees discussed important actors and events for the young people. Each youth participant

emphasized the significance of meeting other Indigenous activists at the Indigenous Caucus meeting and Conference of Youth, as well as participating in Indigenous-centric policy spaces. Meetings involving Government of Canada delegates, western media, and UNESCO representatives were highlighted as important by other key informants, but the youth themselves did not feel particularly connected to those spaces. This insight from the Web of Support seems to indicate that youth may place importance on a shared Indigenous identity and connecting with other Indigenous. Perhaps these people and spaces were more comfortable and familiar to the young people given that they were in such a foreign environment (e.g. in a new country; participating in large-scale events). Another interesting aspect of the figures is the breadth of connections the students were able to make. Through social media their message was able to extend beyond geographic borders or the confines of meeting rooms. Furthermore, they were able to share their local experiences of climate change with people from different parts of the world.

Finally, the post-trip node illustrates how the youth were received by their communities after participation as well as their continued activism. Figures 2 and 3 illustrate that youth themselves felt very supported by their communities when they returned from their trip. Key informant interviews also supplemented the youth comment's by discussing local responses to the youth's return to the community. In Ryan's case, Francois Paulette, a well-respected Elder and conservationist congratulated and thanked the him for his activism (Figure 3). Interviewees close to the young people remarked that the student they chaperoned is viewed as a role model for other youth in the community. Gavin's Web of Support (Figure 4) shows that he continued to be involved in environmental governance by serving as a junior member the Mayo Renewable Resources Council. A key informant explained that as part of that role he attended Peel Watershed meetings and talked about his experiences in Europe. Figure 5 illustrates Portia's ongoing, passionate activism. Since participating in the Tracking Change events she has continued to be involved in movements related to youth leadership in Indigenous communities, anti-fossil fuel campaigns, speaking at Climate Strikes, and attending COP25. When asked if the trip to Europe had contributed to her ongoing activism she replied, "yes, yes, yes, yes, yes!". All of the youth participants interviewed stated that they felt they had a greater understanding of climate change after participation. Both the young people and the key informants interviewed

stated that the leadership skills the students developed through their activism may be useful if they continue to be involved in issues that matter to them.

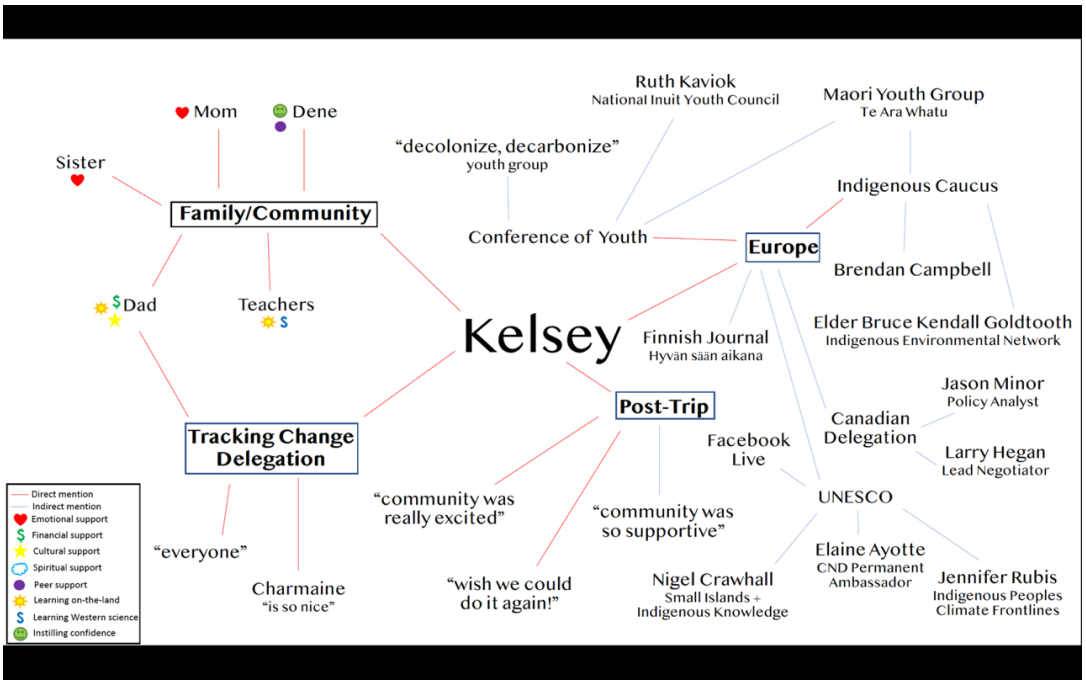


Figure 2. Kelsey's Web of Support.

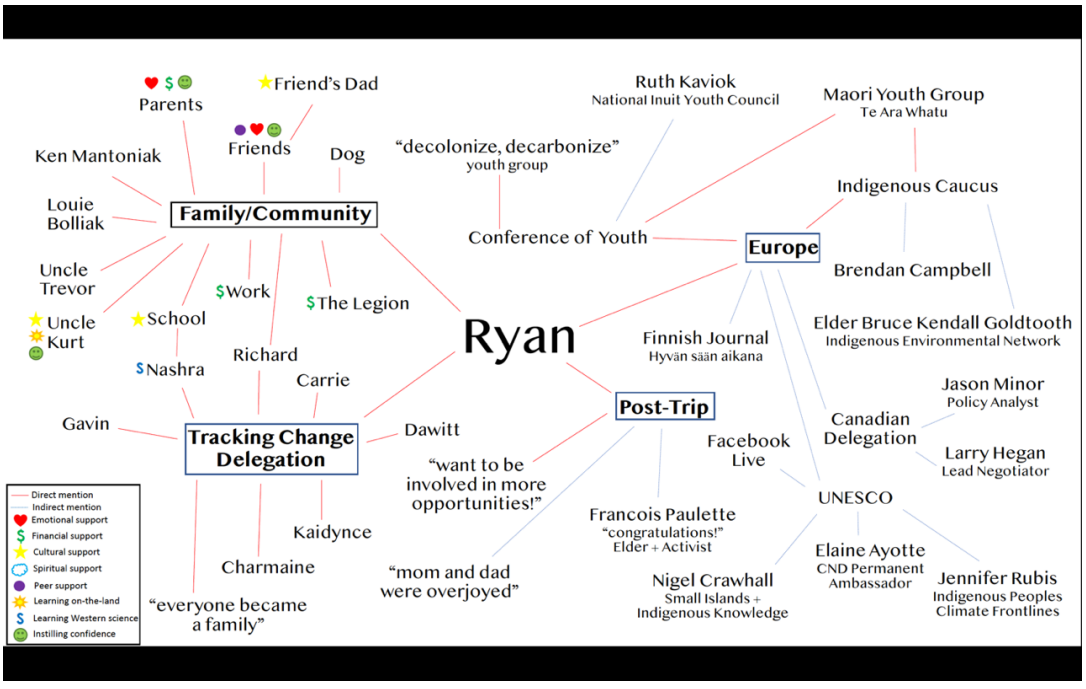


Figure 3. Ryan's Web of Support.

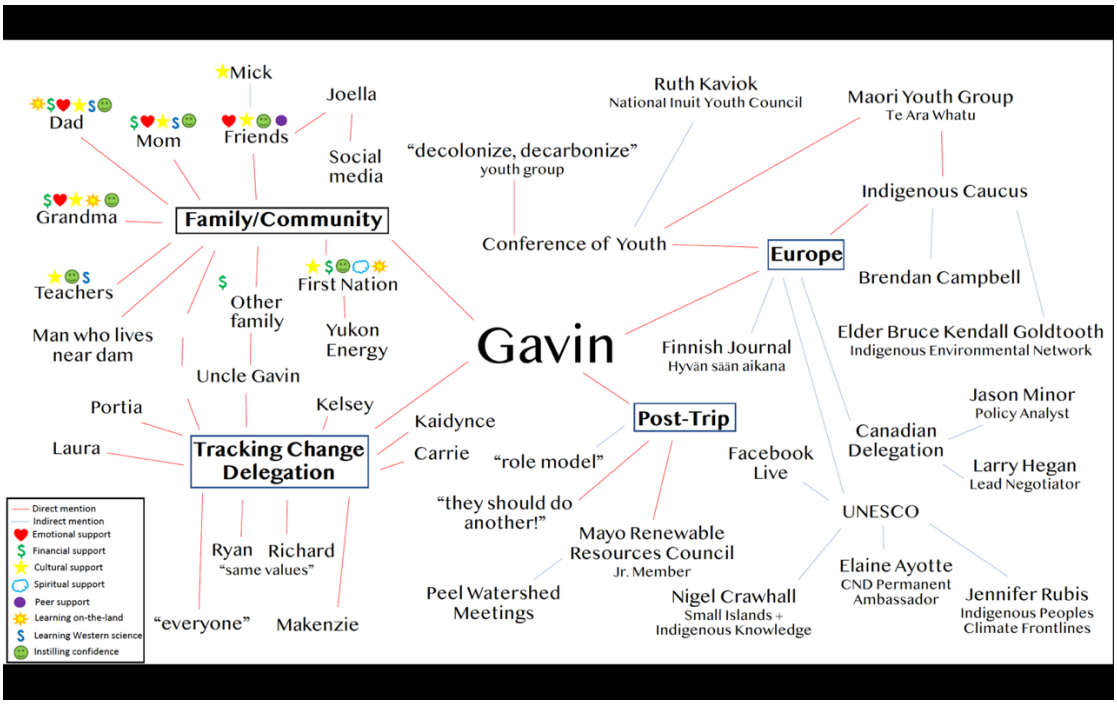


Figure 4. Gavin's Web of Support.

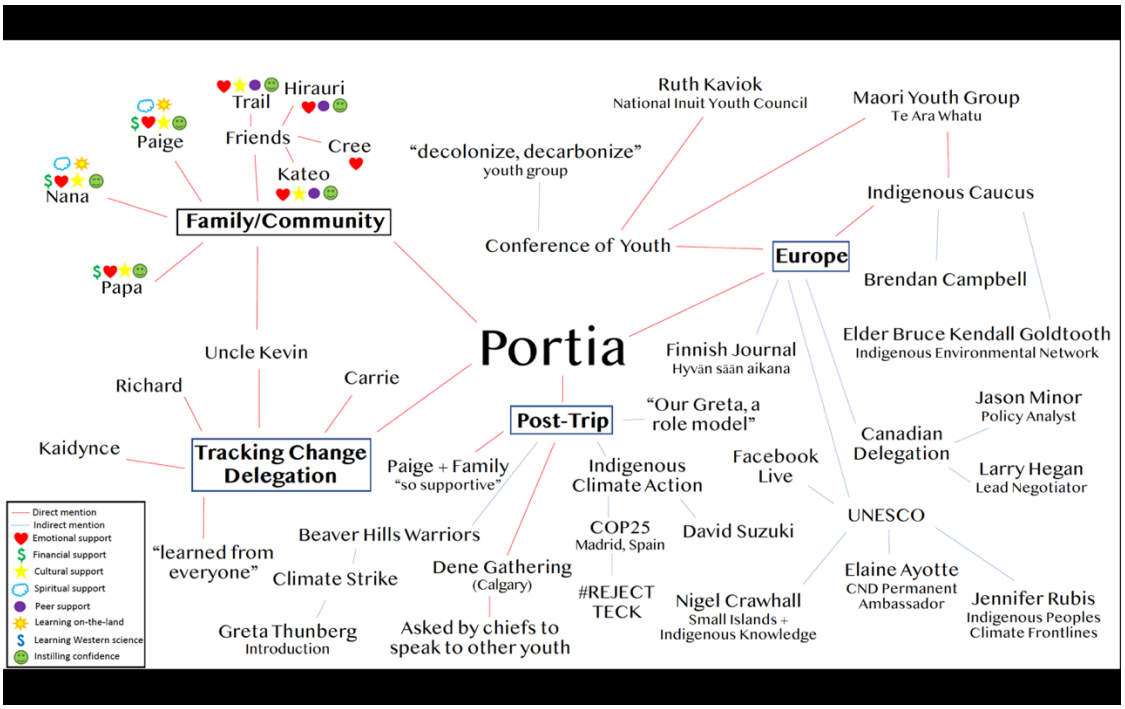


Figure 5. Portia's Web of Support.

3.6 Discussion

The results included quotes and webs of support that explain the experiences of youth that participated in the Tracking Change climate action events. This discussion elucidates how youth engagement in activism creates learnings, requires people to draw on the support of their community as well as contribute back to their networks, and develop leadership skills. All interviewees said they found significant value in the youth participation in these Tracking Change events. It seems that the findings from this study align closely to what the literature says about the importance of culturally-appropriate learning for youth, the value of social capital and networks, as well as development of leadership skills. This paper makes a contribution to existing literature by providing a case study of how these theories are relevant to the real world and supplying a rich narrative to support the argument.

3.6.1 How did learning opportunities created by the events matter?

Environmental education literature highlights the importance of placed-based and collaborative learning approaches, especially for Indigenous youth (Simpson, 2002; Castagno and Brayboy, 2008; Chinn, 2012. Both the Youth Knowledge Fair and trip to COP24 were designed with this context in mind. The Tracking change events provided opportunities for youth to learn from the land, listen to knowledge holders, as well as learn from other youth and Indigenous delegates. Carrie Karsgaard, an educator and lead trip organizer put it nicely, "We learned from each other. We laughed together. We ate together. We texted each other goodnight. All those things shape how we learned together and I like the way the students created that space together". Participation in activism allowed the youth to learn from those around them as well as be teachers. When the youth presented or shared stories their messages were particularly impactful because they spoke with passion, rawness, and urgency. Youth felt that audiences were actually listening to what they were saying, which has not usually been the case based on their previous experience. Chaperones and other adult delegates noted that they learned a lot from the young people. Youth were both students and teachers.

By attending meetings with other people impacted by climate change the young people were able to understand the scope of the climate issue. While students mostly had a local understanding of climate change at the onset of these experiences, speaking with delegates from

other parts of Canada and around the world showed them that climate issues are not limited to their communities but are experienced across the planet. Kelsey remarked that before she participated she "didn't really care about the land much" but by speaking with other youth she has since come to realize the importance of the environment for other kids and their families. Gavin spoke about how before the trip he was skeptical that people actually cared about climate change, but that when he saw people mobilizing from all parts of the world he felt reassured that other people are as passionate as him. Thus, these learnings may indicate that opportunities to engage in international climate action can extend student understandings of the significance of climate change. It seems that engagement in activism may address issues of youth having limited understandings of climate change causes and adaptive strategies (Corner et al, 2015).

3.6.2 How were youth supported by and contribute back to their communities?

Family and friends equipped the youth with the knowledge and encouragement needed to participate in activism. Portia often spoke about how she has learned a lot from her Grandma and that whenever she is feeling discouraged she leans on her for support. Dawitt explained that the youth he chaperoned has such a strong understanding of climate change and eloquence when speaking because the student's father is an Elder who lives off the land. The Tracking Change events required students to seek out Traditional Knowledge and learn about their communities. Previous research has pointed to the value of cultural continuity as a protective factor from negative effects, stress, and youth suicide (Kirmayer et al., 2009; Chandler and Lalonde, 1998). Based off of this case study it seems possible that by interacting with Traditional Knowledge and other aspects of Indigeneity, youth may have developed more cultural continuity by providing them with some stability in the face of climatic or social stress. However, this research was not designed to investigate links between youth activism and cultural continuity, so future research should explore possible connections. Communities encouraged the students and expressed genuine excitement for the Tracking Change opportunities. Many interviewees spoke about how there are limited opportunities like these for youth, so the community celebrates whenever a child has the chance to leave the community and have a new experience. As Paige said, "suicide rates are going up among Indigenous youth and I think a big part of it is not being involved in a lot of things. – That's why Indigenous youth need more [Traditional] Knowledge."

Social capital is a useful framework for understanding how community can be a support for individuals (Bhandari and Yasunobou, 2009). The quotes and webs of support illustrate that youth utilized social capital in the process of researching for their poster presentations as well as acquiring necessary emotional and financial support to participate. Connections were created within the Tracking Change delegation, with youth inspiring and supporting one another when they were feeling intimidated by speaking for audiences. Gavin said, "when I saw the other kids presenting I thought 'I gotta be able to do it too!'". Participation also gave the youth the chance to extend their networks to people they would otherwise never meet and consider future opportunities. For example, Portia had a lively discussion with Government of Canada negotiators over a traditional Polish meal. They were so impressed with her passion that they invited her to apply for the Prime Minister's Youth Council. It seems that expanding networks allows youth to tap into new opportunities which they may be otherwise unable to access in their own communities. Stanton-Salazar (2011) found that when marginalized youth "overcome the odds" it is usually through networks that connect the young people to new resources or opportunities. It seems likely that a similar process was happening during the trip to Europe. Furthermore, the "post-trip" networks displayed in the webs of support demonstrate that while youth draw on social capital, they also contribute back to their communities. Both Gavin and Portia continue their participation in community causes that matter to them and serve as role models for other young people.

3.6.3 How did participation matter in the context of youth leadership?

All four youth participants spoke about their increased confidence and public speaking skills, and these observations were repeated by other interviewees. Other studies have found that collaborative learning opportunities are a way for students to develop social skills for cooperation and conflict resolution (Cohen and Cohen, 1991) and improve self-esteem (Laal and Ghodsi, 2012). It seems that these types of soft skills are also apparent in this case study. Furthermore, research on marginalized youth participating in community change efforts highlights the importance of organization, public speaking, negotiation, and meeting participation (Erbstein, 2013). The Tracking Change events were important in the youth's development because they provided opportunities to practice these essential skills, whereas the small, remote communities they come from have fewer opportunities. It is often assumed that

youth have little to contribute in policy spaces (Bostrom, 2000) but this research indicates that once youth have the opportunity to participate and develop initial leadership skills they can become active participants in causes that matter to them.

Potential long-term benefits of youth development were also discussed in interviews. Nashra highlighted that Ryan has become more adaptable to new situations and different cultures. She spoke about how students from her community that try to go to university in Edmonton often return back to the community without finishing their degree because there is such culture shock. While Ryan is not presently in university she does view the Europe experience as great preparation for Ryan to flourish if he does decide to move to a larger community. It seems that participation in activism supports positive development to continue engagement in causes, but also has benefits related to individuals being able to thrive in new environments.

3.7 Conclusion

The paper has shared the voices of youth as well as chaperones, teachers, and community members to provide an understanding of the complex opportunities and benefits of engaging in the COP24 meetings. Based off of the interviewee narratives, it seems that the combined learning opportunities, support of community, and newly developed leadership skills created through the events had an impact on all those who participated. Benefits of Indigenous youth activism are not limited to the participants but may also have cascading positive effects in their northern communities as well as well as those who heard the passionate, emotional presentations in Europe. Interviews with youth participants and key informants suggest that the youth gained a greater understanding of climate change and developed leadership skills that may allow them to continue to be active in causes they care about. More research on the value of youth engagement in this and similar forums would be useful in cementing understandings of the important and powerful role that Indigenous youth can have in addressing climate change and broader benefits of their participation.

References

Adelson, N. (2005). The embodiment of inequity: Health disparities in Aboriginal Canada. *Canadian journal of public health*, *96*(2), S45-S61.

Alter, C., Haynes, S., and Worldand, J. (2019, December) Time 2019 Person of the Year Greta Thunberg. *Time*. Retrieved from: https://time.com

Bhandari, H., & Yasunobu, K. (2009). What is social capital? A comprehensive review of the concept. *Asian Journal of Social Science*, *37*(3), 480-510.

Bostrom, M. (2000). Teenhood: Understanding attitudes toward those transitioning from childhood to adulthood: A focus group analysis. In S. Bales (Ed.), *Reframing youth issues* (Working Papers). Washington, DC: FrameWorks Institute and Center for Communications and Community, UCLA.

Castagno, A. E., & Brayboy, B. M. J. (2008). Culturally responsive schooling for Indigenous youth: A review of the literature. *Review of educational research*, *78*(4), 941-993.

Chandler, M. J., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural psychiatry*, *35*(2), 191-219.

Chandler, M. J., & Lalonde, C. E. (1995). The problem of self-continuity in the context of rapid personal and cultural change. In A. Oosterwegel & R.A. Wicklund (Ed.) *The self in European and North American culture: Development and processes*, 45-63. Springer, Dordrecht.

Chartrand, V. (2019). Unsettled times: Indigenous incarceration and the links between Colonialism and the Penitentiary in Canada. *Canadian Journal of Criminology and Criminal Justice*, *61*(3), 67-89.

Chinn, P. W. (2012). Developing teachers' place-based and culture-based pedagogical content knowledge and agency. In *Second international handbook of science education, 24*, 323-334. Springer, Dordrecht.

Conference of Youth. (2020). *About COY*. Retrieved from https://conference-of-youth.org/en/about-coy/

Cohen, B.P. & Cohen, E.G. (1991). From groupwork among children to R & D teams: interdepence, interaction and productivity. In Lawler, E.J., Markovsky, B., Ridgeway, C. & Walker, H. (Eds.), *Advances in Group Processes* (pp. 205-226). Greenwich, Connecticut; USA. JAI Publishing.

Corner, A., Roberts, O., Chiari, S., Völler, S., Mayrhuber, E. S., Mandl, S., & Monson, K. (2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. *Wiley Interdisciplinary Reviews: Climate Change*, *6*(5), 523-534.

Eckersley, R. 1999. Dreams and expectations: Young people's expected and preferred futures and their significance for education. *Futures, 31*(1)*,* 73–90.

Ecuador Times. (2019, December 13). Helena Gualinga: Who is the young voice against climate change? *Ecuador Times.* Retrieved from: https://www.ecuadortimes.net/

Elias, B., Mignone, J., Hall, M., Hong, S. P., Hart, L., & Sareen, J. (2012). Trauma and suicide behaviour histories among a Canadian indigenous population: an empirical exploration of the potential role of Canada's residential school system. *Social science & medicine*, *74*(10), 1560-1569.

