Transformative Climate Change Actions among Youth from Alberta, Canada

by

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COMMITTEE APPROVAL

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Abstract

Young people's futures are largely affected by society's capacity and willingness to take action on climate change, reduce greenhouse gas (GHG) emissions and adapt to a different climate reality. Young people are necessary collaborators and partners in solution design and decision-making, and should not be relegated to the margins. It is equally important that they are supported in enacting climate initiatives that educate, engage and encourage other young people – as well as adults – to become agents of change.

Under the guise of "transformative climate change action," this study explores motivations among young people to move from concerned observer to informed actor, and provides insight into the mechanisms and processes that contribute to the shift. These initiatives are meant to foster innovations and behavioral shifts, as well as challenge existing systems and demonstrate what transformative climate action is, conceptually and practically, on a local level in the specific context of Southern Alberta, Canada.

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Summary of Acronyms

C	Celsius
CCA	Climate Change Adaptation
CCM	Climate Change Mitigation
COP	Conference of the Parties
COP23	23rd Annual meeting of the Conference of the Parties
DEM	Disaster and Emergency Management
GHGs	Green House Gases
IBC	Insurance Bureau of Canada
IPCC	Intergovernmental Panel on Climate Change
MP	Member of Parliament
NASA	National Aeronautics and Space Administration
SDG	Sustainable Development Goals
TCCA	Transformative Climate Change Adaptation
UNEP	United Nations Environment Programme
UNFCCC	The United Nations Framework Convention on Climate Change
WEF	World Economic Forum

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Introduction

The urgency to implement climate actions to reduce the negative impacts of climactic changes has climbed high on the agenda of most governments, institutions, industries and NGOs; this urgency is driven in good measure by the increasing hydrometeorological disasters and with it the threat to people's health and well-being and the increasing ecological, infrastructure and financial losses (Coats, 2018; Hamilton, 2017, The World Bank, 2018, World Health Organisation, 2018). The World Economic Forum's Global Risk Report 2018 states that all five risks in the environmental category, that is extreme weather events, natural disasters, failure of climate change mitigation and adaptation, biodiversity loss and man-made environmental disasters, are now ranked higher than average for both likelihood and impact over a ten-year horizon (World Economic Forum, 2018). Actions that address the interrelated issues of climate change, disaster risks and sustainable development have become a core priority of the United Nations Office for Disaster Risk Reduction (UNISDR) given 90 percent of the recorded disaster over a time period of 20 years from 1995 to 2015 were climate- and weather-related (UNISDR, 2015a). This has been made explicit since the adoption of the Hyogo Framework for Action 2005-2015 (UNISDR, 2005) and, even more so through its successor, the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNISDR, 2015b).

November 4, 2017 marked the first anniversary of the landmark Paris Climate Agreement entering into force (UNFCCC, 2017a). The 23rd Annual meeting of the Conference of the Parties (COP23) to the United Nations Framework Convention on Climate Change (UNFCCC) in Germany (November 2017) focused on progress on the Paris Agreement Implementation Guidelines in an effort to limit the temperature increase this century to 1.5°C above preindustrial levels (UNFCCC, 2017b). However, a recent study by Raftery, Zimmer, Frierson, Startz & Liu

(2017) claims that, unless drastic emission reduction actions are implemented by the highest emitting countries, there is just a 5% chance that temperature changes will be held to less than 2° and only a 1% chance of staying below 1.5°C.

Given these trends, our young people's future relies largely on both society's capacity to mitigate Green House Gas (GHG) emissions in order to limit the rise of global temperatures (UNFCCC, 2015c) and the capacity of governments and civil societies to adapt to the growing economic, environmental and social costs that are already evident and predicted to escalate as temperatures rise (UNEP, 2016).

The urgency of this situation requires transformative climate action, meaning a change of our current economic, political and social systems, in order to enable desirable futures to emerge (Miller, 2007; Tàbara, Jäger, Mangalagiu & Grasso, 2018). Given the impact climate change is likely to have on their lives, young people must be more strongly engaged in decision-making processes as collaborators and partners in initiating and shaping transformative climate action. Young people are needed to both enact climate initiatives that educate, engage and encourage other young people and adults to become agents of change as well as engage more directly with the climate challenge.