Erbstein, N. (2013). Engaging underrepresented youth populations in community youth development: Tapping social capital as a critical resource. *New Directions for Youth Development*, *2013*(138), 109-124.

Fast, E., & Collin-Vézina, D. (2019). Historical trauma, race-based trauma, and resilience of indigenous peoples: A literature review. *First Peoples Child & Family Review*, *14*(1), 166-181.

Global Climate Strike. (2019, September 28). *7.6 Million people demand action after week of climate strikes*. Retrieved from https://globalclimatestrike.net

Harris, A., Wyn, J., Younes, S. (2010). Beyond apathetic or activist youth: 'Ordinary' young people and contemporary forms of participation. *Young, 18*(1), 9-32.

Indigenous and Northern Affairs Canada. (2019). *Grants and Contributions to Increase Indigenous Youth Participation in Education and Labour Market Opportunities: Terms and Conditions.* Retrieved from: https://www.aadncaandc.gc.ca/eng/1100100010002/1100100010021

Kirmayer, L. J., Sehdev, M., & Isaac, C. (2009). Community resilience: Models, metaphors and measures. *International Journal of Indigenous Health*, *5*(1), 62.

Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia-social and behavioral sciences*, *31*, 486-490.

MacDonald, J. P., Harper, S. L., Willox, A. C., Edge, V. L., & Government, R. I. C. (2013). A necessary voice: Climate change and lived experiences of youth in Rigolet, Nunatsiavut, Canada. *Global Environmental Change*, *23*(1), 360-371.

MacDonald, J. P., Willox, A. C., Ford, J. D., Shiwak, I., Wood, M., Government, R. I. C., & IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Marsh, T. N., Coholic, D., Cote-Meek, S., & Najavits, L. M. (2015). Blending Aboriginal and Western healing methods to treat intergenerational trauma with substance use disorder in Aboriginal peoples who live in Northeastern Ontario, Canada. *Harm Reduction Journal*, *12*(1), 14.

Marsh, T. N., Cote-Meek, S., Young, N. L., Najavits, L. M., & Toulouse, P. (2016). Indigenous healing and seeking safety: A blended implementation project for intergenerational trauma and substance use disorders. *International Indigenous Policy Journal*, *7*(2).

Musto, R. J. (1990). Indian reserves: Canada's developing nations. *Canadian Family Physician*, *36*, 105.

Nystad, K., Spein, A. R., & Ingstad, B. (2014). Community resilience factors among indigenous Sámi adolescents: A qualitative study in Northern Norway. *Transcultural psychiatry*, *51*(5), 651-672.

O'brien, K., Selboe, E., & Hayward, B. M. (2018). Exploring youth activism on climate change. *Ecology and Society*, *23*(3).

Ojala, M. (2012). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research*, *18*(5), 625-642.

Simpson, L. (2002). Indigenous environmental education for cultural survival. *Canadian Journal of Environmental Education (CJEE)*, *7*(1), 13-25.

Stanton-Salazar, R. D. (2011). A social capital framework for the study of institutional agents and their role in the empowerment of low-status students and youth. *Youth & Society*, *43*(3), 1066-1109.

The Canadian Press. (2019, September 28). Canadian Indigenous water activist Autumn Peltier addresses UN on clean water. Retrieved from: https://www.cbc.ca

Thunberg, G. (2019). *No one is too small to make a difference*. Penguin.

Tracking Change. (2018). *Tracking Climate Change – Youth Knowledge Fair 2018.* Retrieved from: http://www.trackingchange.ca

Tucci, J., J. Mitchell, and C. Goddard. 2007. Children's fears, hopes and heroes: Modern childhood in Australia. *Melbourne: Australian Childhood Foundation.*

Chapter 4:

WHAT ABOUT RENEWABLE ENERGY? FINDING ENERGY SECURITY IN THE INUVIALUIT SETTLEMENT REGION

4.1 Introduction

In the Canadian arctic, renewable energy is increasingly valued by Indigenous communities as well as regional, territorial and federal governments. This is particularly true in the Northwest Territories, where there are numerous concerns about the costs and carbon footprint of existing energy systems in small and remote communities. A variety of alternatives including solar, wind and small hydro-electric development projects have been proposed and feasibility studies have been initiated since 2010. Much discussion has been on the technical and fiscal opportunities and challenges, however, there is less understanding of the perspectives of northern Indigenous communities. With this context in mind, what values do members of Inuvialuit communities have about energy? What are their experiences with energy decision-making? This paper draws on literature on Indigenous participation in renewable energy and community renewable energy to understand values and decision-making processes related to energy in the Northwest Territories.

Understanding the values and needs of communities is critical to decisions about how to address their energy needs. For example, many sources of renewable energy around the world are under-utilized due to social values (Skanavis et al. 2013) such as NIMBYism (Devine-Wright 2005; 2011), socio-cultural ties to the petroleum industry (Afanasyeva, 2018), as well as lack of general understanding of the opportunities. Building on previous research on arctic energy security, energy governance, and Indigenous community renewable energy (Krupa et al., 2015), this paper aims to contribute to a better understanding of energy security in northern Canada based on interviews about the energy needs of Tuktoyaktuk and Inuvik. Drawing on the results of 23 semi-directed interviews in 2018-19, the paper shares the values and decision-making experiences of Inuvialuit community members, as well as other energy actors in the region and territory.

This paper contributes to literature related to renewable energy and Indigenous peoples. The discussion illustrates that the values of Inuvialuit interviewees related to renewable energy are similar to those described in other research with Indigenous communities. It is important to recognize the complexity of values related to energy security. While some scholars emphasize Indigenous opposition to fossil fuels (Willow, 2016), there are examples of Indigenous support for development. First Nations along the Trans Mountain pipeline route as well as Native Alaskans have been vocal in their support for oil and gas **(**Flanagan, 2019; Chapman, 2013). Through this research, we similarly determined that, although renewable energy was very important, interviewees also talked about the importance of natural gas to their households and communities.

An exploration of various actor relationships is also presented which illustrates the complexity of decision-making related to renewable energy. The literature emphasizes the critical importance of a bottom-up approaches to renewable energy governance. The outcomes of this research, based on interviews with Inuvialuit leaders, community members, researchers, government representatives, as well as non-governmental organization employees, suggest that a bottom up approach is challenging given there are many levels of government and actors involved in the renewable energy landscape. Specifically, some interviewees had the perception that large renewable energy projects will not benefit them and are more interested in energy projects that will show individual and household energy savings and security. This paper utilizes a "true governance triangle" analysis (adapted from Guerra, 2018) to visually depict this complexity and the various roles of actor groups.

The interview outcomes highlight some of the key challenges and opportunities facing small northern communities in achieving energy security but also provides an understanding of the complexity of renewable energy governance in the arctic.

4.2 Background

The Northwest Territories is home to 33 communities, 25 of which are not connected to the territorial grid (Karanasios and Parker, 2016). Power is predominately supplied to communities via the Northwest Territories Power Corporation (NTPC), a crown-corporation of the Territorial government. The Public Utilities Board (PUB) regulates NTPC and sets consumer power rates (Karanasios and Parker, 2016). Power costs are shared across the Territory into two zones: Hydro and Thermal. Thermal communities pay more for power than those in the Hydro zone, but consumers in the Hydro zone subsidize the cost for Thermal consumers. Residents and businesses can generate their own electricity through solar or wind technology via the net-metering program. Net-metering allows consumers to generate their own power and then send it back to the grid to earn credits which can be redeemed towards their energy bills (Northwest Territories Power Corporation, 2014a). There is a 20% cap on net-metering supplying the electricity grid.

A Devolution Agreement between the Federal Government and Government of Northwest Territories was signed on June 25, 2013 (Executive and Indigenous Affairs, n.d.). This transferred the management of natural resources in the territory to the Territorial Government. Settled land claims in the territory also give some Indigenous communities more rights and power than in other parts of the country, especially as it relates to decisions related to the land in their claim area. This is highly relevant when considering decision-making and energy government. The Inuvialuit Final Agreement (IFA) settled the Inuvialuit land claim and set up the Inuvialuit Settlement Region (ISR). Inuvialuit peoples gained guaranteed rights to preserve their culture and land when they gave up exclusive rights to their traditional territory. The IFA has allowed them to become important actors in the Northern economy, including setting up their own Development Corporation (Inuvialuit Regional Corporation, 2019).

Communities in the ISR rely on shipments of fuel to be trucked up from southern distributers. Tuktoyaktuk is 100% diesel reliant whereas Inuvik utilizes a combination of diesel and liquified natural gas. Both fuels are transported via the Dempster Highway that can face reliability and supply chain risks (CBC News North, 2019). Inuvik supplements its imports with a local natural gas well, but this deposit is quickly depleting (Scott, 2018). A $40 million wind turbine has been proposed to reduce Inuvik's use of the natural gas in the face of this shortage

(CBC News North, 2018). Inuvik and Tuktoyaktuk are not connected to the territorial grid and the only connection to southern communities is via the Dempster Highway.

In the 1970s there was great interest in building the Mackenzie Valley Gas Pipeline which would transport the natural gas 1,196km from the Beaufort Delta region to northern Alberta (CBC News North, 2016). There was little support for the pipeline in the 1970s but by the 2000s, some Indigenous leaders saw the pipeline as an opportunity. The Inuvialuit, Gwich'in, and Sahtu Got'ine formed the Aboriginal Pipeline Group to represent Indigenous interests in the new Mackenzie gas project (Marsh and Baker, 2018). In December 2017 Imperial Oil, one of the companies leading the project in partnership with the Aboriginal Pipeline Group, announced the project had been cancelled due to low natural gas prices and increased competition. Both Indigenous leaders and residents of some communities were disappointed with the cancellation because there was the perception that the Mackenzie gas project would have great socio-economic benefits.

Inuvialuit leaders were one of the Indigenous groups that were in strong support of the pipeline, although the project never came to fruition (CBC News North, 2010). Developing these natural gas deposits may be a way to reduce cost of living, improve energy security, reduce greenhouse gas emissions, and contribute to the overall economic potential of the ISR (Inuvialuit Regional Corporation, 2017). The Inuvik-Tuktoyaktuk Highway (ITH) that opened in 2017 provides access to the land with natural gas deposits, meaning improved accessibility to the resource (Inuvialuit Regional Corporation, 2017). Natural gas deposits near Tuktoyakuk and Inuvik are now more economically feasible to develop than they were before the all-season highway was built, creating a new opportunity (Clark, 2017).

The Arctic Energy Alliance (AEA) is a non-profit organization funded by the Government of the Northwest Territories. They are mandated to support communities and individuals in the pursuit of improving their energy sustainability (Arctic Energy Alliance, n.d.). The AEA headquarters for the Beaufort Delta is located in Inuvik, NT. The Aurora Research Institute is also based out of Inuvik and is responsible for administering Scientific Research Licenses as well as conducting Arctic research (Aurora Research Institute, 2014).

4.3 Literature Review

4.3.1 Community Renewable Energy

Lack of access and supply of fossil fuel generated energy, coupled with growing concern over climate change are motivating the development of renewable energy in the arctic (Mortenson et al., 2017). Renewable energy sources are loosely defined as unpolluted supplies of energy where efficient utilization of these resources can reduce pressure on the environment, produce less waste, and be economical for consumers (Panwar, Kaushik, and Kothari, 2011). A large body of work and public discussion has focused on the value of solar and large-scale wind projects, however, other solutions including household wood pellet stoves are also critical in creating energy solutions (Yan et al., 2019).

Renewable energy options are considered an important solution to addressing the environmental impacts of diesel-generating systems in remote arctic communities in Canada and elsewhere (Boute, 2016). For example, there are currently diesel generators in twenty-five communities in the Northwest Territories which use 23,330,000 litres/year of diesel fuel and contribute to 67,000 tonnes/year $CO_{2,eq}$ emissions. While transitioning to renewables is technically feasible in most arctic communities, finding solutions that meaningfully meet the needs of communities or increase their energy security is more complex and requires consideration of the perspectives of many different actor groups involved in the production, consumption delivery, and regulation of energy. Together these actors comprise the governance landscape in which different actors are related, and various forms of power are distributed across institutions (Burke and Stephens, 2018).

Top-down approaches to governance in which power is concentrated at larger cases can be problematic. For example, in Zeewolde, Netherlands lack of consideration of community input including social values led to fierce resistance of a local wind turbine project. “Residents were not actively involved in planning and licensing. This strengthened their opinion that the municipal authorities passed over the interests of the local community. Residents felt that the project solely served external economic interests” (Agterbosch, 2009, p. 400).

One solution is a more decentralized and bottom up approach to energy decision-making. A community renewable energy approach is characterized by a high degree of community involvement in the ownership, management, and benefits of projects (Walker and Devine-Wright, 2008). Although conventionally small communities are viewed as the passive recipients of energy that is produced elsewhere, the community renewable energy approach recognizes communities as experts about their own energy future. "Local communities are well-placed to identify local energy needs, take proper initiatives and bring people together to achieve common goals such as the reduction of energy costs, CO_2 emissions and dependence on the national grid" (Koirala et al., 2016). Community renewable energy has been found to increase public acceptance and create opportunities for learning (Walker, 2011), as well as increased economic activity and employment for local people (Walker et al., 2007). To date, however, the literature on community renewable energy has little considered the values of Indigenous communities including those of arctic communities.

4.3.2 Indigenous Engagement in Renewable Energy

In Canada and globally, Indigenous leaders and organizations have been at the forefront of calls to climate action including transitions to renewable energy. Indigenous youth, in particular, are seeking a greater voice in climate related decision-making (see Chapter 3). In this context, the role of Indigenous communities in the renewable energy transition is an emerging area of research of interest to numerous social scientists as well as other energy scholars and practitioners (Sovacool, Axsen, and Sorrell, 2018). Many scholars have pointed to the benefits of renewable energy for Indigenous communities, including long-term economic benefits, reliability, and energy autonomy (Stefanelli et al., 2019). How to achieve these benefits has also been a focus of research; studies in Yukon, Northwest Territories, British Columbia and Ontario emphasize the importance of decentralizing decision-making and active involvement of Indigenous peoples (Karanasios and Parker, 2018; Necefer et al., 2015). However, it has been noted that Indigenous people's interest in active participation in energy systems diverges significantly from government and utilities approaches to energy and policy practices (Karanasios and Parker, 2018). Krupa et al (2015) explained the importance of incorporating the community's long-term vision of renewable energy projects in a comparative study looking at First Nations communities in northwestern Ontario and off the coast of British Columbia.

A community-based approach has been emphasized as the best approach to ensuring communities are drivers of decisions about their energy futures. Among the motivations behind community interest in renewable energy in Canada is environmental protection (Necefer et al., 2015). But more specific case study work with First Nations and Inuit communities provides some additional and detailed insight. For Ojibway Pic River First Nation, for example, an important opportunity in renewable energy development related to gaining experience in the operation and ownership of projects. The success of the community's first project, the Wawatay run-of-river hydroelectric generating station, led to the Band participating in two other hydroelectric projects, two large-scale wind sites, and a hybrid biofuels plant (Krupa et al., 2015; Krupa, 2012). Research suggests that Pic River has had success in their transition to renewable energy because they fold projects into the fabric of the community and harness in-house leadership.

Research with the Haida Nation in the mid-2010s provide other insights, particularly around the importance of community leadership (Krupa et al., 2015). Provincial and federal environmental impact assessment policy did not allow for the governments to collaborate with the Haida on the proposed NaiKun wind megaproject which led to problems including lack of trust between the developer and community. This case study suggests the importance of collaboration and trust building as well as alignment of the project goals with community priorities.

Rakshit et al (2019) in their case study of Poplar Hill First Nation revealed the importance of understanding the complex environmental, social, economic, and technological dimensions of energy projects. Internal and external pressures result in socio-cultural "rigidity traps" that prevent a community the flexibility to adapt to a new technological system, such as renewable energy. Poplar Hill identified reinforcing social challenges that contribute to rigidity, including low education, poor water quality, high suicide rates, homelessness, and social assistance dependency. Successful renewable energy development will require Poplar Hill to consider and address these kinds of social illness and lack of capacity that inhibit the community's ability to pursue projects and become self-sufficient.

Greater energy sovereignty is another important driver. A community-based approach to renewable energy development can serve Indigenous communities by flipping the power dynamics from top-down to bottom-up (Krupa et al., 2015). Renewable energy can be a way for communities to increase self-sufficiency, both from in terms of utilizing local resources and establishing political autonomy from colonial institutions (Rezaei and Dowlatabadi, 2016; Lowan-Trudeau, 2017). Conversely, approaches that do not allow for local decision making can serve as barriers for Indigenous peoples to drive energy projects and achieve self-governance and autonomy (Lovekin and Heermea, 2018).

It is in this context that the project aimed to address the question, what are the experiences and perspectives of the Inuvialuit communities about renewable energy. What is driving interest in renewable energy? How is the success of a project determined? Who should be involved in planning, operating, and maintaining renewable energy projects?

4.4 Methodology

The project was inspired by principles of community-based participatory research and the value placed on place, community engagement in the process of knowledge production. Those who follow community-based participatory research approaches put communities first in decisions about research focus, implementation and outcomes. (Fletcher, 2003; Castleden, Morgan, and Lamb, 2012). The project was initiated in the ISR of the Northwest Territories in 2017-18 based on guidance from regional governments (Inuvialuit Regional Corporation). Twenty-three semi-structured interviews were carried out in the communities of Yellowknife, Inuvik and Tuktoyaktuk from October 2018 to June 2019. Two days were spent in Yellowknife as well as two weeks in Inuvik and Tuktoyaktuk. Three phone interviews were also conducted. Interviews were audio recorded and later transcribed by the lead author. Transcripts were verified by each interviewee and two community workshops were held in Inuvik and Tuktoyaktuk. The transcripts were reviewed for sub-themes (19) which were later grouped into core themes (13).

The results of interviews are presented in aggregate according to theme with community or institutional affiliation cited. A network map was also developed to illustrate the roles and relationships between different actors groups using the frameworks developed through previous research (Guerra, 2018; Abbot, 2012; Keohane and Victor, 2011). The approach extends the work done by Guerra (2018) by expanding the scope of actors to also include non-formalized institutions (e.g. individuals, as well as reference to the size of particular energy projects (see Table 1).

4.5 Results

4.5.1 Motivations

Cost was highlighted as a key motivation for pursuing energy systems across all stakeholder groups.

> It's definitely cost for communities. They think there may be new opportunities of reducing cost. - NGO 2

> I think it's a few things that're driving it. One for the clients it's the cost of energy and they're trying to make investments that will pay back, that will help save money. - NGO 4

The link between the high cost of energy in the Territory and the high cost of living was also noted.

> I'd like to believe that [it] would be about the environment and saving the planet but you know at the end of the day dollars are tight to come by. Especially in the North people don't want to choose between food and transportation - I just can't emphasize how much everything is driven by money and economics. - Government 2

> I think there's some interest in trying to reduce energy costs which [is] one of the major factors in terms of cost of living. - Government 6

Renewable energy was also identified as a way of reducing the risk associated with reliance on imported fossil fuels and limited fuel storage.

> I haven't heard the recent update, but let's say they [the Town of Inuvik has] two weeks of gas storage here – [and] they keep those full. [Alternative energy may be important] 'cause we don't have the storage capacity here in the communities. - Researcher 1

This is especially important given that climate change is damaging the road infrastructure that supports imports to Northern communities like Inuvik and Tuktoyaktuk.

> Renewable energy is sort of a 2 for 1 deal- you get more energy resilient as well as more resilient to changes from climate change. - Government 1

> I know they're big picture and hard to imagine, but there's some slumps along the Dempster Highway. The more the temperature warms the more those activities [of hauling supplies up the road] are going to become unpredictable. - Researcher 1

Renewable energy was seen as a "back up" and way of supplementing a power grid that has proven to have issues with power outages.

> If someone knocks over [the] power line the whole town goes out of power and there is no back up. Solar and wind would be a useful backup. - Community member 9

Finally, a desire to reduce personal and community contributions to the global climate crisis was discussed.

> What is driving it? It's the moral [thing]. It's the right thing to do. - Researcher 1

> So number one is trying to save money and number two - would be greenhouse gas emissions. - Government 2

There was a recognition that the Northwest Territories only contributes to a tiny fraction of global greenhouse gas emissions. Regardless, people feel it is important to take a leadership role in this environmental issue because the North is being most profoundly impacted by climate change.

> The carbon footprint of the NWT has no real significance globally; it makes no difference to climate change. - NGO 2

> …although Canada is 1% of global carbon emissions and were a fraction of a percent of Canada's total emissions. This is the one of the jurisdictions being most profoundly impacted by changing climate. I think there was a desire, certainly within on the government, to walk the walk as it were and really look at how we can practically reduce carbon emotions arising through electrical generations, for those communities still on thermal systems. - Government 5

4.5.2 Process- Developing Energy Projects

Interviewees discussed the current process of decision-making related to planning, implementation, and management of energy systems in communities. Some interviewees consider the current engagement and consultation process as insufficient because it does not grant communities enough decision-making power. This is especially notable given that Indigenous governments, such as the Inuvialuit, have additional rights in governance and decision-making in their land claim.

> [The territorial government will] dress it up to make it look like there's been engagement but [it's] just telling. My perspective [is that] when they do go into communities they discuss it with the Hamlet [but] not with the community corporations or the development corporations. - The Hamlet is the territorial government in each community. The community corp and the dev corps are the Inuvialuit government and that's where decisions should be made when you're in a land claim and when they're becoming self-governing. It shouldn't be that your engagement goes strictly through the Territorial government body which is what happens. - Government 4

It was noted that consultation is not always motivated by a real desire to make decisions based off of community concerns and priorities. Sometimes policy decisions have already been made by the time institutions meet with communities about energy issues. Interviewees spoke about the relationship between the Yellowknife-based government and Indigenous communities, such as Sachs Harbour in the Inuvialuit Settlement Region.

> When we were looking at doing wind [turbines in Sachs Harbour] the consultants [and our Inuvialuit government representatives] were all there in Yellowknife talking about [the project]. GNWT's Energy Director was there. The power company's Director was there. And what came out of that discussion was basically, "you [the community] get on board with what we decided or it's just not going to happen." So that was the limit of engagement and concern [for] what was going on in communities. - Government 4

> I think the root of [engaged decision-making] is the understanding that local energy production, renewable energy, is distributed energy. It's not centralized energy production. And in many respects the decision-making process around policy needs to reflect the reality of how energy is generated, distributed. - NGO 5

> What I currently see [with] consultation is "this is what we're thinking, give us your thoughts," the thoughts go into a black hole, policy decision makers, policy crafters work together to come up with something and voila! There you have it. We consulted with you, this is the product – [the] consequence [is] people feel disconnected from the decisions and if they don't see clear rational for why things are done - it diminishes peoples' buy-in and understanding of program objectives and outcomes. - NGO 5

> Meaningful consultation - is awareness, education, [and] effective communication. Those tools, if they don't exist and brought to bear on energy decisions, means that people will defer or throw up their hands and just allow policy makers to make policy. Effective policy means that you have a transcending understanding of the real-life consequences of how energy is used. Not just numbers or averages. Numbers are easy to look at. – [Effective policy means going beyond] detached analytics. - NGO 5

However, interviewees did acknowledge that governments may be doing the best they can given the unique governance considerations and geography of the territory.

> I don't [to] want to make it sound like they're all bad because it's really challenging when you when you're in Yellowknife and you have to address the needs of 60,000 people in the whole territory. Up here [we have] 5,000. I get the balance. It's just a little frustrating when you look at how it may not be great for communities just to go along with what the governments [is] saying. - Government 4

> I think that at least in policy and practice there's an attempt to have more of a government-to-government relationship [with communities]. - Government 6

Other interviewees felt that policymakers were doing a good job of incorporating community voices into the energy decision-making process. They perceive communities, especially Indigenous communities in settled land claim areas, as having a lot of decision-making power.

> The GNWT tries to do what communities want. There is lots of collaboration between community governments and GNWT. There are no political parties in the NWT, so communities are "running the show" in a lot of ways. Also, most MLAs are Indigenous, so these voices are represented. - Government 1

> Communities may have more opportunities to provide input into decision-making where there are settled land claims in the Territory. - NGO 3

> We went out [and] did a lot of consultations because - in the North you can't do anything without going to see the people. - Government 2

People that live in communities or work closely with them agree that it is best if energy decisions are made as close to the end user as possible. However, NTPC policy does make such decision-making highly complex.

> We leave it to individuals to decide what they are going to do. - NGO 1

> I mean the decisions should be made as close to those people consuming the energy but - when you get into some of these other decisions [related to navigating policy it gets complicated]. The Territorial government [is] probably the largest employer so it's the largest energy consumer and [gets energy from] the power corp. That's throughout the entire Northwest Territories. - Government 3

The projects that are pursued are also an important part of the energy decision-making process. In the Inuvialuit Settlement Region (especially Inuvik and Tuktoyaktuk), natural gas was

highlighted as a key energy priority by Inuvialuit and non-Inuvialuit stakeholders. This indicates that it is not just Inuvialuit peoples that see the value of natural gas and the benefits a gas pipeline would have created.

> And our point is [that] natural gas is in our backyard, why not take advantage of it. Yeah. So that's where we are. - Community member 5

> [What would have been the effects of the Makenzie Valley Pipeline?] Oh that would've been a huge, huge benefit. You [would] have this huge pipe of natural gas going down [south] and then you put a small pipeline coming into Inuvik and gas would've been almost the same price as it is in Alberta. - Government 3

> LNG is starting to take a big leap. We have studies going in Fort Simpson and Tuktoyaktuk to put in LNG. - We can truck it up in Alberta and BC, inject it into the diesel generators and it increases the octane. It makes the diesel generator more efficient. Saves us lots of money. Also reduces GHGs because liquefied natural gas is one of the more cleaning burning fuels. - So we may be starting to use more LNG in our diesel systems. - Government 2

> The natural gas - would be energy security. It's better than living off diesel. We have all this infrastructure that already relied on it [from a few years ago]. [It would] diminish the emissions. It'd create local employment as well. We're removing all those risk factors and all the fuel that's being burned as well. There's plus, plus, plus. It would be great to see something like that go ahead. - Researcher 1

> In Inuvik now they had one small well that was supplying natural gas [to the community] but it's running out. They're actually trucking liquified natural gas all the way from BC. It just doesn't really make a lot of sense to me. If

> natural gas [can] be developed and serve as a substitute fuel for local consumption I can probably live with that. - Government 6

However, one interviewee pointed out that large-scale oil and gas development will likely not happen, and that LNG would be most useful for meeting local energy needs.

> There is [an] oil and gas strategy that Cabinet prepared which is sort of a bit like a dinosaur in that there's this persistent view that [large-scale] oil and gas exploration is going to come back to the Northwest Territories. I just don't see that ever happening - especially given the climate change crisis. If it's for domestic [local] purposes, you know to power the natural gas generators in say Inuvik - or Tuk that might make some sense. - Government 6

Overall, government policy and "promises" for energy were faced with skepticism.

> There's a lot of talk about things (projects) but nothing really happens. Government/politicians make promises but the promises always get pushed [to] the backburner. Talk about energy funding but nothing ever comes of it; nothing ever comes of anything. - Community member 9

> Policy can be a lot of mouth without any teeth and often fails. - Community member 6

The Arctic Energy Alliance is spoken about more warmly. Part of the organization's success is linked to the shift in decision-making power. It is grassroots and focused on community leadership in projects.

> The Arctic Energy Alliance affects change at the individual level. It's a grassroots, bottom-up process of change. - NGO 5

> The Arctic Energy Alliance works on the basis that each individual is unique, each home is unique, each wood stove installation is going to be tailored to that home, and where there is a responsibility for future upkeep that's the homeowner's responsibility. The success of the project is the community government's responsibility. - So it's not [that] the program is delivered through the Arctic Energy Alliance, but [that] the program is owned by the community and its residents. - NGO 5

4.5.3 Outcomes

The type of outcome (benefit) was discussed by interviewees. The type of outcome realized has to do with the scale of the project. Energy efficiency initiatives results in cost savings and emissions reductions at the individual level. Proponents that utilize these projects will see the greatest return on their investment related to cost savings. Projects in this category are considered a good starting point for proponents interested in improving energy systems.

> We think about our work in an energy pyramid. At the bottom is energy conservation. That is where you invest the least and have the most savings. Once people have worked on conservation issues, they invest in more. Only if you have worked on these other levels should people move to the top of the pyramid which is the investment in renewables. That way people aren't investing in something huge they don't use. - NGO 1

The cost-sharing structure of the Northwest Territories Power Corporation means that any costs and benefits of renewable energy projects must be shared across all communities. For this reason, the benefits of renewable energy in communities will not benefit people the way CRE in neighbouring Alaska. The Northwest Territories cannot easily replicate the success of Alaskan wind energy projects due to the difference in policy. Interviewees highlighted that it would be great if the model were replicated, but it just is not realistic at this point in time. Despite an overall acceptance that the Alaska Model cannot be replicated on the part of these interviewees, there are consultants that continue to push for it.

> The Alaska Model [has] certainly [been] discussed here a lot. Having community buy-in to a commitment to an energy resource is important. But - it's just not lining people's pockets the way it would in Alaska or benefiting the same way. - Researcher 1

> I wouldn't say [the Alaska model] won't work. But independent power production is a bigger risk to these communities because they don't have ownership over the cost of the power production. – [The Alaska model makes sense] when you're talking about establishing a grid when you don't have a territorial or state utility that's responsible for the responsible for the power generation and shares that cost across the entire populous of the state. [In that context] independent power producer option makes a lot of sense for developing regional capacity, and they do it in a way that's small scale [and] creates some jobs. - Researcher 2

Large-scale projects, like the Inuvik wind turbine project, will have benefits that are distributed across the territory. Furthermore, costs associated with the development would also be shared with other communities. External grants for large-scale projects are critical to ensure power costs are not increased.

> But let's say there was a $2million savings [because they aren't burning as much diesel due to the Inuvik wind turbine]. If [those cost savings] were just in Inuvik that might reduce the costs. But because that's shared with all of the thermal communities then yeah, it becomes [a] very small change. - Government 3

> Will a renewable energy project in Inuvik, like a big wind turbine, save everybody in the NWT some money? Or will it just accrue to one group? Well through the PUB [public utility board] we have to make sure that everybody benefits from it. The problem is if we didn't have a subsidy for

> this wind turbine, and we had to build it with GNWT money the wind turbine would have to be paid for and it would drive everybody's rates up. - Government 2

Renewable energy projects, like biomass, were seen to keep economic activity within the region. External fossil fuel reliance means jobs and capital are lost to the South.

> I like the idea of the money that you paid [for energy] - staying in the Northwest Territories. The jobs and the value added that goes along with energy right now resides in a jurisdiction outside of the Northwest Territories. – [Even] the crude oil that's produced in Normal Wells that's pumped down the Enbridge pipeline to Salmon, Alberta still has to go to Edmonton to Strathcona to be refined then loaded on trucks and driven back up to the Northwest Territories. So yes, are an [oil and gas] energy producer as a Territory but there are a lot of steps in the supply chain between production and, useful energy supply. It makes sense to me and appealing to me to have that much shorter supply chain. - Government 5

Benefits beyond economics may also be seen in communities if more renewable energy (especially biomass) was utilized.

> [With more biomass development] you [would] have individuals who would have spent limited funds on diesel to heat their home spending that money locally on wood providers or pellets. - It contributes to strengthening and diversifying the local economy. And ultimately economies are about relationships between buyers and sellers and in a world where you can go online and order something from Amazon, it's really nice to be able to know the person who is providing you with the wood to heat your home. It becomes a community strengthening process. - NGO 5

> There's multiple [economic] effects from the local sourcing of energy. Then there's sort of what I would call "community resiliency" "community bonding" that happens as well. [It] becomes a community effort and [there's value in] knowing [the] individual who provides you wood, who installed your wood stove, and [the person] who's getting trained to do it. There's the linkages between one's life and the relationship with others in the community. - NGO 5

Interviewees said that renewable energy could be good for the North, but exactly "who" is going to benefit is still complicated. One interviewee expressed concern over communities potentially being worse off than before.

> Energy and alternative energy programs and projects are coming up. It's a little nerve wracking because it sounds great and it's a wonderful idea but it ends up sometimes costing a lot more than they're going to get back in the communities. - Government 4

There could be benefits for Indigenous organizations getting involved in energy production. However, current energy policy limits opportunities for communities to get into the energy market.

> But I think that there's interest from some of the Indigenous economic development corporations to become power providers themselves and provide some competition. The NWT Power Corp has this policy of a 20% cap on renewables in any lease so uh um I think the Power Corp needs new leadership and they need a new plan to basically do itself out of a job. - Government 6

The expected vs. realized benefits of renewable energy is also important to consider. It is easy for communities to have false expectations about the benefits an energy project will provide. One

Inuvialuit government worker reflected on external consultants creating challenges and disappointment in relation to previous alternative energy projects.

> When people like researchers or consultants want to work in communities - we encourage them to meet with the IRC and ourselves [Inuvialuit Community Economic Development Corporation] so there can be real and effective community engagement. – It can be challenging because a consultant will go in talk to the community and [say], "you're going to have jobs, and you're going to have revenues, and you're going to have everything positive" and never talk about, "it's going to cost this much" to put it in and maintain it and operate it. It gets their hopes so high and then they [the consultant] install it and take the money and leave and then there's this monstrosity in the community that nobody knows how to maintain. - Government 4

> Well I know when [a consultant] came up and was in Uluhaktok and Paulatuk he spoke to the Mayor of Paulatuk they [the community] were so excited. Even if you look at the proposal [for the renewable energy project] it talks about that people will be hired in the community; that there will be jobs. Yeah well there might be 3 jobs when you do the installation but for maintenance and all that? No. I mean maybe one person. Maybe. But it would likely be a GNWT or NWT power person that would be doing the checks. - Government 4

The Arctic Energy Alliance is focused on outcomes that benefit the end user. This is what makes it a unique institution and serves the needs of the community.

> I think one of the faults or weaknesses [about] the renewable energy sector is they've oversold and underdelivered [benefits]. The Arctic Energy Alliance is a case where the delivery, the outcomes, the clients, the public [expectations] happen and there's no overselling happening. It's a situation

> where people are making informed decisions and they're happy with the outcomes. - NGO 5

Further, the importance of birds for local food and cultural practices must be kept in mind as wind turbines could threaten this important resource. Community-members in Tuktoyaktuk spoke about wind turbines as being a threat goose populations. This is an important insight because of the importance of geese to Inuvialuit peoples in Tuktoyaktuk for food and as a cultural tradition.

The projects that higher levels of governments choose to pursue and prioritized will not have the same benefits or outcomes as smaller scale local investments. A Member of the Legislative assembly remarked that employment and quality of life improvements will not be realized through development of large-scale projects like the Taltson Hydroelectric expansion.

> It's Cabinet that makes the decisions and Cabinet's [priority is the] huge expansion of Taltson's hydro[electric dam]. They want to export the hydroelectric power to Alberta and/or Saskatchewan although there are no confirmed buyers and/or build transmissions lines. - But these things [investments in aging infrastructure] do have limited life[spans]. Why spend literally hundreds of millions of dollars building power lines into the middle of nowhere? [It] is beyond me that that's what Cabinet thinks. - Government 6

> If you invest that [capital for the Taltson expansion] into communities directly, like improve their housing and energy efficiency we could create a lot of jobs and employment and benefits for communities. All Taltson is going to do is suck up every last cent we have to export power somewhere else and maybe get some revenues out of it? I just I think it'll take time and energy away from the real work that needs to be done. - Government 6

Interviewees noted that the way government devotes funding does not always align with what the priorities are. Communities do not want renewable energy for the sake of renewable energy; their potential support or motivation is rooted in wanting to improve quality of life.

> If they went out and asked them [community members] what they want - renewable energy would be low on the list. I don't think I've ever ever heard them say "I want to have solar panels". - Community member 1

> If you were paying $16 for two litres of juice you too wouldn't care about greenhouse gases as much as you would care about subsidies for food. - Community member 1

> Community members need jobs, they need to not be beaten, they need to eat, they need kids to not commit suicide. There's a whole bunch of very very serious problems and [the government] push[es] those other issues off the table. - Community member 1

4.5.4 Barriers to Community Renewable Energy

There are institutional barriers to developing renewable energy projects. It was noted that bureaucracy creates challenges for communities to get involved and lead projects (energy and otherwise).

> It's so frustrating when you try to talk to your own government. [It's] better to do it [by] more common-sense approaches. [The government has] already beat you to the punch by putting in policies and procedures that will knock you off your feet. - Community member 5

Current Northwest Territories Power Corporation policy limits the amount of net-metering in each community. Proponents interested in undertaking a renewable energy project must consider the broader energy policy to ensure their project fits within the regulations. Individuals must

ensure their home solar projects do not exceed net-metering caps and community projects must ensure their projects do not rely on territorial funding that inadvertently drives up the cost of energy for other communities. If proponents do not consider the broader context of their energy choices they can actually increase costs and create challenges for others.

> On the outside [the Lutselk'e community solar project] sounds like a win-win situation for everybody but - that project actually drove everybody's power rates up in the NWT by a slight, slight, slight, slight amount. I mean sub pennies. - But if you have many of these projects and they were all Independent Power Producers, and the GNWT was kicking in money, well then it doesn't make sense. So we're not going to provide funding for renewables- unless it's Federal money. - Government 2

> They have some policies in place that say that renewables can only make up 20% of the baseload in the communities. I think [that] limits our potential to build self-reliance but I do understand that they have [a] huge base that they're trying to protect. They're trying to protect customers that are not connected to renewable systems – [because as] fewer and fewer people are connected to the grid, fewer and fewer people have to bear the cost of maintaining the grid. - Government 6

NTPC's monopoly of the electricity market may be one reason policy is restrictive and not as innovative as other jurisdictions.

> Part of the issue too is we have the Northwest Territories Power Corporation [which has] more or less a monopoly. – [In] the Northwest Territories there's not a lot of competition [so] there's not a lot of innovation happening. - Government 6

The limit in community-ownership of energy projects can impact the acceptance and long-term success of the project, especially for larger-scale projects like wind turbines.

> I think with some of the previous renewable energy projects having community ownership [was] super important for their success. If people don't understand why it's there, they won't engage with it, they won't maintain it, there's not that desire to jump in and get it to work. - How do we get people here [in Inuvik] to want a [wind] tower in Sachs Harbour, and then how do we get Sachs Harbour to want a tower there as well? - Researcher 3

Local capacity in Inuvik and Tuktoyaktuk, as well as other Northern communities, is a barrier to communities being able to have locally-led energy projects. Communities lack local expertise such as engineers and technicians to do project planning, installation, and maintenance.

> Specialized personnel to construct and maintain renewables is a real issue. - There is a lack of capacity in communities. If the work and project does not go well then it's often a problem for communities. - NGO 1

> Now that there's a road [between Inuvik and Tuk] it's a bit easier. There's no electricity people in [Tuktoyaktuk] so they have to wait for someone from Inuvik to come up and fix problems. - Community member 8

> We have to make sure that whatever strategy we take [it] is reliable and fixable and doesn't require access to the sort of high end technological skills that one would expect to find in a province. You can't expect every Hamlet in every community to have the electrical engineer that would easily available in southern Canada. - Government 5

There are also challenges associated with existing infrastructure and geography. The remoteness of communities and limited infrastructure makes doing energy projects difficult and more expensive than in other places. Additional efforts must be made to plan projects to be successfully implemented in the North.

> Diavik [mine] put up 4 turbines of the same kind [as the proposed Inuvik wind turbine project] for $32million. It's going to cost us $40million to do one of the same kind. The reason is because Diavik already had road builders out there [and] cranes because they're a mine. Whereas we're going to have to build the road and the transmission line [which] cost more than the wind turbine itself. - Government 2

> It's not just the cost, it's planning to do a project. When they were doing the [solar] project in Paulatuk [they thought] getting the solar panels up there [would be] no problem. They couldn't. - Like this year the barge didn't go into Paulatuk. They're having to get all their groceries [and] diesel sent by plane instead of by barge. So with Paulatuk it was almost a full year before we were able to get everything in. It was trucked to Inuvik and then it had to be flown to Paulatuk. They had to divide everything into smaller pieces so it could fit into the plane - because the landing strip isn't big enough. So if you're planning an energy project it could be 2 years before you get to do it and that stuff that often gets forgotten. Honestly in the south you can throw it on a truck and drive it. - Government 4

4.6 Discussion

The results included quotes that touch on the complexity of completing renewable energy projects. This discussion articulates Inuvialuit values as they relate to energy projects as well as the actors involved in renewable energy. It is through a database of governance actors (Table 1) and a series of true governance triangles (Figures 6-10), that this paper illustrates their roles and functions in energy decision-making processes. The literature has emphasized the importance of communities driving their own decisions about energy. This discussion shows the majority of interviewees feel that bottom-up approaches to renewable energy continue to be limited in Inuvik and Tuktoyaktuk. Communities are largely excluded when setting rules about renewable energy projects and are responding to policies and priorities set by higher levels of government. The following values, actors, and their roles emerged through the 23 interviews that were conducted.

The information in the database and placement on the triangles may be different if other people were interviewed or alternative questions were asked.

4.6.1 Are renewable energy projects important to the Inuvialuit? Why?

Scholars have indicated that Indigenous peoples value renewable energy for seven reasons, including: economic benefits, reliability, suitability for the community, collaboration and trust, human capacity development, environmental concerns, and energy autonomy. The cost savings and improved reliability promised by renewable energy and efficiency technologies (Stefanelli et al. 2019) is heavily valued by the Inuvialuit. Similar to other Indigenous communities, the Inuvialuit interviewees expressed concerned about the high cost of living and rising price of energy. Research participants also acknowledged the reliability risk of transporting diesel up the Dempster Highway. Reliability has been improved slightly due to the Inuvik-Tuktoyaktuk Highway and community members view renewable energy and efficiency upgrades as a way to further reduce risk.

The literature says that Indigenous peoples value projects that engage locals and intertwine with community priorities (Karanasios and Parker, 2018; Necefer et al., 2015; Krupa, 2015, 2012). This value was also identified through this research. Community members stressed that projects must not disrupt cultural traditions, such as wind turbines hurting culturally important goose populations. Those interviewees that live in Inuvik and Tuktoyaktuk feel that their efforts to get involved (e.g. proposing a Tuktoyaktuk wind turbine) are rejected by the territorial government and NTPC with little explanation. This links into another value highlighted in the literature: collaboration and trust (Krupa, 2015). The majority of interviewees that reside in the communities feel that they are not meaningfully included in projects, are skeptical of government policy, and view NTPC as solely focused on profit rather than working with communities. Other case studies (Rakshit, 2019) have viewed social illness as a barrier to developing the human capacity needed for energy projects. In contrast, Inuvialuit leadership view government policy as a barrier to developing human capacity. These participants see the government setting up “hurdles” to local programming which hinders Inuvialuit abilities to develop capacity, such as youth training initiatives. Limited human capacity is viewed as an opportunity to train young people, rather than a true barrier to energy projects.