To date, many studies have examined the effectiveness of climate communication, engagement and education initiatives with young people (Corner et al. 2015, Haynes & Tanner, 2015; Narksompong & Limjirakan, 2015; Ojala, 2012; Ojala & Bengtsson, 2018; Ojala & Lakew, 2017). However, little research has been undertaken to understand what motivates some young people to move from a generalised concern about what a changing climate might mean, to concrete action with the intention of making a change. What support, resources and contexts empowered these individuals to become leaders of transformative climate action in their

communities? This study addresses this research gap and provides insights into the mechanisms and processes that contribute to young people moving from concerned observers to informed actors in the space of transformative climate change action for climate change mitigation and/or adaptation.

Chapters overview

Chapter One provides the context to this study. Chapter Two explains the research in relation to existing, relevant literature. Chapter Three describes the applied research methodology used. Chapter Four introduces the participants in the study and their climate initiatives. Chapters Five and Six present the results of the thematic analysis of the ten interviews and a narrative analysis of three in-depth interviews. Chapter Seven concludes with a discussion of the key findings, followed by Chapter Eight that provides recommendations for further research and final thoughts.

Chapter One: Context

Research Context

Over the past 100 years, Alberta's mean temperature has increased by 1.4°C with most of the increase occurring since 1970. Between 1912 and 2011, the average annual temperature increased by 1.1°C (0.1 per decade) in the southern half of the province and double that (2.3°C or 0.2 per decade) in the northern portion. Since 1970 the pace of warming has intensified with temperatures increasing at a rate of 0.3°C per decade in both the North and the South (Shank & Nixon, 2014). Also, globally, this is the warmest period in the history of modern civilisation (USGCRP, 2017).

The impacts of climate change are evident in Canada and associated with an increase in frequency and intensity of extreme weather events and consequent disasters (Richardson, 2010) such as floods, wild fires, droughts, rising sea levels and extreme heat events. Alberta is one of the provinces that has been so far hardest hit in Canada (IBC, 2012). According to a report by the Toronto Dominion Bank (TD, 2014), the long-term financial impacts of disaster are estimated to cost Canadians $5 billion per year in 2020 and $21-$43 billion by 2050 in infrastructure damages, healthcare costs, reduced performance of Canadian industry and lost labour hours. According to Catastrophe Indices and Quantification (CatIQ), insured damage for 2016 of $4.9 billion surpassed the previous annual record of $3.2 billion set in 2013 (IBC, 2017). Except for geophysical events such as earthquakes, tsunamis and volcanic eruptions, all so-called natural disasters are weather-related (meteorological, hydrological and climatological events) according to MunichRe (2014). Climate change is increasing both the number and the impacts of extreme weather events (Mann et al., 2017).

Most scientists highlight the difficulty of attributing any changes in weather patterns or natural hazard risks solely to climate change, recognizing that such events are influenced by a broad range of interrelated and complex factors. These include not only emissions, but also the contributions of urban and land-use planning, industrialisation, agriculture as well as forest-, soil- and water-management practices (Harvey, 2018). All of these factors are interrelated and can exacerbate existing stresses and vulnerabilities, and create changes in the intensity and breadth of the impacts of weather. What is clear, is that this complex web of factors is contributing to an increase in extreme weather, natural hazard-related disasters, and their adverse consequences. Two recent disasters in Alberta stand as examples of this pattern of increased risk.

The floods across Southern Alberta in 2013 forced 125,000 residents to evacuate from across 30 communities built along the rivers. (MNP, 2015) Three years later, the Horse River Wildfire in 2016 destroyed 2,400 structures and forced 80,000 to evacuate their homes in Fort McMurray (MNP, 2017). As the hydrological cycle accelerates with global warming, extreme events such as floods are increasing in numbers and intensity (Andersen & Marshall Shepherd, 2013). The Insurance Board of Canada (IBC) reports that payouts by its members for natural disasters like floods, have more than doubled every five years since the 1980s (IBC, 2017). Forest wildfires are anticipated to grow in numbers and ferocity because of the increasing long, hot and dry weather conditions and the current forest and wildfire management practices (Smith et al., 2016). Disasters of such magnitude result in major financial losses for affected individuals, communities and governments (Johansmeyer, 2017), and also cause widespread psychosocial impacts that often linger for years preventing individuals and communities from moving forward (Charbonneau, Ouellette & Gaudet 2000). In recent years, an increasing body of research is concerned with extreme event attribution. This research explores the question of how much climate change might be affecting the risk of these events occurring rather than framing the question of whether climate change caused the event (Stott et al., 2016; Sheperd, 2016; National Academies of Sciences, Engineering, and Medicine, 2016). For example, the annual special edition of the Bulletin of the American Meteorological Society (2018), dedicated to event attribution, provides evidence that some extreme events – namely the global heat wave of 2016, the Asia heat event of 2016, and a "blob" (a large mass of warm water) off Alaska – were not possible in a preindustrial climate (Herring, Christidis, Hoell, Kossin, Schreck & Stott, 2018)

       Much of what governments and private actors are doing to counteract and mitigate climate change aims to make incremental changes that do not substantively change the *status*

quo. For example, reducing carbon emissions without fundamentally changing the systems that support a culture of consumption. Many argue that such incremental changes, by seeking to maintain and increase the efficiency of existing systems without fundamentally changing those systems, will be insufficient to address climate change or its impacts (Driessen et al., 2013; Mustelin & Handmer, 2013; O'Brien & Sygna, 2013; Revi et al., 2014). As a result, a fast-growing body of literature is concerned with the concept of transformation including transformative actions to respond effectively to the challenges of climate change (Fazey et al., 2017). Even though transformation is defined in many different ways (Feola, 2015), the literature on transformation relating to climate change largely frames transformation as those initiatives that are explicitly and implicitly aimed at changing the *status quo* thus triggering "fundamental shifts in power and representation of interest and values" (Pelling, 2010, p. 50).

Recent international agreements regarding climate change, such as The Paris Agreement, UNFCCC (2017a), are built on the premise that such a transformation requires a 'whole of society' approach that engages a broad range of stakeholders including young people. A literature review by Corner *et al* (2015), however, revealed that young people do not necessarily understand what they can do in response to climate change, therefore have a limited sense of self-efficacy when it comes to enacting climate actions. The question this prompts is how to then engender a sense of agency that encourages individuals or small groups of people, including young people, to do something meaningful to mitigate climate change, despite the overwhelming complexity and severity. Moser (2009, 2017), O'Brien (2015) and Pelling (2010) argue that the inclusion and activation of young people and other marginalized groups in climate policy and action is necessary to increase transformative climate action on the ground. They further argue

that encouraging young people and adults alike to become climate champions may accelerate the transformative shift that is required to become a more climate resilient society.

Geographic context

The research took place in Alberta, a province that – because of economic, political and social factors – is redefining itself. The context in Alberta includes a significant shift in the political environment. The New Democratic Party (NDP) won the Alberta provincial election in spring 2015 after 40 years of Progressive Conservative Party (PC) rule. Climate change and climate change-related issues had risen in prominence on the global stage but had been largely ignored in Alberta by the former conservative government (McLaughlin, 2015). However, the NDP government has acknowledged that uncontrolled GHG emissions are the world's biggest issue. It is also an emerging critical issue for Alberta because of the harmful health effects for Albertans and the province's ecosystem and consequentially, economy (Alberta Government, 2015). This acknowledgement occurred simultaneously with a global decline in fossil fuel prices and a concomitant decline in Alberta's economy, which, to date had relied heavily on the oil and gas exploration and exports. However, despite this acknowledgement of the need to curb GHG emissions, the Government of Alberta supports and the Government of Canada has approved and now finances the $4.5 billion Kinder Morgan pipeline expansion that transports oil from Northern Alberta to Vancouver (Sharp, 2018). The Mayor of Vancouver and other officials in BC as well as citizens, environmental groups and indigenous communities strongly criticize the project which threatens the natural environment, contravenes the commitment to the Paris Climate Agreement and disrespects First Nations communities who were improperly consulted (Cecco, 2018; Obiko Pearson, 2018).