Finally, the Inuvialuit highlighted natural gas as important for their self-governance efforts. The literature emphasizes Indigenous communities valuing local energy resources to shift power away from external institutions and grant communities more autonomy (Rezaei and Dowlatabadi, 2016; Lowan-Trudeau, 2017). It seems that Inuvialuit peoples also value local energy sources for the self-sufficiency and autonomy benefits. However, based off of the interviews and the history of support for fossil fuels in the region (CBC News North, 2010) it seems that natural gas may be a particularly important energy source for the Inuvialuit, in addition to renewable energy. People from all stakeholder groups spoke about how the Inuvialuit should be able to develop the natural gas because they have decision-making power in their land claim. The interest of some Inuvialuit people in this fossil fuel is contrasted with some of the energy literature that associates Indigenous communities with the stereotype of "ecological Indians"; "noble savages" that are solely focused on land preservation and are anti-development (Smithers, 2015). A key insight from this paper is that not all Indigenous peoples are exclusively anti-fossil fuel. Similar to First Nations along the Trans Mountain pipeline route and Native Alaskans (Flanagan, 2019; Chapman, 2013), Inuvialuit peoples involved in this study expressed interest in fossil fuel development (although future research should seek to more deeply understand community perspectives). Both Inuvialuit and non-Inuvialuit participants (including some government representatives) view natural gas as a clean-burning alternative to current diesel reliance. Some participants thought that natural gas development for local use would allow communities to reduce their contributions to climate change, of which they see the impacts firsthand through thinning ice and coastal erosion. Interest in natural gas development on the part of some Inuvialuit people does not mean they do not care for the environment. In fact, they place great value on respecting the land so that future generations can partake in cultural traditions, similar to other communities (Necefer et al., 2015). Elders who negotiated the land claim told people, "You kids, don't worry about the money. It'll come. Just remember [that] your land and our wildlife is what kept us in this place today." The Inuvialuit governance structure that has distinct bodies for the management of lands and development of natural gas gives people confidence that a preservation/development balance can be achieved. It is important to remember that every community is unique and putting all Indigenous peoples in the same basket is not useful when seeking energy security.

4.6.2 Is energy governance in the Inuvialuit Settlement Region bottom-up?

The literature highlights the importance of bottom-up approaches to energy due to benefits such as increasing acceptance and creating opportunities for learning (Walker, 2011), as well as economic stimulus and employment (Walker et al., 2007). Centralized approaches can result in community resistance to projects (Agterbosch, 2009). This paper demonstrates that the idea of community renewable energy is too simplistic in the highly complex governance landscape of the Inuvialuit Settlement Region. Inuvialuit communities interact with many actors, each of which play a different role. While bottom-up approaches to energy are great in principle, it is critical to account for these different interactions and functions of actors (Table 1 and Figures 6-10). Most notably, community-based approaches to energy are evident in the operations phase of projects (Figure 8) whereas the rule-making aspect of governance (Figure 7) excludes communities entirely.

Mapping Energy Governance in Inuvik and Tuktoyaktuk, Northwest Territories:

Table 1 outlines the differing motivations and project priorities between different governance actors and was created using information from the interviews. Of particular interest is the different priorities between higher levels of government and residents in the Inuvialuit Settlement Region. Federal and territorial governments are motivated by greenhouse gas reduction and renewable energy development for the sake of renewable energy development. To meet this goal they prioritize large-scale projects. The Public Utility Board (PUB) and Northwest Territories Power Corporation (NTPC) similarly have a focus on megaprojects, such as the Inuvik wind turbine, Taltson hydroelectric dam, and southern electric grid expansion discussed by interviewees. These types of large projects are exciting, can reduce greenhouse gas emissions, and may be seen as demonstrations for using innovative technologies in the north. However, it is the smaller scale, local and individual level projects that will allow residents of the Inuvialuit Settlement Region to meet their goals.

Community members are primarily interested in renewable energy as a way to reduce their costs, although they do feel a moral obligation to reduce their greenhouse gas emissions. Northerners are faced with an extremely high cost of living so they prioritize projects that will make life more affordable. Interviewees spoke about how energy efficiency improvements (e.g.

LED lightbulbs, energy efficient windows) will result in the most cost savings, followed by individuals installing wood pellet stoves in their homes and participating in solar net-metering programs. Inuvialuit government bodies, the Aurora Research Institute (ARI), and Arctic Energy Alliance (AEA) are at the midpoint between these actors in terms of their function, motivation, and priority. These entities prioritize the energy needs and conditions of people actually living in the ISR, likely due to their own locality. One interviewee highlighted how the territorial government, based in Yellowknife, is unable to adequately meet challenges in the ISR because of its requirement to address the needs of everyone in the territory.

Local and individual initiatives that reflect regional conditions are important for communities and best suited to address energy insecurity. Thus, there is a disconnect between the large-scale projects that governments emphasize and the smaller-scale initiatives that will benefit individual residents. This may result in decisions being made that do not adequately reflect the needs and priorities of its residents. Furthermore, the government is the source of funding for many renewable energy programs so there may be a risk of government funding large-scale projects deemed to be "exciting" over the simpler initiatives that benefit community members. This is not to say that the territorial government is at complete odds with energy projects in communities. The Government of the Northwest Territories funds the Arctic Energy Alliance which is an organization that works in communities to support individual and community level projects. Interviewees spoke about how the AEA is an excellent organization and works well in communities, but they did emphasize that there needs to be increased funding to expand programs. Therefore, local entities' understandings of communities and their calls for greater involvement in renewable energy is linked to the literature's focus on involving people in the energy systems in which they are affected. The disconnect in priorities between higher levels of government (territorial, federal, and crown corporation) with local organizations and community members is notable due to the differing roles of actors in making decisions (see Figures 6-10).

Table 1. Database of governance actors and their roles in energy decision-making in the Northwest Territories.

Actor	**Function**	**Motivation/Policy Issue**	**Priority for Scale**
Federal Government	Funder; high-level policy	Greenhouse Gases, Renewable energy	Mega

Territorial Government	Funder; Territorial-level policy	Greenhouse Gases, Renewable energy, Cost of energy/living	Mega; Local
Public Utility Board (PUB)	Utility regulator	Stable consumer costs	Mega
Northwest Territories Power Corporation (NTPC)	Utility	Reliable distribution/grid	Mega
Oil & Gas Companies	Funder	Natural resource development	Regional
Inuvialuit Regional Corporation (IRC)	Funder; Local-level policy	Cost of energy/living; risk reduction ~Greenhouse gases	Regional; Local
Inuvialuit Community Economic Development Organization (ICEDO)	Funder (partial); Grant applicant; Supporting locally identified needs	Cost of energy/living; risk ~Greenhouse gases	Regional; Local
Inuvik/Tuktoyaktuk Community Corporation (ICC/TCC)	Funder (partial); Identifying local needs	Cost of energy/living; risk reduction ~Greenhouse gases	Regional; Local; Individual
Hunters and Trappers Committee (HTC)	Identifying local needs	Cost of energy/living; risk reduction ~Greenhouse gases	Regional; Local; Individual
Town/Hamlet	Funder (partial); Identifying local needs	Cost; risk reduction ~Greenhouse gases	Local; Individual
Arctic Energy Alliance (AEA)	Funder; Educator; Installation	Cost; Greenhouse gases; cost of energy/living	Individual
Aurora Research Institute (ARI)	Research	Greenhouse Gases, Renewable energy; cost of energy/living	Regional; Local
Local Businesses	Funder (partial); Program user; peer-to-peer information sharing	Cost ~Greenhouse gases	Individual
Residents	Funder (partial); Program user; peer-to-peer information sharing	Cost ~Greenhouse gases	Individual
Heat providers	Utility	Reliable consumer base	Local

Energy governance actors and their functions are visually depicted in the true governance triangles adapted from Guerra (2018). Rather than merely mapping the governance regime

(Keohane and Victor 2011), true governance triangles also include seven zones to illustrate the types of actors or institutions that are involved (Abbot, 2012). This paper applies the true governance triangle approach to illustrate decision-making functions of national, territorial, and local actors. Triangles are broken into three decision-making levels: public (top-down approaches), collaborative, and private (bottom-up approaches). Actors could be classified as a state (Western or Indigenous government), a community support organization (civil society groups, non-profits, networks), and/or a firm (businesses, industry associations), and were based off what people said in interviews. Each actor was placed in the most appropriate zone (1-7) given how they were classified, recognizing that an actor may fit two or all three classifications. Actors placed in the collaborative level are those that have classifications aligning with both the public and private levels. Thus, they are collaborative actors because they transcend the levels of decision-making. The five triangles depict decision-making actors and their roles broadly and in four specific aspects of energy governance: rule-making, operational matters, information sharing, and funding.

As is illustrated in Figure 6, there are many actors involved in governing renewable energy in the Inuvialuit Settlement Region. The number of actors involved, including their level of decision-making power, as well as motivations and priorities (see Table 1) means there is great complexity when governing renewable energy. Actors at higher levels of decision-making (public) must keep energy conditions of the entire Territory in mind when making decisions, whereas actors in the communities (private) have a more localized view. It appears that local organizations and governments are the most collaborative because they occupy spaces as community supported organizations and the state. These actors play a role in facilitating discussion and understanding between the public and private level actors. In essence, the collaborative institutions support interactions between Western governments and local residents that are located in opposite decision-making levels. For example, the AEA receives territorial funding to operate energy efficiency and renewable energy programs in communities like Inuvik and Tuktoyaktuk. The organization has funding requirements to the Territorial government but has the flexibility to respond to local conditions and needs. Additionally, while the Northwest Territories Power Corporation has a responsibility to ensure every community in the Northwest Territories has power, the Inuvialuit Final Agreement means the Inuvialuit have greater decision-

making power in their land claim area and should be the point of contact for institutions that want to work with communities.

Figure 7 illustrates that higher levels of governments and the PUB make the rules around energy. It is interesting to compare Figures 6 and 7 because it becomes clear that despite the vast number of actors involved in governing energy in the Inuvialuit Settlement Region, very few are involved in making the rules. While interviewees spoke about how the territorial government consults with communities when making decisions about energy (e.g. the 2030 Energy Strategy) but that community perspectives are rarely included in the final policy. While some government entities may argue that communities are involved in decision-making this does not appear to be true in practice based off the vast majority of interviews completed for this study. A true governance triangle that displays a community renewable energy approach to policy and rule-making would see greater involvement on the part of the public and regional governments (more similar to Figure 6). While community organizations occupy a collaborative level of decision-making overall, the are not present in standard setting governance triangle (Figure 7). Thus, despite community calls for greater involvement in decision-making, it appears the collaborative entities that would facilitate such cooperation are not present. Based off of the interviews it seems that bottom-up approaches to governance, prominent in the community renewable energy literature, are relatively limited in the Northwest Territories.

Individuals, businesses, and organizations are more prominent in operational matters of energy governance (Figure 8). It is at the local level that projects are identified, funding secured, logistics planned, and implementation completed. Higher levels of government are not actually involved in the energy projects, although communities must work with NTPC to connect to the existing electricity grid. Rather, the interviews suggest that local actors respond to rules set by the government when they participate in operational matters of renewable energy in communities. It seems that the rules selected by higher levels of government may create limitations around the types of projects that communities can pursue. For example, interviewees highlighted NTPC's 20% cap on net-metering as a major barrier to community solar development (Government 6). Thus, while communities do have some decision-making power in selecting projects, they are still limited by the rules set by non-local actors. Furthermore, the on-

the-ground community involvement has been largely limited to projects at the individual scale. Previous studies of Indigenous community renewable energy have discussed larger-scale solar, wind, and hydroelectric projects (Krupa et al 2015). Interviews completed for this research suggest that the communities of Inuvik and Tuktoyaktuk are limited to smaller projects in order to comply with rules set by outsiders. Collaborative entities, such as AEA, ARI, and Inuvialuit governments, support residents and businesses in pursuing renewable energy by delivering funding and assisting with project identification.

Figure 9 depicts the actors involved in renewable energy information sharing and networking. Existing literature points to community-led approaches to renewable energy as opportunities for learning (Walker, 2011). Interviewees highlighted the AEA and ARI as critical actors in the realms of outreach and education. The AEA is a grassroots approach to energy where they not only teach people about energy efficiency and renewable energy, but also support community leadership in implementing different energy projects (NGO 5). AEA's emphasis on community-leadership is important because it allows people to truly engage with the technology they are implementing. By attending community events like Jamborees the AEA is better able to connect with locals on energy issues than outsiders to the community that occupy higher levels of decision-making. Interviewees that live in the communities spoke about how the AEA better understands the reality of life in Inuvik and Tuktoyaktuk and that, in turn, contributes to greater learning on the part of residents. The ARI is viewed as a demonstration of alternative energy technology. The organization is involved in wind monitoring programs throughout the region as well as has an extensive solar panel installation on the building's roof. Additionally, researchers based out of the ARI host a science and engineering club which gives the youth the opportunity to learn about how these technologies work. Through the ARI's efforts they support community understandings of energy by having visual demonstrations of technology and building youth capacity. Finally, people sharing information is another way people learn about renewable energy. One interviewee remarked that a lot of information is also shared by word-of-mouth between communities; that people learn from best practices and challenges by sharing stories (NGO 1). Another interviewee spoke about wind turbines getting a bad reputation after several turbines fell down in Sachs Harbour. The importance of local actors in information sharing

(Figure 9) is consistent with literature that argues learning and networking is not limited to formal organizations, but also includes everyday community members in the private sphere.

Finally, most actors are involved in financing projects to some extent (Figure 10). Higher levels of government provide funding to build large scale renewable energy projects (e.g. Inuvik Wind Turbine), supports the AEA in running their local level programs, as well as involves higher level funding programs at the territorial level. The importance of this government funding to support local actor's ability to pay is critical. As one interviewee said, the north is on "an allowance from mom and dad" (Government 2). Locals that provide capital for projects usually do this at a highly subsidized rate. As was highlighted throughout the results, communities are faced with an extremely high cost of living. Thus, most people do not have the disposable income to cover high costs for things like solar panels or new insulation if not for government funding. Community member 2 remarked that they would have been unable to get energy efficient windows without a grant from the AEA. While residents do finance renewable energy and energy efficiency projects the interviews indicate that their ability to do so is heavily reliant on government funding. Furthermore, it is important to keep in mind that there are differences in priorities between the governance actors (Table 1). Actors at the highest decision-making level prioritize large-scale projects with small cost savings benefits distributed across the territory. One interviewee called these megaprojects "sexier" because they are perceived to be more exciting than LED lightbulbs or improved insulation. While the government does make funding available to support local actor's energy endeavours it is important to remember that their project priorities do differ. Thus, funding that is being spent on the larger projects because they are "exciting" may be better spent on more local level initiatives that would result in greater benefits at the individual level. The critical role of Western governments in resident's ability to finance projects seems to be an important takeaway. This is consistent with government policies in the United Kingdom that financially support community-oriented energy (Walker and Devine-Wright, 2008).

Figure 6. The true governance triangle of energy governance in Inuvik and Tuktoyaktuk, Northwest Territories (adapted from Guerra 2018).

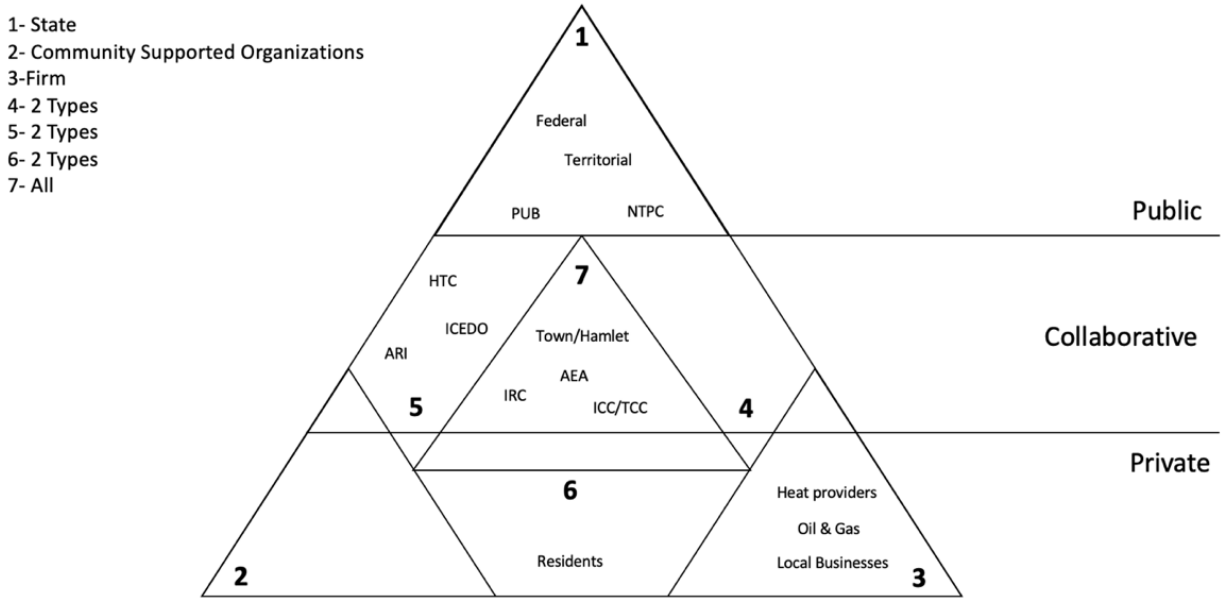


Figure 7. The true governance subtriangle representing energy actors involved in standards and commitments (i.e. rule-making) (adapted from Guerra 2018).

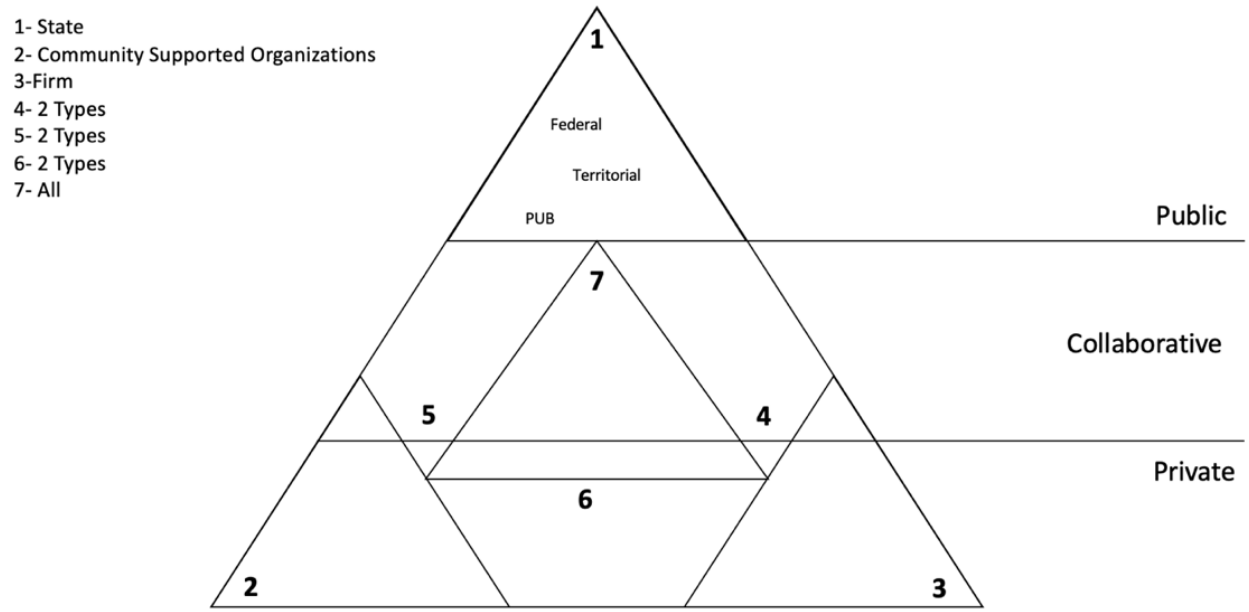


Figure 8. The true governance subtriangle representing energy actors involved in operational matters (i.e. planning, implementation, training) (adapted from Guerra 2018).

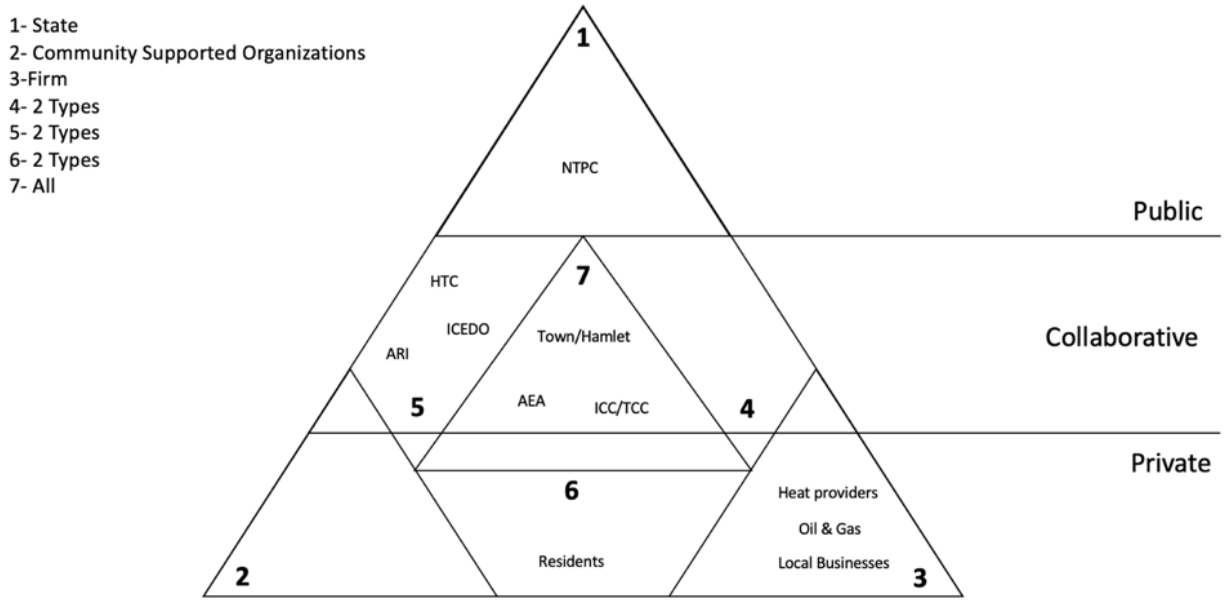


Figure 9. The true governance subtriangle representing energy actors involved in information and networking (i.e. sharing knowledge, building local capacity) (adapted from Guerra 2018).

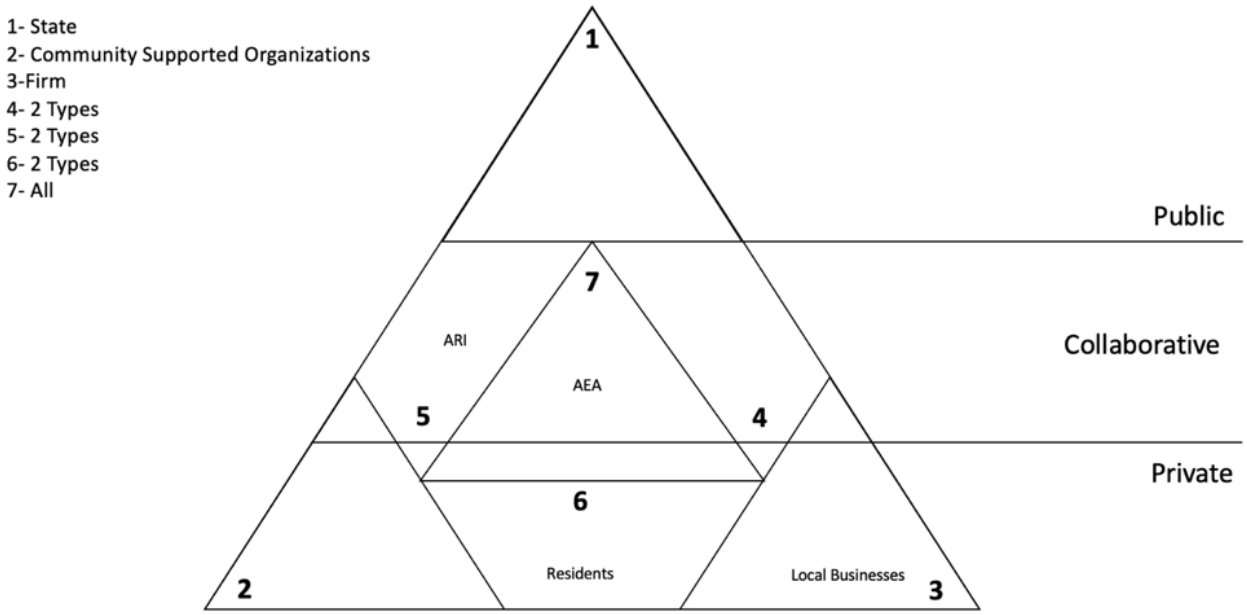
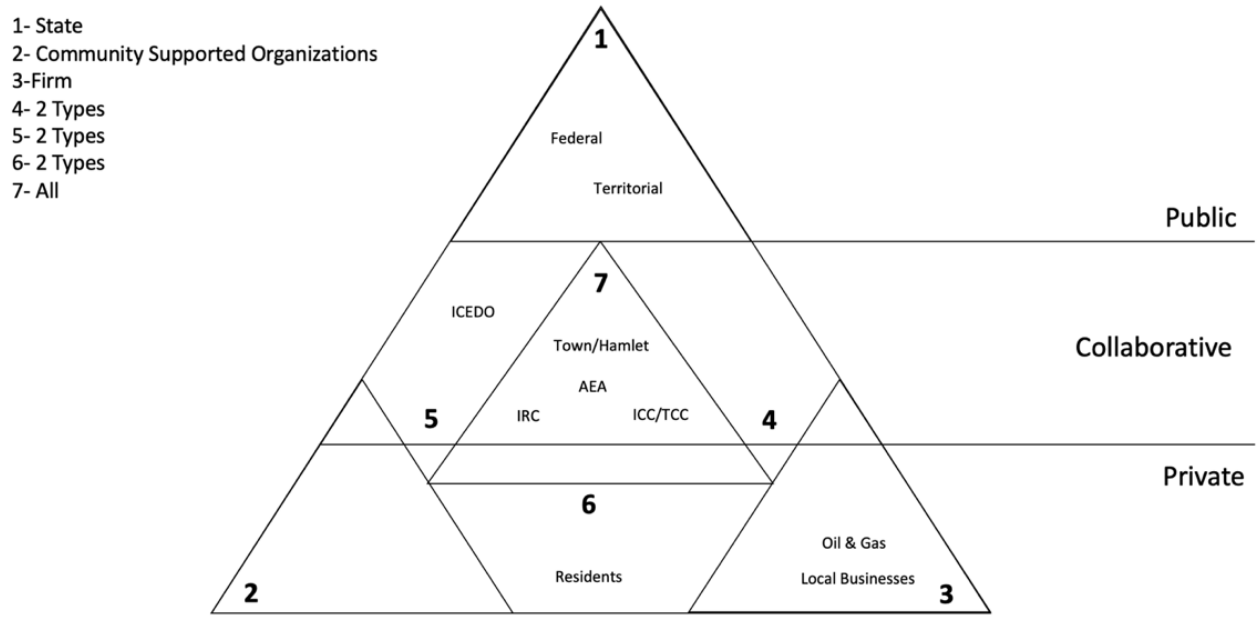


Figure 10. The true governance subtriangle representing energy actors involved in financing (adapted from Guerra 2018).



7. Conclusion

This case study extended understandings of the values and decision-making experiences people in Inuvialuit communities have with renewable energy. This research with 14 people in Inuvik and Tuktoyaktuk as well as 9 people in Yellowknife, suggests that some people in the ISR have similar values related to renewable energy that other researchers have identified in their work with Indigenous communities. Participants from each stakeholder group mentioned that natural gas may be a particularly important energy source for the Inuvialuit. The paper also demonstrates that motivations and priorities for energy projects do not necessarily align between higher levels of government and local people. Interviewees that live in the ISR identified the lack of meaningful engagement as a barrier to more bottom-up approaches to renewable energy, as were policies that do not allow communities to pursue the projects that are valued by residents. It seems that higher levels of government prioritize larger renewable energy projects whereas communities may be more interested in smaller individual and household level technologies. The findings from this research indicate that more work needs to be done to understand the ways

Inuvialuit communities understand and want to achieve energy security, as well as the complexity of governance actors involved in renewable energy.

References

Abbott, K. W. (2012). The transnational regime complex for climate change. *Environment and Planning C: Government and Policy*, *30*(4), 571-590.

Afanasyeva, A. (2018). *Environmentalism, Anti-environmentalism and Deep Stories about Wind Energy Development in Rural Alberta* (Master's thesis, University of Alberta, Edmonton, Canada). Retrieved from https://doi.org/10.7939/R31N7Z37P

Agterbosch, S., Meertens, R. M., & Vermeulen, W. J. (2009). The relative importance of social and institutional conditions in the planning of wind power projects. *Renewable and Sustainable Energy Reviews*, *13*(2), 393-405.

Arctic Energy Alliance. (N.d). About Us. Retrieved from: http://aea.nt.ca/about-us

Aurora Research Institute. (2014). About Us. Retrieved from: https://nwtresearch.com/about-us

Boute, A. (2016). Off-grid renewable energy in remote Arctic areas: An analysis of the Russian Far East. *Renewable and Sustainable Energy Reviews*, *59*, 1029-1037.

Burke, M. J., & Stephens, J. C. (2018). Political power and renewable energy futures: A critical review. *Energy Research & Social Science*, *35*, 78-93.

Castleden, H., Morgan, V. S., & Lamb, C. (2012). "I spent the first year drinking tea": Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer*, *56*(2), 160-179.

CBC News North (2010, April 21). Inuvialuit leader backs Mackenzie pipeline. (2010, April 21). *CBC News.* Retrieved from https://www.cbc.ca

CBC News North. (2016, June 2) Deadline to start building Mackenzie Gas Project extended to

2022. *CBC News.* Retrieved from https://www.cbc.ca

CBC News North. (2018, November 13). Inuvik receives $40m for wind turbine project. *CBC News.* Retrieved from: www.cbc.ca

CBC News North. (2019, September 5). Dempster Highway closed after LNG truck accident. *CBC News.* Retrieved from: www.cbc.ca

Chapman, C. (2013). Multinatural resources: ontologies of energy and the politics of inevitability in Alaska. In S. Strauss, S. Rupp, & T. Love (Ed.). *Cultures of energy: power, practices, technologies*, 96-109.

Clark, J. (2017, November 30). Exploring the gas fields of the NWT. *Canadian Mining & Energy*. Retrieved from https://www.miningandenergy.ca

Devine-Wright, P. (2005). Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy: An International Journal for Progress and Applications in Wind Power Conversion Technology*, *8*(2), 125-139.

Devine-Wright, P. (2011). Public engagement with large-scale renewable energy technologies: breaking the cycle of NIMBYism. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(1), 19-26.

Executive and Indigenous Affairs (n.d.). Implementing the Devolution Agreement. Retrieved on August 22, 2019. https://www.eia.gov.nt.ca/en/priorities/implementing-devolution-agreement

Flanagan, T. (2019). *How First Nations Benefit from Pipeline Construction.* Retrieved from the Fraser Institute website: https://www.fraserinstitute.org/sites/default/files/how-first-nations-benefit-from-pipeline-construction_0.pdf

Fletcher, C. (2003). Community-Based Participatory Research Relationships with Aboriginal Communities in Canada: An Overview of Context and Process. *Pimatisiwin: A Journal of Aboriginal & Indigenous Community Health*, *1*(1), 27-61

Guerra, F. (2018). Mapping offshore renewable energy governance. *Marine Policy*, *89*, 21-33.

Inuvialuit Regional Corporation. (2017). *IRC to Assess Natural Gas Development Potential in Beaufort Delta Region.* Retrieved from: https://www.irc.inuvialuit.com/news/irc-assess-natural-gas-development-potential-beaufort-delta-region

Inuvialuit Regional Corporation. (2019). Inuvialuit Final Agreement. Retrieved from: https://www.irc.inuvialuit.com/inuvialuit-final-agreement

Karanasios, K., & Parker, P. (2016). Recent developments in renewable energy in remote aboriginal communities, NWT, Canada. *Papers in Canadian Economic Development*, *16*, 41-53

Keohane, R. O., & Victor, D. G. (2011). The regime complex for climate change. *Perspectives on politics*, *9*(1), 7-23.

Koirala, B. P., Koliou, E., Friege, J., Hakvoort, R. A., & Herder, P. M. (2016). Energetic communities for community energy: A review of key issues and trends shaping integrated community energy systems. *Renewable and Sustainable Energy Reviews*, *56*, 722-744.

Krupa, J. (2012). Identifying barriers to aboriginal renewable energy deployment in Canada. *Energy Policy*, *42*, 710-714.

Krupa, J., Galbraith, L., & Burch, S. (2015). Participatory and multi-level governance: applications to Aboriginal renewable energy projects. *Local Environment*, *20*(1), 81-101.

Lowan-Trudeau, G. (2017). Indigenous environmental education: the case of renewable energy

projects. *Educational Studies*, *53*(6), 601-613.

Lovekin, D. and Heermea, D. (2018). *Indigenous clean energy must be built on trust and respect.* Retrieved from The Pembina Institute: https://www.pembina.org/blog/indigenous-clean-energy-shift

Marsh, J. & Baker, N. (2018). Mackenzie Valley Pipeline Proposals. In *The Canadian Encyclopedia*. Retrieved from The Canadian Encyclopedia database.

Mortensen, L., Hansen, A. M., & Shestakov, A. (2017). How three key factors are driving and challenging implementation of renewable energy systems in remote Arctic communities. *Polar Geography*, *40*(3), 163-185.

Necefer, L., Wong-Parodi, G., Jaramillo, P., & Small, M. J. (2015). Energy development and Native Americans: Values and beliefs about energy from the Navajo Nation. *Energy Research & Social Science*, *7*, 1-11.

Northwest Territories Power Corporation (2014). Net-metering. Retrieved from: https://www.ntpc.com/customer-service/net-billing

Panwar, N., Kaushik, S.C., Kothari, S. (2011). Role of renewable energy sources in environmental protection: A review. *Renewable and sustainable energy reviews, 15*(3), 1513–1524.

Rakshit, R., Shahi, C., Smith, M. A., & Cornwell, A. (2019). Energy transition complexities in rural and remote Indigenous communities: a case study of Poplar Hill First Nation in northern Ontario. *Local Environment*, *24*(9), 1-16.

Rezaei, M., & Dowlatabadi, H. (2016). Off-grid: community energy and the pursuit of self-sufficiency in British Columbia's remote and First Nations communities. *Local Environment*, *21*(7), 789-807.

Scott, M. (2018, June 13). Inuvik wind farm inching closer to reality. *CBC News.* Retrieved from: www.cbc.ca

Skanavis, C., Giannoulis, C., & Skanavis, V. (2013). The Significance of the Environmental Communication for the Renewable Energy Governance Scenario: Who Decides for Whom?. In E. Michalena, & J. Hills (Ed.) *Renewable Energy Governance* (pp. 351-362). Springer, London.

Smithers, G. D. (2015). Beyond the "ecological Indian": environmental politics and traditional ecological knowledge in modern North America. *Environmental History*, *20*(1), 83-111.

Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design. *Energy Research & Social Science, 45*, 12-42.

Stefanelli, R. D., Walker, C., Kornelsen, D., Lewis, D., Martin, D. H., Masuda, J., Richmond, C., Root, E., Tait Neufeld, H., & Castleden, H. (2019). Renewable energy and energy autonomy: how Indigenous peoples in Canada are shaping an energy future. *Environmental Reviews*, *27*(1), 95-105.

Walker, G. (2011). The role for 'community' in carbon governance. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(5), 777-782.

Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean?. *Energy policy*, *36*(2), 497-500.

Walker, G., Hunter, S., Devine-Wright, P., Evans, B., & Fay, H. (2007). Harnessing community energies: explaining and evaluating community-based localism in renewable energy policy in the UK. *Global Environmental Politics*, *7*(2), 64-82.

Willow, A. J. (2016). Indigenous ExtrACTIVISM in Boreal Canada: Colonial legacies, contemporary struggles and sovereign futures. *Humanities*, *5*(3), 55.

Yan, C., Rousse, D., & Glaus, M. (2019). Multi-criteria decision analysis ranking alternative heating systems for remote communities in Nunavik. *Journal of cleaner production*, *208*, 1488-1497.

Chapter 5:

CONCLUSION

5.1 Summary of Thesis

Climate change is a growing issue that has catalyzed activism and transitions to renewable energy systems. Indigenous peoples will experience the impacts of climate change most profoundly through threats to cultural traditions, food security, and safety while living in communities and travelling on-the-land (Dowing and Cuerrier, 2011). Youth recognize that climate change will profoundly impact their lives and they are seeking opportunities to establish themselves as climate leaders. Northern Indigenous communities are also taking on a leadership role in the fight against climate change through their exploration of less carbon-intensive forms of energy. While research for Chapters 3 and 4 was conducted separately, the papers are connected through their focus on Indigenous involvement in governance processes. This thesis makes a small contribution to the literature on Indigenous youth in climate action and renewable energy in the Inuvialuit Settlement Region.

Chapter 3 created insights about the benefits of Indigenous youth engagement in climate action. The paper contributed to an emerging area of researched focused on how youth are resilient to challenges in their communities and can participate in governance issues that matter to them (MacDonald et al., 2015). Benefits of youth involvement in climate activism were identified through more focused discussions of learning outcomes, involvement and engagement in local communities, and creation of leadership skills useful in governance spaces. Youth were able to take responsibility for their own climate change learnings by conducting research based off of Traditional Knowledge as well as sharing and listening to stories of their peers. This aligns with scholarship that emphasizes culturally appropriate educational opportunities (Simpson, 2002) and the importance of weaving understandings of climate change with narratives of hope and opportunity (Ojala, 2012). The importance of community support and encouragement of youth participants was also emphasized by interviewees. Notably, youth felt an immediate connection and support with other Indigenous delegates due to traditions and values. This links to the importance of connections to culture which has been documented in literature on Sami

youth (Nystad et al., 2014). Interviewees were impressed with the way youth rose to the occasion of speaking to policymakers and the importance of skill development like public speaking and confidence. Many made comparisons to the Indigenous youth and Greta Thunberg's activism for their passion and eloquence. This research shows that meaningful benefits can result from Indigenous youth engagement in climate action.

Inuvialuit values and experiences in renewable energy decision-making processes were explored in Chapter 4. Literature that has focused on northern Canada has been limited to technical and economic matters, thus this research has contributed to knowledge of socio-cultural and policy considerations in arctic communities. The primary takeaway from this paper is that life is much more complicated than the community renewable energy literature would suggest. While scholars have written about the importance of renewable energy to Indigenous peoples (Stefanelli et al., 2019), this paper indicates that natural gas may be an important energy source for some residents of Inuvialuit communities. Painting all Indigenous communities with an "anti-fossil fuel" brush does not necessarily reflect the diversity of community values. Interviews indicate that some Inuvialuit peoples may support some fossil fuel development in their territory. Community renewable energy literature has emphasized and demonstrated the benefits of bottom-up approaches to project decision-making (Walker and Devine-Wright, 2008). The energy governance landscape of the Northwest Territories is very complicated so there continues to be a primarily top-down approach. While there are some positive renewable energy projects taking place in Inuvik and Tuktoyaktuk these are mostly small-scale due to policy that prohibits larger-scale developments. Community participants stressed that despite their calls for greater involvement in decision-making, government engagement is not meaningful. The literature is clear that community renewable energy is an innovative approach to meet local needs, but the continued centralized governance structure in the Northwest Territories does not allow Inuvialuit peoples to truly decide their energy future.

5.2 Suggestions for Future Research

Community members were pleased and satisfied with the student's research approach inspired by the principles of Community-Based Participatory Research. Leadership and interviewees emphasized that researchers should continue to apply this approach when working

with Indigenous peoples. Thus, future scholarship on Indigenous youth climate action and community renewable energy should work in close partnership with communities.

This research demonstrates that Indigenous youth can experience great positive development through climate action. It seems that youth can increase their resilience and ability to cope with hopelessness and socio-economic challenges in their communities. Scholars should continue to unpack the benefits of activism in responding to these social issues. While this research constructed an interview guide focused on youth experiences in activism, future interviews should include some questions more rooted in theory (see Chandler and Lalonde, 1998), which may further clarify links between activism and resilience to social illness. Finally, this research interviewed people one year after their involvement in the Tracking Change events. A longitudinal study would create insights to how youth benefit from activism in the long-term and where they end up as young adults.

The thesis investigated Inuvialuit values and decision-making experiences with community renewable energy. Future research should extend this work by interviewing Inuvialuit people from different socio-economic profiles, ages, and genders to greater unpack community perspectives. Furthermore, the energy research was focused on Inuvialuit peoples in Inuvik and Tuktoyaktuk. The Northwest Territories is a diverse place so more work should be done to understand values and experiences of non-Inuvialuit peoples, including the Gwich'in (who reside in a similar area to the Inuvialuit), Dene, and Metis peoples.

References

Chandler, M. J., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural psychiatry*, *35*(2), 191-219.

Downing, A., & Cuerrier, A. (2011). A synthesis of the impacts of climate change on the First Nations and Inuit of Canada. *Indian Journal of Traditional Knowledge, 10*(1), 57-70.

MacDonald, J. P., Willox, A. C., Ford, J. D., Shiwak, I., Wood, M., Government, R. I. C., & IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Nystad, K., Spein, A. R., & Ingstad, B. (2014). Community resilience factors among indigenous Sámi adolescents: A qualitative study in Northern Norway. *Transcultural psychiatry*, *51*(5), 651-672.

Ojala, M. (2012). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research*, *18*(5), 625-642.

Simpson, L. (2002). Indigenous environmental education for cultural survival. *Canadian Journal of Environmental Education (CJEE)*, *7*(1), 13-25.

Stefanelli, R. D., Walker, C., Kornelsen, D., Lewis, D., Martin, D. H., Masuda, J., Richmond, C.A., Root, E., Tait Neufeld, H. and & Castleden, H. (2019). Renewable energy and energy autonomy: how Indigenous peoples in Canada are shaping an energy future. *Environmental Reviews*, *27*(1), 95-105.

Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean?. *Energy policy*, *36*(2), 497-500.

References

Abbott, K. W. (2012). The transnational regime complex for climate change. *Environment and Planning C: Government and Policy*, *30*(4), 571-590.

Adelson, N. (2005). The embodiment of inequity: Health disparities in Aboriginal Canada. *Canadian journal of public health*, *96*(2), 545-561.

Adger, W. N. (2003). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography 78(4)*, 387-404.

Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, *3*(2), 112-117.

Afanasyeva, A. (2018). *Environmentalism, Anti-environmentalism and Deep Stories about Wind Energy Development in Rural Alberta* (Master's thesis, University of Alberta, Edmonton, Canada). Retrieved from https://doi.org/10.7939/R31N7Z37P

Agterbosch, S., Meertens, R. M., & Vermeulen, W. J. (2009). The relative importance of social and institutional conditions in the planning of wind power projects. *Renewable and Sustainable Energy Reviews*, *13*(2), 393-405.

Alter, C., Haynes, S., and Worldand, J. (2019, December) Time 2019 Person of the Year Greta Thunberg. *Time*. Retrieved from: https://time.com

Arctic Energy Alliance. (n.d.). About Us. Retrieved from: http://aea.nt.ca/about-us

Aurora Research Institute. (2014). About Us. Retrieved from: https://nwtresearch.com/about-us

Aurora Research Institute. (2019). About Licensing Research. Retrieved from: https://nwtresearch.com/licensing

Baker, J. M., & Westman, C. N. (2018). Extracting knowledge: Social science, environmental impact assessment, and Indigenous consultation in the oil sands of Alberta, Canada. *The Extractive Industries and Society*, *5*(1), 144-153.