Research Objectives and Questions

This study explores what motivates young people aged 18 – 29 in Alberta (Canada) to move from concerned observer to informed actor, and provides insight into the mechanisms and processes that contribute to the shift. The study focuses on young people who have initiated and/or leading climate change initiatives that demonstrate what transformative climate actions can look like, conceptually and practically, on a local level in the specific context of Southern Alberta, Canada.

Adopting a narrative approach, I first interviewed ten young people using a semi-structured interview guide. I then deepened the conversation with three out of the ten participants to explore the specific questions: a) what personal, social, political, economic and structural factors motivated, supported and enabled them to move from concern about climate change to lead or co-lead climate actions; b) what are the enabling factors (i.e., mentors, support networks, resources) and barriers they encounter(ed) and; c) in which way these actions are considered to be transformative. My goal is to inform theories of youth engagement and mobilisation in relation to climate change while also enhancing understanding of what transformative action means at a local level.

Research Significance

An increasing proportion of the academic literature is concerned with the question of why so little action is taken in spite of the urgency of global environmental change (Lertzman, 2013; Marshall, 2014; Oreskes & Conway, 2011; Stoknes, 2014). There is a growing realisation that existing social, economic and political paradigms both cause and increase vulnerability to the impacts of climate change, calling into question people's capacity to influence the direction of future climate changes (Brooks, Grist & Brown 2009; Manuel-Navarrete 2010). A study revealed

that an increasing number of people in Southern Alberta are concerned about climate change but

do not know what actions to take (Environics, 2015). To bridge this gap, it is critical to

understand the triggers that have shifted people – in this case young people – from concern to

action and portray the pathways they have travelled in order to illuminate what resources,

supports and contexts might encourage other young people to initiate transformative climate

change actions. Moser (2009) emphasizes that "smaller changes plow the ground for bigger ones

while spreading an important symbolic message to those who are not yet engaged" (p. 298). An

example of a small initiative that grew into a large-scale trend is the '100-mile diet' initiative that

was developed by Smith & MacKinnon (2007) from British Columbia in 2004 and which

coincided with the fast-growing popularity of farmers markets and increased interest in food

production and its environmental impact. Understanding the socio-ecological systems that

support young people to enact change helps to inform theories of youth engagement and

mobilisation. Researchers and practitioners realize that meeting the climate challenge needs more

than simply doing more of the same or making incremental adjustments (Kates, Travis &

Wilbanks, 2012). From this perspective, it is particularly important to explore youth-led

transformative examples to enhance the understanding over what transformative action is

conceptually and practically on a local level (Olsson, Gunderson, Carpenter, & Ryan, 2006).

There is a vast body of existing research that explores climate change education (Chang,

2014; Meadows, Booth Sweeney & Mehers, 2016; Schreiner, Henriksen & Kirkeby Hansen,

2005) and an increasing amount of academic and grey literature on youth climate engagement

(IFRC, n.d; Haynes & Tanner, 2013; Kaye, 2009; Pandve, Deshmukh, Pandve & Patil, 2009).

Numerous studies have evaluated young people's views about climate change (Capstick,

Whitmarsh, Poortings, Pidegeon & Upham, 2014; Corner et al., 2015; Harris, Wyn & Younes,

2010, Hibberd & Nguyen, 2013), and many emphasize that young people are still a largely untapped source for climate change action (Haynes & Tanner, 2015; Narksompong & Limjirakan, 2015). Youth climate initiatives are increasingly showcased and promoted by international organisations that launch youth challenges in the field of environmental protection, education, economic empowerment, etc. (Commonwealth Youth Programme, 2015; United Nations Joint Framework Initiative on Children, Youth and Climate Change, 2013); however, there is little in-depth analysis exploring the enabling factors that move young people from concern to action. Except for a few studies referred to in this literature review, little research has been published on youth-led climate change initiatives that include the socio-ecological conditions that catalyze a shift from either "unaware" or "aware and concerned" to climate action.

Chapter Two: Literature Review

The purpose of this chapter is to explore and to position this study within the existing literature. Substantial research has been conducted in the field of environmental education, climate change and resilience-related youth engagement as well as youth leadership. Over the past few years, the literature on transformation in relation to climate change has grown as the urgency mounts for meaningful and effective action to mitigate carbon emissions and to adapt to a climate-altered future.