Ball, J., & Janyst, P. (2008). Enacting research ethics in partnerships with indigenous communities in Canada: "Do it in a good way". *Journal of Empirical Research on Human Research Ethics*, *3*(2), 33-51.

Battiste, M., & Youngblood, J. (2000). *Protecting Indigenous knowledge and heritage: A global challenge*. UBC Press.

Berkes, F., & Jolly, D. (2002). Adapting to climate change: social-ecological resilience in a Canadian western Arctic community. *Conservation ecology, 5*(2), 18.

Bhandari, H., & Yasunobu, K. (2009). What is social capital? A comprehensive review of the concept. *Asian Journal of Social Science*, *37*(3), 480-510.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, *10*(2), 141-163.

Bostrom, M. (2000). Teenhood: Understanding attitudes toward those transitioning from childhood to adulthood: A focus group analysis. In S. Bales (Ed.), *Reframing youth issues* (Working Papers). Washington, DC: FrameWorks Institute and Center for Communications and Community, UCLA.

Bourdieu, P. (1986). The Forms of Capital. In J. Richardson, (Ed.), *Handbook of Theory and Research for the sociology of Education*. Greenwood.

Boute, A. (2016). Off-grid renewable energy in remote Arctic areas: An analysis of the Russian Far East. *Renewable and Sustainable Energy Reviews*, *59*, 1029-1037.

Brooks, L. (2008). The Common Pot: The Recovery of Native Space in the Northeast. Minneapolis, MN: U of Minnesota Press.

Bryman, A. (2004). *Social research methods* (2nd ed.). Oxford: Oxford University Press.

Burke, M. J., & Stephens, J. C. (2018). Political power and renewable energy futures: A critical review. *Energy Research & Social Science*, *35*, 78-93.

Castagno, A. E., & Brayboy, B. M. J. (2008). Culturally responsive schooling for Indigenous youth: A review of the literature. *Review of educational research*, *78*(4), 941-993.

Castle, E. N. (2002). Social capital: An interdisciplinary concept. *Rural sociology*, *67*(3), 331-349.

Castleden, H., Morgan, V. S., & Lamb, C. (2012). "I spent the first year drinking tea": Exploring Canadian university researchers' perspectives on community-based participatory research involving Indigenous peoples. *The Canadian Geographer*, *56*(2), 160-179.

CBC News North (2010, April 21). Inuvialuit leader backs Mackenzie pipeline. (2010, April 21). *CBC News.* Retrieved from https://www.cbc.ca

CBC News North. (2016, June 2) Deadline to start building Mackenzie Gas Project extended to 2022. *CBC News.* Retrieved from https://www.cbc.ca

CBC News North. (2018, November 13). Inuvik receives $40m for wind turbine project. *CBC News.* Retrieved from: www.cbc.ca

CBC News North. (2019, September 5). Dempster Highway closed after LNG truck accident. *CBC News.* Retrieved from: www.cbc.ca

CBC News. (2014, October 22). 'It's affecting everyone': fuel prices jump 22% in Tuktoyaktuk. *CBC News.* Retrieved from: www.cbc.ca

Chandler, M. J., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural psychiatry*, *35*(2), 191-219.

Chandler, M. J., & Lalonde, C. E. (1995). The problem of self-continuity in the context of rapid personal and cultural change. In A. Oosterwegel & R.A. Wicklund (Ed.) *The self in European and North American culture: Development and processes*, 45-63. Springer, Dordrecht.

Chapman, C. (2013). Multinatural resources: ontologies of energy and the politics of inevitability in Alaska. In S. Strauss, S. Rupp, & T. Love (Ed.). *Cultures of energy: power, practices, technologies*, 96-109.

Chartrand, V. (2019). Unsettled times: Indigenous incarceration and the links between Colonialism and the Penitentiary in Canada. *Canadian Journal of Criminology and Criminal Justice*, *61*(3), 67-89.

Chavez V., Duran B., Baker Q.E., Avila, M.M., Wallerstein, N. (2003.). The dance of race and privilege in community-based participatory research, In M. Minkler & N. Wallerstein (Ed.). *Community- Based Participatory Research for Health*. San Francisco, Jossey-Bass.

Chinn, P. W. (2012). Developing teachers' place-based and culture-based pedagogical content knowledge and agency. In *Second international handbook of science education, 24*, 323-334. Springer, Dordrecht.

Christensen, V., Ehrlich, A., & White, G. (2007). Involving Canada's indigenous peoples in environmental impact assessment: co-management through the Mackenzie valley environmental impact review board. In *the annual conference if the International Association for Impact Assessment, Seoul, Korea: June* (pp. 3-9).

Clark, J. (2017, November 30). Exploring the gas fields of the NWT. *Canadian Mining & Energy*. Retrieved from https://www.miningandenergy.ca

Cohen, B.P. & Cohen, E.G. (1991). From groupwork among children to R & D teams: interdepence, interaction and productivity. In Lawler, E.J., Markovsky, B., Ridgeway, C. & Walker, H. (Ed.), *Advances in Group Processes*. Greenwich, Connecticut; USA. JAI Publishing.

Cohen, S., & Willis, T. (1985). Stress and social support and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Conference of Youth. (2020). *About COY*. Retrieved from https://conference-of-youth.org/en/about-coy/

Corner, A., Roberts, O., Chiari, S., Völler, S., Mayrhuber, E. S., Mandl, S., & Monson, K. (2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. *Wiley Interdisciplinary Reviews: Climate Change*, *6*(5), 523-534.

Davidson-Hunt, I. J., & Michael O'Flaherty, R. (2007). Researchers, indigenous peoples, and place-based learning communities. *Society and natural resources*, *20*(4), 291-305.

Devine-Wright, P. (2005). Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy: An International Journal for Progress and Applications in Wind Power Conversion Technology*, *8*(2), 125-139.

Devine-Wright, P. (2011). Public engagement with large-scale renewable energy technologies: breaking the cycle of NIMBYism. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(1), 19-26.

Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative-learning: Cognitive and Computational Approaches*. Amsterdam: Pergamon, 1-19.

Downing, A., & Cuerrier, A. (2011). A synthesis of the impacts of climate change on the First Nations and Inuit of Canada. *Indian Journal of Traditional Knowledge, 10*(1), 57-70.

Dunkel, C. S. (2005). The relation between self-continuity and measures of identity. *Identity*, *5*(1), 21-34.

Eckersley, R. 1999. Dreams and expectations: Young people's expected and preferred futures and their significance for education. *Futures, 31*(1)*,* 73–90.

Ecuador Times. (2019, December 13). Helena Gualinga: Who is the young voice against climate change? *Ecuador Times.* Retrieved from: https://www.ecuadortimes.net/

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *The Academy of Management Journal*, *50*(1), 25-32.

Elias, B., Mignone, J., Hall, M., Hong, S. P., Hart, L., & Sareen, J. (2012). Trauma and suicide behaviour histories among a Canadian indigenous population: an empirical exploration of the potential role of Canada's residential school system. *Social science & medicine*, *74*(10), 1560-1569.

Erbstein, N. (2013). Engaging underrepresented youth populations in community youth development: Tapping social capital as a critical resource. *New Directions for Youth Development*, *2013*(138), 109-124.

Erikson, E. H. (1950). Childhood and society. New York: Norton.

Executive and Indigenous Affairs (n.d.). Implementing the Devolution Agreement. Retrieved on

August 22, 2019. https://www.eia.gov.nt.ca/en/priorities/implementing-devolution-agreement

Fast, E., & Collin-Vézina, D. (2019). Historical trauma, race-based trauma, and resilience of indigenous peoples: A literature review. *First Peoples Child & Family Review*, *14*(1), 166-181.

Fisher, S. R. (2016). Life trajectories of youth committing to climate activism. *Environmental Education Research*, *22*(2), 229-247.

Flanagan, T. (2019). *How First Nations Benefit from Pipeline Construction.* Retrieved from the Fraser Institute: https://www.fraserinstitute.org/sites/default/files/how-first-nations-benefit-from-pipeline-construction_0.pdf

Fletcher, C. (2003). Community-Based Participatory Research Relationships with Aboriginal Communities in Canada: An Overview of Context and Process. *Pimatisiwin: A Journal of Aboriginal & Indigenous Community Health*, *1*(1), 27-61

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, *12*(2), 219-245.

Fuchs, G., & Hinderer, N. (2014). Situative governance and energy transitions in a spatial context: case studies from Germany. *Energy, Sustainability and Society*, *4*(1), 16.

Fukuyama, F. (2013). What is governance?. *Governance*, *26*(3), 347-368.

Global Climate Strike. (2019, September 28). *7.6 Million people demand action after week of climate strikes*. Retrieved from https://globalclimatestrike.net

Goldthau, A. (2014). Rethinking the governance of energy infrastructure: Scale, decentralization and polycentrism. *Energy Research & Social Science*, *1*, 134-140.

Goldthau, A., & Sovacool, B. K. (2012). The uniqueness of the energy security, justice, and governance problem. *Energy Policy*, *41*, 232-240.

Guerra, F. (2018). Mapping offshore renewable energy governance. *Marine Policy*, *89*, 21-33.

Harris, A., Wyn, J., Younes, S. (2010). Beyond apathetic or activist youth: 'Ordinary' young people and contemporary forms of participation. *Young, 18*(1), 9-32.

Hart, R., Fisher, S., & Kimiagar, B. (2014). Beyond projects: Involving children in community governance as a fundamental strategy for facing climate change. In UNICEF Office of Research (Ed.), *The challenges of climate change: Children on the frontline* (pp. 92–97). Florence, Italy: UNICEF Office of Research.

Hawkins, M. T., Letcher, P., Sanson, A., Smart, D., & Toumbourou, J. W. (2009). Positive development in emerging adulthood. *Australian Journal of Psychology, 61*, 89–99.

Hooghe, L., & Marks, G. (2003). Unraveling the central state, but how? Types of multi-level governance. *American political science review*, *97*(2), 233-243.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, *15*(9), 1277-1288.

IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Indigenous and Northern Affairs Canada. (2019). *Grants and Contributions to Increase Indigenous Youth Participation in Education and Labour Market Opportunities: Terms and Conditions.* Retrieved from: https://www.aadncaandc.gc.ca/eng/1100100010002/1100100010021

Inuvialuit Regional Corporation. (2017). *IRC to Assess Natural Gas Development Potential in Beaufort Delta Region.* Retrieved from: https://www.irc.inuvialuit.com/news/irc-assess-natural-gas-development-potential-beaufort-delta-region

Inuvialuit Regional Corporation. (2019). Inuvialuit Final Agreement. Retrieved from: https://www.irc.inuvialuit.com/inuvialuit-final-agreement

Inuvialuit Regional Corporation. (2020). Communities. Retrieved from: https://www.irc.inuvialuit.com/communities

Israel, B. A., Eng, E., Schulz, A. J., & Parker, E. A. (Eds.). (2005). *Methods for Community-Based Participatory Research for Health*.

Karanasios, K., & Parker, P. (2016). Recent developments in renewable energy in remote Aboriginal communities, Newfoundland and Labrador, Canada. *Papers in Canadian Economic Development*, *16*, 109-118.

Karanasios, K., & Parker, P. (2016). Recent developments in renewable energy in remote aboriginal communities, NWT, Canada. *Papers in Canadian Economic Development*, *16*, 41-53.

Keohane, R. O., & Victor, D. G. (2011). The regime complex for climate change. *Perspectives on politics*, *9*(1), 7-23.

Kirmayer, L. J., Sehdev, M., & Isaac, C. (2009). Community resilience: Models, metaphors and measures. *International Journal of Indigenous Health*, *5*(1), 62.

Koirala, B. P., Koliou, E., Friege, J., Hakvoort, R. A., & Herder, P. M. (2016). Energetic communities for community energy: A review of key issues and trends shaping integrated community energy systems. *Renewable and Sustainable Energy Reviews*, *56*, 722-744.

Krupa, J. (2012). Identifying barriers to aboriginal renewable energy deployment in Canada. *Energy Policy*, *42*, 710-714.

Krupa, J., Galbraith, L., & Burch, S. (2015). Participatory and multi-level governance: applications to Aboriginal renewable energy projects. *Local Environment*, *20*(1), 81-101.

Kunchornrat, J., & Phdungsilp, A. (2012). Multi-level governance of low-Carbon energy systems in Thailand. *Energies*, *5*(3), 531-544.

Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia-social and behavioral sciences*, *31*, 486-490.

Landau, M. J., Greenberg, J., & Solomon, S. (2008). The never-ending story: A terror management perspective on the psychological function of self-continuity. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives*, 87-100.

Leech, B. L. (2002). Asking questions: Techniques for semistructured interviews. *PS: Political Science & Politics*, *35*(4), 665-668.

Leman, P. J., Smith, E. P., Petersen, A. C., & SRCD Ethnic–Racial Issues and International Committees. (2017). Introduction to the special section of Child Development on positive youth development in diverse and global contexts. *Child development*, *88*(4), 1039-1044.

Lerner, R., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development: A view of the issues. *Journal of Early Adolescence, 25*, 10–16.

Li, H., & Yi, H. (2014). Multilevel governance and deployment of solar PV panels in US cities. Energy Policy, 69, 19-27.

Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key methods in geography*,

3(2), 143-156.

Lovekin, D. and Heermea, D. (2018). *Indigenous clean energy must be built on trust and respect.* Retrieved from The Pembina Institute: https://www.pembina.org/blog/indigenous-clean-energy-shift

Lowan-Trudeau, G. (2017). Indigenous environmental education: the case of renewable energy projects. *Educational Studies*, *53*(6), 601-613.

Mabee, H. S., & Hoberg, G. (2006). Equal partners? Assessing comanagement of forest resources in Clayoquot Sound. *Society and Natural Resources*, *19*(10), 875-888.

MacDonald, J. P., Harper, S. L., Willox, A. C., Edge, V. L., & Government, R. I. C. (2013). A necessary voice: Climate change and lived experiences of youth in Rigolet, Nunatsiavut, Canada. *Global Environmental Change*, *23*(1), 360-371.

MacDonald, J. P., Willox, A. C., Ford, J. D., Shiwak, I., Wood, M., Government, R. I. C., & IMHACC Team. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science & Medicine*, *141*, 133-141.

Markantoni, M. (2016). Low carbon governance: mobilizing community energy through top-down support?. *Environmental Policy and Governance*, *26*(3), 155-169.

Marquardt, J. (2014). A struggle of multi-level governance: promoting renewable energy in Indonesia. *Energy Procedia*, *58*, 87-94.

Marsh, J. & Baker, N. (2018). Mackenzie Valley Pipeline Proposals. In *The Canadian Encyclopedia*. Retrieved from The Canadian Encyclopedia database.

Marsh, T. N., Coholic, D., Cote-Meek, S., & Najavits, L. M. (2015). Blending Aboriginal and

Western healing methods to treat intergenerational trauma with substance use disorder in Aboriginal peoples who live in Northeastern Ontario, Canada. *Harm Reduction Journal*, *12*(1), 14.

Marsh, T. N., Cote-Meek, S., Young, N. L., Najavits, L. M., & Toulouse, P. (2016). Indigenous healing and seeking safety: A blended implementation project for intergenerational trauma and substance use disorders. *International Indigenous Policy Journal*, *7*(2).

Masten, A. S., & Cicchetti, D. (2016). Resilience in development: Progress and transformation. In D. Cicchetti (Ed.), *Developmental psychopathology* (3rd ed, pp. 271–333). New York, NY: Wiley.

Meyer, M. A. (2008). Indigenous and Authentic: Hawaiian Epistemology and the Triangulation of Meaning. In Denzin, N,, Lincoln, Y., and Smith, L (Eds.), *Handbook of Critical and Indigenous Methodologies,* (pp. 217-232). London: Sage.

Minkler, M. (2004). Ethical challenges for the "outside" researcher in community-based participatory research. *Health Education & Behavior*, *31*(6), 684-697.

Mortensen, L., Hansen, A. M., & Shestakov, A. (2017). How three key factors are driving and challenging implementation of renewable energy systems in remote Arctic communities. *Polar Geography*, *40*(3), 163-185.

Musto, R. J. (1990). Indian reserves: Canada's developing nations. *Canadian Family Physician*, *36*, 105.

Necefer, L., Wong-Parodi, G., Jaramillo, P., & Small, M. J. (2015). Energy development and Native Americans: Values and beliefs about energy from the Navajo Nation. *Energy Research & Social Science*, *7*, 1-11.

Newman, D. G. (2017). Political Rhetoric Meets Legal Reality: How to Move Forward on Free,

Prior, and Informed Consent in Canada. *Macdonald-Laurier Institute Paper Series*.

Noor, K. B. M. (2008). Case study: A strategic research methodology. *American journal of applied sciences*, *5*(11), 1602-1604.

Northwest Territories Power Corporation (2014). Net-metering. Retrieved from: https://www.ntpc.com/customer-service/net-billing

Nystad, K., Spein, A. R., & Ingstad, B. (2014). Community resilience factors among indigenous Sámi adolescents: A qualitative study in Northern Norway. *Transcultural psychiatry*, *51*(5), 651-672.

O'brien, K., Selboe, E., & Hayward, B. M. (2018). Exploring youth activism on climate change. *Ecology and Society*, *23*(3).

Office of the Auditor General of Canada. (2007). 2007 October Report of the Auditor General. Chapter 3 – Inuvialuit Final Agreement. Retrieved from: http://www.oag-bvg.gc.ca/internet/English/parl_oag_200710_03_e_23827.html

Ojala, M. (2012). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research*, *18*(5), 625-642.

Panwar, N., Kaushik, S.C., Kothari, S. (2011). Role of renewable energy sources in environmental protection: A review. *Renewable and sustainable energy reviews, 15*(3), 1513–1524.

Pete, S. (2016). 100 Ways: Indigenizing & decolonizing academic programs. *Aboriginal policy studies*, *6*(1).

Provance, M., Donnelly, R. G., & Carayannis, E. G. (2011). Institutional influences on business

model choice by new ventures in the microgenerated energy industry. *Energy Policy*, *39*(9), 5630-5637.

Rakshit, R., Shahi, C., Smith, M. A., & Cornwell, A. (2019). Energy transition complexities in rural and remote Indigenous communities: a case study of Poplar Hill First Nation in northern Ontario. *Local Environment*, *24*(9), 1-16.

Rezaei, M., & Dowlatabadi, H. (2016). Off-grid: community energy and the pursuit of self-sufficiency in British Columbia's remote and First Nations communities. *Local Environment*, *21*(7), 789-807.

Sanson, A. V., Van Hoorn, J., & Burke, S. E. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201-207.

Scott, M. (2018, June 13). Inuvik wind farm inching closer to reality. *CBC News.* Retrieved from: www.cbc.ca

Simpson, L. (2002). Indigenous environmental education for cultural survival. *Canadian Journal of Environmental Education (CJEE)*, *7*(1), 13-25.

Skanavis, C., Giannoulis, C., & Skanavis, V. (2013). The Significance of the Environmental Communication for the Renewable Energy Governance Scenario: Who Decides for Whom?. In E. Michalena, & J. Hills (Ed.) *Renewable Energy Governance* (pp. 351-362). Springer, London.

Smith L.T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books

Smith, A. (2007). Emerging in between: The multi-level governance of renewable energy in the English regions. *Energy policy*, *35*(12), 6266-6280.

Smith, L. T. (2013). *Decolonizing methodologies: Research and indigenous peoples*. Zed Books

Smithers, G. D. (2015). Beyond the "ecological Indian": environmental politics and traditional ecological knowledge in modern North America. *Environmental History*, *20*(1), 83-111.

Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design. *Energy Research & Social Science, 45*, 12-42.

Stanton-Salazar, R. D. (2011). A social capital framework for the study of institutional agents and their role in the empowerment of low-status students and youth. *Youth & Society*, *43*(3), 1066-1109.

Statistics Canada. (2017a). *Inuvik, T [Census subdivision], Northwest Territories and Northwest Territories [Territory]*(table). *Census Profile*, *2016 Census*. (Statistics Canada Catalogue no. 98-316-X2016001). Ottawa. Retrieved on February 2, 2020 from Statistics Canada: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E

Statistics Canada. (2017b). *Tuktoyaktuk, HAM [Census subdivision], Northwest Territories and Northwest Territories [Territory]* (table). *Census Profile*, *2016 Census*. (Statistics Canada Catalogue no. 98-316-X2016001). Ottawa. Retrieved on February 2, 2020 from Statistics Canada: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E

Stefanelli, R. D., Walker, C., Kornelsen, D., Lewis, D., Martin, D. H., Masuda, J., Richmond, C., Root, E., Tait Neufeld, H., & Castleden, H. (2019). Renewable energy and energy autonomy: how Indigenous peoples in Canada are shaping an energy future. *Environmental Reviews*, *27*(1), 95-105.

Stiegman, M. L., & Castleden, H. (2015). Leashes and lies: Navigating the colonial tensions of

institutional ethics of research involving Indigenous peoples in Canada. *International Indigenous Policy Journal*, *6*(3).

The Canadian Press. (2019, September 28). Canadian Indigenous water activist Autumn Peltier addresses UN on clean water. Retrieved from: https://www.cbc.ca

Thunberg, G. (2019). *No one is too small to make a difference*. Penguin.

Tracking Change. (2018). *Tracking Climate Change – Youth Knowledge Fair 2018.* Retrieved from: http://www.trackingchange.ca

Tucci, J., J. Mitchell, and C. Goddard. 2007. Children's fears, hopes and heroes: Modern childhood in Australia. *Melbourne: Australian Childhood Foundation.*

Tuck, E., McKenzie, M., & McCoy, K. (2014). Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research. *Environmental Education Research, 20*(1), 1-23.

United Nations General Assembly. (1989). Convention on the Rights of the Child.

Varga, S. M., & Zaff, J. F. (2018). Webs of support: An integrative framework of relationships, social networks, and social support for positive youth development. *Adolescent Research Review*, *3*(1), 1-11.