This chapter begins with a definition of the key terms used in this study, followed by a literature review that focuses on four primary aspects of the study:

1. youth-related climate change engagement, including an overview of organisations thatengage young people on climate change or are led by youth

2. triggers that shift young people from concern to action, including barriers

3. mobilizing climate narratives

4. transformation in relation to climate change.

Definition of Key Terms

Climate change action require actors and an intention directed towards climate change (Eisenack 2012), whether it is an educational, political, social or technological response. In this study, climate change actions are defined as actions or initiatives undertaken by the participants in order to reduce greenhouse gas (GHG) emissions and/or the impact of climate change. Examples are climate literacy programs, promotion of renewable energies, local low-energy food production, waste reduction etc.

Incremental climate change actions seek to maintain existing systems (Revi et al., 2014) and pursue actions within the *status quo* that maintain and/or increase efficiency of

existing systems (Mustelin & Handmer, 2013). Mitigation and adaptation to climate change has largely been envisioned and tackled as incremental to avoid disruption of existing systems, though researchers and practitioners alike are increasingly asking whether doing more of the same is sufficient (Kates, Travis & Wilbanks, 2012). Ribot (2014) decries such measures as insufficient, arguing for the necessity of climate adaptation measures that are cross-sectoral and transformative. Measures that take an incremental approach to change are, Ribot argues, mostly posing the question of "who" is vulnerable, rather than posing the question of "why" they are vulnerable. This, he suggests, leads to the exclusion of the root causes of climate change and results in an approach to adaptation that fails to question the role of existing political and economic systems in contributing to climate change.

Effective responses to climate change require a different approach (Rodima-Taylor, Olwig & Chhetri, 2012), as incremental climate action alone may act to strengthen the systems that have caused and continue to cause environmental decline (Grothmann & Daschkeit, 2014).

Transformation in relation to climate change actions has emerged as a response to concerns that incremental adjustments are insufficient to address an increasingly volatile and unpredictable climate with more severe and frequent weather events, and which overlooks both the relational causes of vulnerability and the need for systemic and structural changes to address vulnerability to climate change (Godfrey-Wood & Naess, 2016). Scholars define transformation in global environmental change as a fundamental alteration of the nature of a system and a radical adaptive response to create untried beginnings from which to evolve (Folke et al., 2010; Nelson, Adger, & Brown, 2007; Park et al., 2012; Thornton & Comberti, 2013). For the purpose of this study, I orient myself towards Pelling (2010) who defines transformation in the context of climate change action as "a fundamental shift in power and representation of interest and values"

(p. 50), and therefore emphasizes the need to address the root causes of vulnerability,

challenging the prevalent *status quo*. Pelling further elaborates that transformation also intends to

foster social and economic development that seeks to incorporate the interest of youth and future

generations beyond preservation of existing economic, social and political patterns.

Climate change adaptation (CCA) is commonly described as a "process of adjusting to

a changing climate through planned interventions" (IPCC, 2007, p. 1) to reduce the current and

future impacts of a climate-altered future that will affect the social, economic, built and natural

systems (UNISDR, 2006). Moser & Ekstrom (2010) refer to the social-ecological system that is

and will inherently adapt to the climatic changes given its interrelating characteristics. It is

important to mention that these initiatives may or may not succeed in reducing damages imposed

by climate change, depending on the severity of these impacts.

Climate change mitigation (CCM) refers to efforts to reduce GHG emissions. This

includes measurements to decrease the sources of these gases by increasing our energy

efficiency, consuming less energy, replacing the fossil-based energy sources with renewable

energies (such as solar, wind and geothermal), and enhancing the sinks that accumulate and store

these gases (NASA, 2018).

Resilience is defined by IPCC (2014a) as "the capacity of social, economic and

environmental systems to cope with a hazardous event or trend or disturbance, responding or

reorganizing in ways that maintain their essential function, identity and structure, while also

maintaining the capacity for adaptation, learning and transformation." Maintaining resilience to

climactic changes can be described as a continuing process for managing responses that include

both climate change mitigation and adaptation (Denton et al., 2014). The Union of Concerned

Scientists (UCS, 2016) states that both climate adaptation and mitigation are equally critical to

create climate resilience. The resilience gap, as the Union of Concerned Scientists calls it, represents the degree a country or community is unprepared for the impacts of climate change; only taking bold actions on both adaptation and mitigation will narrow the gap.