Walker, G. (2011). The role for 'community' in carbon governance. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(5), 777-782.

Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean?. *Energy policy*, *36*(2), 497-500.

Walker, G., Devine-Wright, P., Hunter, S., High, H., & Evans, B. (2010). Trust and community:

Exploring the meanings, contexts and dynamics of community renewable energy. *Energy Policy*, *38*(6), 2655-2663.

Walker, G., Hunter, S., Devine-Wright, P., Evans, B., & Fay, H. (2007). Harnessing community energies: explaining and evaluating community-based localism in renewable energy policy in the UK. *Global Environmental Politics*, *7*(2), 64-82.

Whyte, K. P. (2014). Indigenous women, climate change impacts, and collective action. *Hypatia*, *29*(3), 599-616.

Wilson, S. (2008). Research is Ceremony: Indigenous Research methods. Winnipeg, MB: Fernwood Publishing.

Winskel, M. (2007). Multi-level governance and energy policy: renewable energy in Scotland. *Governing Technology for Sustainability*, 182.

Wirth, S. (2014). Communities matter: Institutional preconditions for community renewable energy. *Energy Policy*, *70*, 236-246.

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The world bank research observer*, *15*(2), 225-249.

Yan, C., Rousse, D., & Glaus, M. (2019). Multi-criteria decision analysis ranking alternative heating systems for remote communities in Nunavik. *Journal of cleaner production*, *208*, 1488-1497.

Zeldin, S., Camino, L., & Calvert, M. (2003). Toward an understanding of youth in community governance: Policy priorities and research directions. *Social Policy Report*, *17*(3), 1-20.

Zhang, Y., & Wildemuth, B. M. (2009). Qualitative analysis of content. *Applications of social research methods to questions in information and library science*, *308*, 319.

Appendix A – Wind Energy Workshop Promotional Poster

Appendix B – Youth Research Plain Language Summary

RESEARCH INFORMATION SHEET

Tracking Change Youth @ COP24

What is the Research project?
You are being asked to participate in an interview related to youth involvement in the COP24 meetings in December 2018 on climate change. The project will take place between 2019-2020. The project is funded by Tracking Change at the University of Alberta www.trackingchange.ca and Future Energy Systems at the University of Alberta. https://www.futureenergysystems.ca

The purpose of the project is to understand how Indigenous youth can influence ideas and social action on climate change at global scales. Specifically, a graduate student will conduct interviews with Indigenous youth who participated in a Tracking Change Youth Knowledge Fair and Tracking Change @ COP24 in 2018. By carrying out these interviews and mapping a) what youth learned and b) what learnings youth created for others, the researchers will be able to understand more about the impact of this event for youth and northern communities. You are being asked to participate because of your involvement in the Tracking Change Youth Knowledge Fair and Tracking Change @ COP24. We hope to speak with student participants, parents/guardians, teachers, community leaders, and trip organizers, etc. about their perceptions of these Tracking Change activities. We are interested in learning about your experiences and reactions to these opportunities.

Why is this research being done?
The research is being carried out under the guidance of the Tracking Change Traditional Knowledge Steering Committee. The results of the research will be used to develop a report for youth and their communities. It will also be shared more broadly (publically) in an academic publication that might be written together with youth (co-authored). The study is needed since there are very few studies that attempt to understand the voices of youth in global decision-making on climate change.

The Interview
You have been asked to participate in an interview. The interview will take 1-2 hours. Your information will be recorded using hand written notes or audio recorder.

What happens to the results of the interview?
Once you have completed the interview the researchers will transcribe (write down) what was said and you will receive a copy of the transcript. Upon receiving the transcript you will have 30 days to edit or withdraw any data that you do not want us to include in the study. You may also completely withdraw from the study if you choose. After the 30 day period, it may not be possible to remove data from the study.

What happens to the results of my interview?
The interview will be recorded with an audio recorded and/or using hand written notes. You can also email your responses to interview questions to mmackay2@ualberta.ca. Note, since the

email will reside on servers outside the researcher's control, we cannot completely guarantee the confidentiality of that data.

Your name will be included in public documents unless you (or your parent/guardian) indicate that you would rather not be identified by name. If you do not want your name used, we will use an alias (e.g., A1) in any reports. If you agree, we will also provide a copy of the transcript of your interview with the local government offices.

What are the risks and discomforts?
The results of the study will be stored and may be used in the future by other researchers. You will be contacted if the results of your interview are going to be used in other ways other than that defined in this project summary.

Do you have to participate? How can I withdraw?
You do not have to participate in the study and you can stop the interview at anytime. You can also withdraw your transcript from the study within 30 days following the receipt of your transcript. After this 30 day period, it may not be possible for us to remove your data (transcript) from the study. If you do decide to withdraw from the study there is no penalty to you. You will not lose the $50 honoraria (payment) if you withdraw. Please contact the researcher (information below) if you would like to make changes to your transcript or withdraw yourself from the study.

What are the benefits to me?
The project will provide you with an opportunity to share your knowledge and perspectives about youth involvement in the COP24 meetings. The report and public documents produced from the study help others understand youth engagement and hear their voices on critical issues of climate change decision-making. You will receive a $50 "honoraria" (payment) to thank you for participating in the project. However, there may end up being no direct benefits to you.

Will my information be kept private?
The results of your interview / participation in the interviews will be kept confidential until you have had a chance to review your transcript (within 30 days after the receipt of your transcript). We would like to use parts of your transcripts with your name in public documents. However, you can choose not to have your name included and you will be signed an anonymous ID (e.g. Person A or 001 etc.) so that the public does not know who shared the information.

Note: If you do give us permission to use your name in public documents it may be possible for someone to link your interview to information online (such as research posters or social media posts). Even if you are assigned an anonymous ID it may still be possible that your interview data will be linked to online materials. Due to the significant amount of media coverage that followed the trip we cannot guarantee confidentiality of participants, despite our best efforts to do so.

In addition to your stories, we would like to record your first name and last initials, your phone number, and email address in order for us to send you a transcript of your interview.

If you have questions or require additional information, please contact:

Makenzie Mackay
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566 GSB University of Alberta,
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Tel: (306) 502-6355
mmackay2@ualberta.ca

Dr. Brenda Parlee
Faculty of Agricultural, Life and Environmental Sciences
501 GSB University of Alberta,
Edmonton Alberta T6G 2H1
Tel: (780) 492-6825
Fax: (780) 492-0268
brenda.parlee@ualberta.ca

The plan for this study (**Pro00085621**) has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

Appendix C – Energy Research Plain Language Summary

RESEARCH PROJECT SUMMARY:
Renewable Energy in Northern and Western Canada

Dear Participant:

I am working with the University of Alberta on a research project about renewable energy in your region. We would like to carry out interviews with local residents in your community about renewable energy. The research is being carried out in an effort to learn more about how renewable energy technology (e.g., solar panels, wind turbines, geothermal) can be developed meaningfully and sustainably.

Timeline: The project is taking place from June, 2018-May, 2020.

Scope: The interview will last about one hour. The interview questions will focus on the following themes:

- importance of the lands and resources in this area to your culture, livelihood and well-being;
- costs and benefits of current energy sources in your community;
- alternative kinds of energy sources you consider important;

Participation, Time Requirement and Honoraria: Interviews will last approximately 1 hour and are completely voluntary. You will receive an honorarium (gift card) of $100 to compensate for the time you spend in the interview.

Risks: You are not required to participate in the interview and can choose not to answer questions that are asked and can withdraw (quit) from the interview at any time without prejudice or consequence. You will be asked to sign a consent form to confirm your willingness to participate in the interview, your consent to the use of the interview data in public documents and consent to the storage and ownership of the transcript by the University of Alberta. You can choose to withdraw from the interview at any time without penalty and can choose to withdraw your data at any time up until the final verification of your interview transcript (30 days after the receipt of your transcript).

Recording, Transcripts and Storage of Transcripts: Your information will be recorded and may be shared publicly (e.g., through a report, publication or thesis). Your name will be used in these public documents unless otherwise indicated by you on the consent form. All results from interviews will be stored at the University of Alberta. Any future use of the data beyond that defined in this project summary will require your consent.

Anyone interested in participating in the project or looking for more information can contact:

Brenda Parlee
Department of Resource Economics and Environmental Sociology
Faculty of Agricultural, Life and Environmental Sciences 507 GSB University of Alberta, Edmonton Alberta T6G 2H1
Tel: (780) 492-6825 Fax: (780) 492-0268
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The plan for this study (Pro00080881) has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615. The Aurora Research Institute issued this study a Scientific Research License (#16413) on October 12, 2018.

Appendix D – Youth Research Consent Forms

YOUTH ASSEST FORM AND PARENTAL CONSENT TO PARTICIPATE
Tracking Change @ COP24

Researcher: Makenzie MacKay (Brenda Parlee)

Affiliation: University of Alberta

Funding: Future Energy Systems, University of Alberta

Purpose: The purpose of the project is to learn more youth engagement and impact in COP24.

Timeline: Interviews will be carried out between 2019-2020

---

1. I would like to carry out an interview with you for our project. Have you understood the attached project summary as you have read it or as I have read it to you?

Yes ____
No ____

The interview will last about 1-2 hours. Information will be recorded in hand-written notes and on audio recording equipment. You will receive a $50 honoraria for participating in an interview.

---

2. Have all of your questions about the interview or research project been answered?

Yes ____
No ____

3. Consent to Interview: Do you understand and agree to participate in this research project as it was shared. Do you understand that you are not required to be involved in this research project. You can choose not to answer questions that are asked and can stop the interviews or withdraw (quit) the project at any time without any problem (prejudice or consequence). We will still be able to complete this research if you decide to not participate or choose to withdraw from the study.

Understand and Agree _____

Disagree _____

4. Verification and Withdrawal: Upon receiving a copy of your transcript you will have 30 days to edit or withdraw any data that you do not want us to use. You may also completely withdraw from the study if you choose. After the 30 day period it may not be possible to remove data from the study. Please contact the researcher (information below) if you would like to make changes to your transcript or withdraw yourself from the study.

Understand and Agree _____

Disagree _____

5. Consent to the Use of Secondary Data: Do you consent to the use of the following secondary data sources? You may still participate in an interview even if you do not give us consent to use the secondary data sources. Please indicate which data sources you give consent for us to use in this research project.

Social Media (posts I posted) _____

Social Media (posts about me) _____

My research poster _____

6. Consent to Use your Name in Public Documents: I would like to use the results of this research in a report and/or public document such as a journal articles. These will all be public documents. A copy of the final report will be housed at the University of Alberta. Interview data will not be used in any public exhibition without your permission.

I would like to acknowledge you by name in all research documents and materials (including potentially listing you as a co-author and linking your name to your data). However, if you prefer we will assign the results of your interview an anonymous ID (e.g. Person A or 001 etc.) so that the public does not know who shared the information. Note: if you give us permission to use your name publicly, it may be possible for your interview to be linked to information online (such as research posters or social media postings).

If there is any information that you would not like to share publicly, please let me know.

I DO ___ want my name to be shared in public documents/ presentations.
I DO NOT ___ want my name to be shared in public documents/ presentations.

7. Agreement for Storage of your Interview Results
I will share a copy of your interview transcript with you. I will also keep a copy of any audio recordings and / or written notes (transcriptions) for the purposes of reporting and publication. To keep with University of Alberta procedures and ensure your information is valued over the long term, your data will be stored securely for a minimum of 5 years. All personal identifiers will be removed as early as possible.

Understand and Agree _____

8. Sharing Transcript
Would you like a copy of your transcript shared with local government offices?

Yes ____
No ____

By signing below I confirm that I have read, understand and agree to the above terms and conditions for this interview.

Interviewee _____ Date: _____

If you are the parent of a child (under 18) being asked to participate in this research project, please sign below.

Interviewee Parent/Guardian _____ Date: _____

If you require additional information or have any concerns about this project, please contact:

The plan for this study (**Pro00085621)** has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

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CONSENT FORM
Tracking Change @ COP24

Researcher: Makenzie MacKay (Brenda Parlee)

Affiliation: University of Alberta

Funding: Future Energy Systems, University of Alberta

Purpose: The purpose of the project is to learn more youth engagement and impact in COP24.

Timeline: Interviews will be carried out between 2019-2020

---

1. I would like to carry out an interview with you for our project. Have you understood the attached project summary as you have read it or as I have read it to you?

Yes ____
No ____

The interview will last about 1-2 hours. Information will be recorded in hand-written notes and on audio recording equipment. You will receive a $50 honoraria for participating in an interview.

---

2. Have all of your questions about the interview or research project been answered?

Yes ____
No ____

3. Consent to Interview: Do you understand and agree to participate in this research project as it was shared. Do you understand that you are not required to be involved in this research project. You can choose not to answer questions that are asked and can stop the interviews or withdraw (quit) the project at any time without any problem (prejudice or consequence). We will still be able to complete this research if you decide to not participate or choose to withdraw from the study.

Understand and Agree _____

Disagree _____

4. Verification and Withdrawal: Upon receiving a copy of your transcript you will have 30 days to edit or withdraw any data that you do not want us to use. You may also completely withdraw from the study if you choose. After the 30 day period it may not be possible to remove data from the study. Please contact the researcher (information below) if you would like to make changes to your transcript or withdraw yourself from the study.

Understand and Agree _____

Disagree _____

5. Consent to the Use of Secondary Data: Do you consent to the use of the following secondary data sources? You may still participate in an interview even if you do not give us consent to use the secondary data sources. Please indicate which data sources you give consent for us to use in this research project.

Social Media (posts I posted) _____

Social Media (posts about me) _____

My research poster _____

6. Consent to Use your Name in Public Documents: I would like to use the results of this research in a report and/or public document such as a journal articles. These will all be public documents. A copy of the final report will be housed at the University of Alberta. Interview data will not be used in any public exhibition without your permission.

I would like to acknowledge you by name in all research documents and materials (including potentially listing you as a co-author and linking your name to your data). However, if you prefer we will assign the results of your interview an anonymous ID (e.g. Person A or 001 etc.) so that the public does not know who shared the information. Note: if you give us permission to use your name publicly, it may be possible for your interview to be linked to information online (such as research posters or social media postings).

If there is any information that you would not like to share publicly, please let me know.

I DO ___ want my name to be shared in public documents/ presentations.
I DO NOT ___ want my name to be shared in public documents/ presentations.

7. Agreement for Storage of your Interview Results
I will share a copy of your interview transcript with you. I will also keep a copy of any audio recordings and / or written notes (transcriptions) for the purposes of reporting and publication. To keep with University of Alberta procedures and ensure your information is valued over the long term, your data will be stored securely for a minimum of 5 years. All personal identifiers will be removed as early as possible.

Understand and Agree _____

8. Sharing Transcript
Would you like a copy of your transcript shared with local government offices?

Yes ____
No ____

By signing below I confirm that I have read, understand and agree to the above terms and conditions for this interview.

Interviewee _____ Date: _____

If you require additional information or have any concerns about this project, please contact:

The plan for this study (**Pro00085621)** has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615

Makenzie Mackay
Faculty of Agricultural, Life and Environmental Sciences
566 GSB University of Alberta,
Edmonton Alberta T6G 2H1
Tel: (306) 502-6355
mmackay2@ualberta.ca

Dr. Brenda Parlee
Faculty of Agricultural, Life and Environmental Sciences
501 GSB University of Alberta,
Edmonton Alberta T6G 2H1
Tel: (780) 492-6825
Fax: (780) 492-0268
brenda.parlee@ualberta.ca

Appendix E – Energy Research Consent Forms

CONSENT FORM:
Renewable Energy in Northern and Western Canada

Researcher: Brenda Parlee and Makenzie MacKay

Affiliation: University of Alberta

Funding: Future Energy Systems, University of Alberta

Purpose: The purpose of the project is to learn more about the costs and benefits of renewable energy technology for First Nations communities in northern and western Canada.

Timeline: Interviews will be carried out between 2018-2020

---

1. I would like to carry out an interview with you for our project. Have you understood the attached project summary as you have read it or as I have read it to you?

Yes ____
No ____

The interview will last about 1 hour. Information will be recorded in hand-written notes and on audio/video recording equipment.

---

2. Have all of your questions about the interview or research project been answered?

Yes ____
No ____

3. Consent to Interview: Do you understand and agree to participate in this research project as outlined above. Do you understand that you are not required to participate in this research project. You can choose not to answer questions that are asked and can stop the interviews or withdraw (quit) the project at any time without prejudice or consequence.

Understand and Agree _____

Disagree _____

4. Consent to Use your Name in Public Documents: I would like to use the results of this research in a report and or publications such as journal articles. These will all be public documents. A copy of the final report will be housed at the University of Alberta. Interview data will not be used in any public exhibition without your permission.

I would like to acknowledge you by name in all research documents and materials, or if you prefer the results of your interview can be coded to Person A or 001 etc. so that the public does not know who shared the information. If there is any information that you would <u>not</u> like to share publicly, please let me know.

I DO ___ want my name to be shared in public documents/ presentations.
I DO NOT ___ want my name to be shared in public documents/ presentations.

5. Consent for Storage of your Interview Results
I will share a copy of your interview transcript with you. I will also keep a copy of any audio/video recordings and / or transcriptions for the purposes of reporting and publication. To ensure that your information is valued over the long term, we would also like to store copies at the University of Alberta

I DO ___ want my information stored at the University of Alberta.
I DO NOT ___ want my information stored and would prefer that it be destroyed once the research project is completed.

By signing below I am acknowledging that I have read, understand and agree to the above terms and conditions for this interview.

Interviewee Name: _____ Date: _____

Interviewee Signature: _____

If you require additional information or have any concerns about this project, please contact:

Brenda Parlee
Department of Resource Economics and Environmental Sociology
Faculty of Agricultural, Life and
Environmental Sciences 507 GSB University of
Alberta, Edmonton Alberta T6G 2H1 Tel: (780)
492-6825 Fax: (780) 492-0268
brenda.parlee@ualberta.ca

Makenzie MacKay
Department of Resource Economics and Environmental Sociology
Faculty of Agricultural, Life and Environmental Sciences
564 GSB University of Alberta, Edmonton Alberta T6G 2H1
Tel: (306) 502-6355
mmackay2@ualberta.ca

The plan for this study (Pro00080881) has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615. The Aurora Research Institute issued this study a Scientific Research License (#16413) on October 12, 2018.

Appendix F – Youth Research Semi-Structured Interview Guide

Tracking Change @ COP24 - Interview Guide for Youth

Before Trip

1. How did you hear about the YKF? Who told you?
2. How did you get involved? Did you have to apply? Who helped you get organized?
3. How did it feel when you found out you could go to the YKF?
4. How did you make your poster? Who helped you prepare for the YKF? Did anyone help fundraise? Who taught you about climate change and the environment?
5. Who'd you share your poster with?
6. Tell me what it was like getting together with so many youth at the YKF. Did you work with other youth to finish your poster or practice your presentation?
7. What did it feel like to win a spot to go to Europe? Were you surprised?
8. What did you do once you went home after the YKF? How did your community react to finding out you were going to Europe? What did your friends say? Your parents?
9. Who helped you prepare for the trip to Europe? Who helped you make your poster? Did anyone help fundraise? Who did you talk to about your feelings about the trip?

During Trip

1. What were you most excited about on the trip to Europe? What were you worried about?
2. Tell me about those few days in Edmonton when we prepared for the Europe trip. How were you feeling about presenting? What was that first practice run-through like? Who helped you during that time?
3. How was the travel to Europe? Have you ever been on such a big trip before? What did you do on the plane! Who did you sit with!
4. Tell me about our time in Paris. What was it like going straight from the plane to present at UNESCO? How did that presentation go? What else did you do in Paris?
5. How did it feel to talk for different groups in Europe? What presentations/meetings were your favourite? Which people were you most happy you got to speak to?
6. Who inspired you in Europe? Was there anyone who's words made you feel inspired or motivated?
7. Did you feel worried, nervous or stressed in Europe? Did you feel homesick? Who supported you when you were feeling less than great?
8. Were there any people you felt really listened to you? That you felt like you taught them something? Who do you think really valued what you were saying about youth, climate change, and the environment? What did you teach others?
9. What people do you think you learned the most from? What did you learn that you didn't already know/think of? Who'd you learn that from?
10. Who on the trip do you think you connected the most with? Who made your time special?
11. What were your favourite tourist/cultural activities? Who did you hang out with during those events? Why did you like those activities so much?

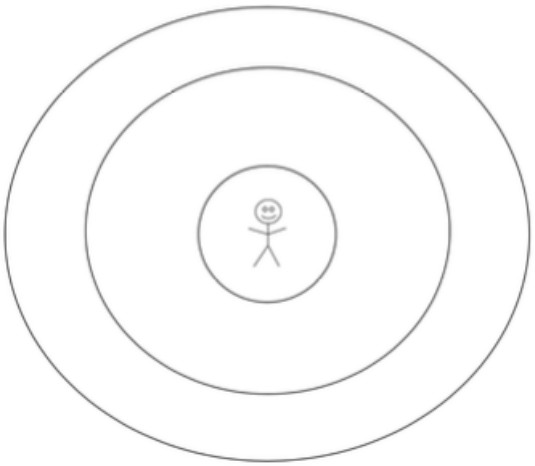
After Trip

1. Tell me what it was like to return to your community after being in Europe. How did it feel to go home? Was anything different? What were you most looking forward to about being home?
2. What was your community's response to you returning? Did anyone reach out to you?

3. Did you do any presentations in your community once you got home? Did you share your experiences in Europe with anyone? Why or why not?
4. How do you think the trip impacted you? Have you noticed any changes in yourself? Has it affected what you do today?
5. Why should we include Indigenous youth in climate change discussions?

**Is there anything else you'd like to talk about?

Cognitive Mapping Activity



1. Draw the most important people in your life in the circle around you. The people closest to you are the most important, the people farther from you are less important. Draw a line between yourself and the people.
2. Which people support you financially? Put a $ sign next to them. *Draw additional people in the next ring if they support you but are not in the inner circle.
3. Which people support you emotionally? Who do you turn to when you feel emotional? Put a heart next to them. *Draw additional people in the next ring if they support you but are not in the inner circle.
4. Which people support you culturally? Who teaches you about your culture and supports you that way? Draw a star next to them. *Draw additional people in the next ring if they support you but are not in the inner circle.
5. Which people support you spiritually? Draw a cloud around them. *Draw additional people in the next ring if they support you but are not in the inner circle.
6. Which peers support you? Who do you hang out with? Draw a circle around them. *Draw additional people in the next ring if they support you but are not in the inner circle.
7. Who teaches you about the environment? Put a flower beside people that teach you on-the-land and a "S" if they teach you about science. *Draw additional people in the next ring if they support you but are not in the inner circle.
8. Who makes you feel confident? Put a smiley face beside people that make you feel confident. *Draw additional people in the next ring if they support you but are not in the inner circle.
9. Is there anyone else in your life that is important but we haven't talked about already?

Tracking Change @ COP24 - Interview Guide for Key Informants

Before Trip

1. How did you get involved with the YKF/trip to Europe? What was your role?
2. Who helped the youth prepare for the YKF? Are you aware of any fundraising that supported the student?
3. If you were at the YKF, tell me what it was like to see so many youth together at the YKF. Did you assist any students at the YKF? What did you think of their posters and presentations?
4. What was your community's reaction when they found out the youth was going to Europe?
5. Who helped the student prepare for the trip to Europe? (did you do anything?) Who helped them with their poster? Did anyone help fundraise?

During Trip

1. Tell me about those few days in Edmonton when we prepared for the Europe trip. What did you think of that first practice run-through? How do you think the youth were feeling about presenting? Anyone who changed their poster stuff a lot?
2. What was it like travelling with the youth to Europe? What was the energy like?
3. Tell me about our time in Paris. What was it like going straight from the plane to present at UNESCO? How did that presentation go/observations of youth talking to delegates? What else did you do in Paris? Standout messages?
4. What do you think of the youth speaking for different groups in Europe? What presentations/meetings do you think were most important?
5. Who inspired you in Europe? Was there anyone who's words made you feel inspired or motivated?
6. Who inspired the youth in Europe? Was there anyone who you think really connected with the Youth?
7. Did you support any of the youth when they were feeling worried, stressed, or homesick? How did you offer them support?
8. Were there any people you felt really listened to the youth? Who do you think really valued what the youth were saying?
9. What people do you think was the biggest learning for your youth participant? How did they learn that?

After Trip

1. Tell me what it was like to return to your community after being in Europe. How did it feel to go home? Was anything different? What were you most looking forward to about being home?
2. What was your community's response to the youth returning? Did anyone reach out?
3. Did the youth do any presentations in their community once they got home? Did they share their experiences in Europe with anyone? Why or why not?
4. How do you think the trip impacted you? Have you noticed any changes in yourself? Has it affected what you do today?
5. How do you think the trip impacted the youth? Have you noticed any changes in the youth participant? Do you think it's affected what they do today?
6. Why should we include Indigenous youth in climate change discussions?

Appendix G – Energy Research Semi-Structured Interview Guide

INTERVIEW QUESTIONS - GOVERNANCE
Improving Energy Systems in the Beaufort Delta

Researcher: Brenda Parlee and Makenzie MacKay
Affiliation: University of Alberta
Funding: Future Energy Systems, University of Alberta
Purpose: This research is being carried out in an effort to learn more about how renewable energy technology (e.g. solar panels, wind turbines, geothermal) can be developed meaningfully and sustainably in the Northwest Territories, with particular focus on the Beaufort Delta. The project aims to understand the importance of land and resources to Indigenous culture, as well as identify costs and benefits of energy sources in communities.

Ice breaker, ethics, gift, any questions?

What got you interested in energy? Can you tell me a bit about what you do in your position?

1. What is driving interest in renewable energy?
2. How do you determine the success of a project?
3. What are the strengths and weaknesses of NWT communities relying on fossil fuels?
4. What would an improved energy system look like? How would NWT residents benefit from improved energy systems? What about reliability and affordability?
5. What energy sources do you think are important for communities in the Northwest Territories/in Inuvik? What energy solutions result in the most meaningful benefits to individuals in the region? (e.g. LNG, energy efficiency, solar, wind, wood pellets)
6. What are the barriers to improving energy systems in the NWT? (e.g. technical, infrastructure, funding, local capacity, environmental, policy, etc.)
7. What stakeholders should be involved in planning renewable energy projects? How are community members consulted about projects? What should the role of the territorial government be in planning renewable energy projects in the NWT? What factors do you consider when making decisions about energy?
8. What stakeholders should be involved in managing, operating, and maintaining renewable energy projects?
9. Can you speak to the advantages and limitations of community-owned energy projects? What about Northwest Territories Power Corporation driven/owned energy projects?
10. Why has there been solar development in the NWT? What kinds of things need to be monitored with solar projects?

11. Why is there limited wind power in the NWT today? If a wind turbine is built near Inuvik, what kinds of things need to be monitored or regulated?

12. Can you speak to the status of biofuel/wood pellet boilers in the NWT? What kinds of things need to be monitored with these projects?

13. Why is there limited geothermal in the NWT today? If a geothermal plant were to be developed, what kinds of things need to be monitored?

Is there anything else you'd like to add?

Any questions for me? Thank you! How were the questions?

Brenda Parlee
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Tel: (780) 492-6825 Fax: (780) 492-0268
brenda.parlee@ualberta.ca

Makenzie MacKay
Department of Resource Economics and Environmental Sociology
Faculty of Agricultural, Life and Environmental Sciences 564 GSB University of Alberta, Edmonton Alberta T6G 2H1
Tel: (306)-502-6355
mmackay2@ualberta.ca

Appendix H – Youth Research Ethics Approval

Notification of Approval

Date:	October 1, 2019
Study ID:	Pro00085621
Principal Investigator:	Brenda Parlee
Study Title:	Tracking Change @ COP24
Approval Expiry Date:	Wednesday, September 30, 2020

Approved Consent Form:	Approval Date	Approved Document
	10/1/2019	Youth Assent Form and Parental Consent to Participate
	10/1/2019	Consent Form - for Key Informants
	10/1/2019	Information Sheet

Thank you for submitting the above study to the Research Ethics Board 1. Your application, including the following, has been reviewed and approved on behalf of the committee.

- Letter of Introduction (8/1/2019)
- Student Interview Script (5/16/2019)
- Key Informant Interview Script (5/26/2019)

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Anne Melena, PhD
Chair, Research Ethics Board 1

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix I – Energy Research Ethics Approval

Notification of Approval

Date:	June 12, 2018
Study ID:	Pro00080881
Principal Investigator:	Brenda Parlee
Study Title:	Renewable Energy Technology in Northern and Western Canada
Approval Expiry Date:	Tuesday, June 11, 2019

Approved Consent Form:	Approval Date	Approved Document
	6/12/2018	Consent Form

Sponsor/Funding Agency:	SSHRC - Social Sciences and Humanities Research Council		SSHRC

RSO-Managed Funding:	Project ID	Project Title	Speed Code	Other Information
	RES0016416	SSHRC Resources and Sustainable Development in the Arctic	40942	
	Pro00064822	Well-being in the Arctic	ZC447	Well-being in the Arctic

Thank you for submitting the above study to the Research Ethics Board 1. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Trish Reay, PhD
Associate Chair, Research Ethics Board 1

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix J – Northwest Territories Scientific Research License

License No. 16413
File Number 12410522
October 12, 2018

2018
Northwest Territories Scientific Research Licence

Issued by:	Aurora Research Institute - Aurora College Inuvik, Northwest Territories
Issued to:	Ms. Brenda Parlee University of Alberta Dept. of Resource Economics and Environmental Sociology 507 GSB University of Alberta Edmonton, AB T6G 2H1 Canada Phone: (780) 492-6825 Email: bparlee@ualberta.ca
Affiliation:	University of Alberta
Funding:	Future Energy Systems Social Sciences and Humanities Research Council of Canada
Team Members:	Makenzie MacKay
Title:	Energy Needs and Solutions at Off-Grid Camps
Objectives:	To investigate the cultural landscape around Inuvik, including the importance of the land and resources to culture, livelihood, and well-being; to understand the energy needs and challenges of communities, with particular focus on off-grid hunting and fishing camps and the broader effects of these system limitations; and to explore the technical and policy-related feasibility of implementing solar, wind, and biomass renewable energy technologies at individual, community, and territorial scales.
Dates of data collection:	August 24, 2018 to September 10, 2018
Locations:	Reindeer Station- Inuvialuit Settlement Region, ~30 minutes from Inuvik, 68.6917° N, 134.1307° W Gwich'in Wellness Camp- Beaufort-Delta Region, ~15km from Inuvik Town of Inuvik

Licence No. 16413 expires on December 31, 2018
Issued in the Town of Inuvik on October 12, 2018

Appendix K – Tracking Change Research Agreement

License No. 16515
File Number 12410522
June 26, 2019

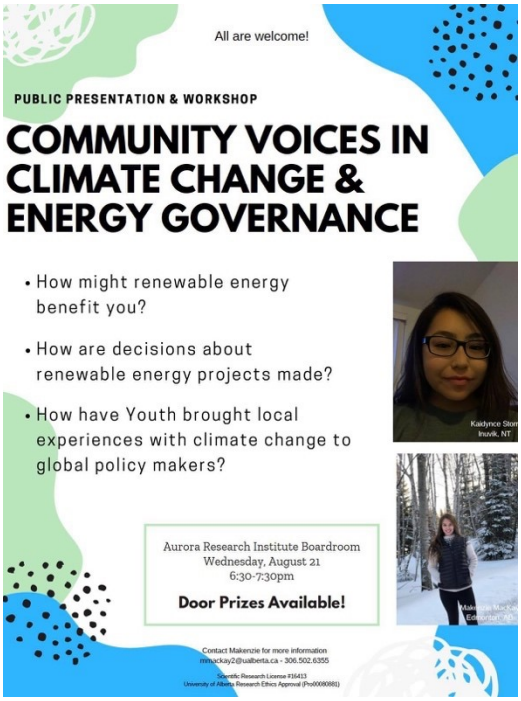
2019
Northwest Territories Scientific Research Licence

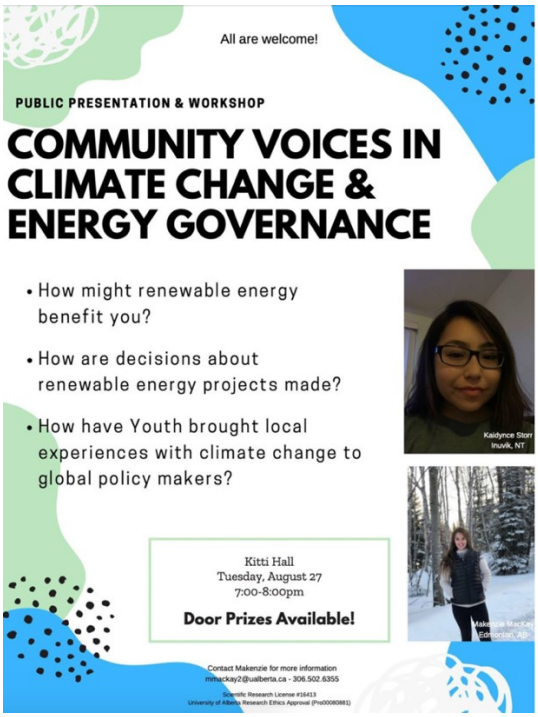
Issued by:	Aurora Research Institute - Aurora College Inuvik, Northwest Territories
Issued to:	Dr. Brenda L Parlee University of Alberta 507 GSB Faculty of Ag, Life and Env. Science Edmonton, AB T5N 2Z3 Canada Phone: (780) 492-6825 Email: bparlee@ualberta.ca
Affiliation:	University of Alberta
Funding:	University of Alberta Social Sciences and Humanities Research Council of Canada
Team Members:	Brenda Parlee; Sydney Stenekes; Trevor Lantz; David Natcher; Leon Andrew; Jennifer Fresque-Baxter; Amy Amos; Deb Simmons; Lauren King; Diane Giroux; Dahti Tsetso; Melody Lepine; Kevin Ahkimnachie; Joseph Tsannie; Kristin Hynes/Vanessa Cunningham
Title:	Tracking Change... Local and Traditional Knowledge in Watershed Governance
Objectives:	To create opportunities to collaboratively document and share local and traditional knowledge (LTK) about social-ecological change in the Mackenzie River Basin, Lower Mekong, and Lower Amazon Basins and determine its' role in watershed governance. Also, to scope community interest in more specific research and knowledge sharing opportunities for youth focused on science and Traditional Knowledge.
Dates of data collection:	1-Jan-2019 to 31-Dec-2019
Locations:	The specific locations of data collection have not been set but will be in the project leads from each region and the communities listed above.

Licence No. 16515 expires on December 31, 2019
Issued in the Town of Inuvik on June 26, 2019

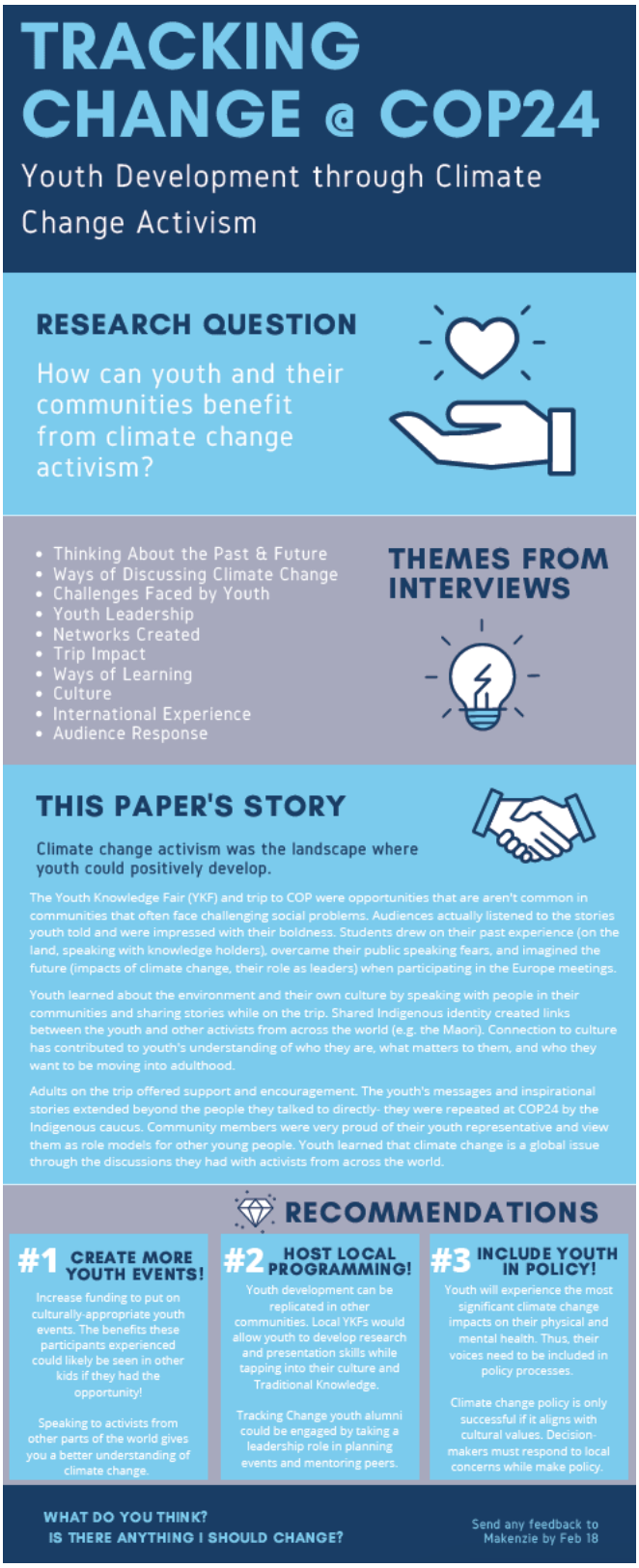
_____
Pippa Seccombe-Hett
Vice President, Research
Aurora Research Institute

Appendix L – Energy Research Verification Workshop Promotional Materials





Appendix M – Youth Research Verification Infographic



Appendix N – Youth Trip Itinerary

trackingchange

COP24 Agenda

November 23 - 24, 2018

There are no group activities planned on these days. You are welcome to prepare for the trip, print your poster materials, and enjoy free time in Edmonton. If you need help with your poster, please let Carrie know ahead of time, and we will make sure you have resources and support.

NOTE: Please keep all of your meal and taxi receipts from travelling for reimbursement.

Accommodations: Lister Hall, 11613 87 Ave NW, Edmonton

Taxis From Airport

Arrival Time	Names	Taxi Instructions
November 23 12:00 pm	Ryan Schaefer	Taxi to Lister Hall - meet Laura Gaitan (chaperone)
November 23 7:05 pm	Gavin Winter-Sinnott	Taxi to Lister Hall
November 23 7:25 pm	Dawit Tsehaye Richard Stewart Kaidynce Storr Charmaine Storr	Meet by Tim Horton's (near luggage area) and taxi together
November 24 4:00 pm	Gavin Douglas Winter	Taxi to Lister Hall

Rooming List*

All people who live in Edmonton will stay at home until we leave for Europe.

First Name 1	Last Name 1	First Name 2	Last Name 2	Room Style
Dawit	Tsehaye	N/A	N/A	single
Richard	Stewart	Ryan	Schaefer	2 double beds
Gavin	Douglas-Winter	Gavin	Winter-Sinnott	queen and sofa bed
Kaidynce	Storr	Charmaine	Storr	double beds
Dennis	Drygeese	Kelsey	Lockhart	queen and sofa bed

Laura	Gaitan	N/A	N/A	single

* You are responsible for your room key. If your key is lost or stolen, you must pay a $150 replacement fee.

November 25, 2018

8:00 - 9:00 am Breakfast (at home or on your own - save your receipts!)

Orientation in Aurora Room, Lister Centre

9:00 - 9:30 am	Icebreaker activity and introductions (Carrie)
9:30 - 10:00 am	Poster check-in
10:00 - 10:30 am	COP and schedule walk-through (Carrie)
10:30 - 11:00 am	Break
11:00 - 11:30 am	Expectations and Safety Procedures (Carrie) Receipts Collection and Reimbursement (Makenzie and Brenda)
11:30 - 12:30 pm	Presentation Preparation Cell Phone Prep (Finn)
12:30 - 1:00 pm	Lunch (on your own - save your receipts!)
1:00 - 1:30 pm	Student Icebreaker (led by Makenzie and Laura) Chaperone Expectations
1:30 - 2:30 pm	Presentation Preparation
2:30 - 3:00 pm	Break
3:00 - 4:00 pm	Presentation Preparation
4:00 - 6:00 pm	Break (and/or final preparation)
6:00 pm	Dinner at Earl's, 8629 112th Street, Edmonton
8:00 pm	Practice for UNESCO Presentation (with chaperones)

November 26, 2018

9:00 am Breakfast (on your own - save your receipts!)
9:30 am Practice UNESCO Presentation (meet on campus)
10:30 am Shuttle to airport
Fly fly fly through the night to Paris!

November 27, 2018

Arrive in Paris 9:55 am

Accommodations: Eiffel Petit Louvre, 1 Rue De Lourmel, 15th arr., Paris *Individual rooms

3:00 pm Presentation at UNESCO Headquarters, 7 Place de Fontenoy, Room III
5:00 - 6:30 pm Eiffel Tower
7:00 pm Dinner at 20 Eiffel, 20 Rue de Monttessuy, Paris

November 28, 2018

Early departure for airport to arrive at 8:30 am
Arrive in Katowice 2:30 pm

Accommodations: Studio Apartament Centrum Katowice, Mickiewicza 30 & Kochanowskiego 4/10

Rest, relax, & practice presentation for COY 14
Dinner in Katowice

Rooming List

Standard 1	Kevin
Standard 2	Gavin Douglas
Balcony Suite	Dawit & Dennis
Triple Room	Richard, Ryan & Gavin
Two-bedroom Apartment	Kaidynce, Portia & Kelsey
Separate Apartment	Nashra, Charmaine, Makenzie & Laura

November 29, 2018
9:00 am - 5:00 pm COY 14 - Conference of Youth

November 30, 2018
9:00 am - 5:00 pm COY 14 - Conference of Youth, Silesian University

10:45 am "Tracking Climate Change Through Traditional Ecological Knowledge"
Speakers:
Kaidynce Storr; Richard Steward; Gavin Winter-Sinnott;
Kelsey Drygeese; Ryan Schaefer; Portia Morin

9:00 am - 5:00 pm International Indigenous People's Forum on Climate Change (IIPFCC), Focus Hotel

December 1, 2018
9:00 am - 5:00 pm COY 14 - Conference of Youth, Silesian University
9:30 am Indigenous Meetup

9:00 am - 5:00 pm International Indigenous People's Forum on Climate Change (IIPFCC), Hotel Silesian

December 2, 2018
9:45 - 5:00 pm Auschwitz-Birkenau

7:00 pm Dinner, Chata z Zalipia, Wojewódzka 15, Katowice
Environment and Climate Change Canada
- Larry Hegan, Lead Negotiator, ECCC, UNFCCC Indigenous Peoples Platform

December 3, 2018
8:00 am - Climate Action Network Daily Meeting, Location TBD

11:00am Alternative Energy in Northern Communities Workshop
Leader: Makenzie MacKay

Silesian Museum - BUS
4:00 pm - Interview with Erkki Mervaala, managing editor at Hyvän sään aikana climate journal (at our apartments)
6:00 pm - Dinner at Klaudia's House! Ul. Bandurskiego 6, 43-190 Mikołów

December 4, 2018
9:00 am Salt Mine Tour

December 5, 2018
Depart for home!