Vulnerability is defined by the IPPC (2014a) as "the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt." (p. 128). Vulnerability is extensively discussed in the disaster and emergency management literature (Adger, 2006; Bankoff, Frerks & Hilhorst, 2004; Cardona, 2004; Cutter, 2003; Pelling, 2003; Wisner, 2004) as well as in the climate change literature (IPCC 2014b; Füssel & Klein, 2006, Räsänen et al., 2016). O'Brien, Eriksen, Schjolden & Nygaard (2004) state that, "vulnerability is a dynamic phenomenon often in a continuous state of flux, both the biophysical and social processes that shape local conditions and the ability to cope are themselves dynamic" (p. 3). Their interpretation is relevant to this study as it emphasizes that the dynamics can shift greatly and rapidly in view of the non-linear behavior of climate change and the impacts, and the degree to which a system and processes are susceptible is equally in constant flux.

The following literature review focuses on four important aspects for this study; first, youth-related climate change engagement, including an overview of climate organisations that engage young people on climate change or are led by youth; second, triggers that shift young people from concern to action, including barriers; third, a climate narrative that mobilises; and fourth, transformation in relation to climate change.

Youth Engagement on Climate Change

Engagement of young people has been a focus for over a decade by UN organisations and Ban Ki-moon, former UN Secretary General, reiterated the critical importance on International

Youth Day in 2007: *"We must fulfill our obligations to youth. The World Programme of Action for Youth asks Governments to consider the contributions of young persons on all policies affecting them. Governments must honor this commitment. They must also increase the financial, education and technical support made available to young people and help them realize their potential."*

Young people as a social group have traditionally been underrepresented in most decision-making processes regarding issues that concern them like climate change (Narksompong & Limjirakan, 2015) although it is young people who need to be at the forefront of the required climate initiatives (White, 2011). Youth-led climate change action is critical for a number of reasons:

a) they will bear the burden of climate change over the course of their lifetimes as well as generations following them (Weiss, 1989)

b) young people are less entrenched in current systems and therefore more willing to adapt to new systems and low carbon life style decisions (Pandve, Deshmukh, Pandve, & Patil, 2009)

c) many young people don't see themselves as sufficiently heard and represented in youth programs that are often led by adults (Larson, Walker & Pearce, 2005)

d) young people have more trust in their peer network than in adults when it comes to climate change engagement, therefore youth programs are more effective when led by young people (Corner 2014; Corner et al. 2015; DFID-CSO, 2010; Haynes, 2015; Petrokubi, 2015).

However, it is also important to acknowledge that young people are also part of the climate issue and their choices about their lifestyle and consumption behaviour also contribute (Ojala, 2017).

Young people have much to both offer and gain when meaningfully engaged. They have the capacity to lead and make informed decisions, adding value to organisations and communities alike (Peek, 2008; Mitchell, Haynes, Hall, Choong & Oven, 2008; Walker et al., 2012; Zeldin, Camino & Calvert, 2007). The child-centered disaster risk reduction (CC-DRR) model employed by many development agencies (e.g., Asian Disaster Preparedness Center (ADPC), European Commission Humanitarian Aid and Civil Protection (ECHO), Handicap International, and Plan International) fosters the agency of children and young people to make their lives and their communities more resilient to natural disasters. Young people and children globally have a tremendous capability and creativity to translate information into meaningful actions – as showcased by numerous organisations (Mitchell et al. 2008) including UNICEF (Youth in Action on Climate Change), Red Cross/Red Crescent Climate Center (Youth Action on Climate Change) andSustainable Development Solution Network (Youth Action Mapper).

Theories of engagement claim that people are best motivated when engagement reinforces their identity, sense of belonging to their social group as well as pride in who they are or have become (Marshall, Park, Howden, Dowd & Jakku, 2013). Engagement is a powerful strategy to enable climate leadership capacity and capabilities (Ferguson, 2011; Lertzman, 2013; Villarruel, 2003). A United Kingdom-based study that involved 36 young adults (ages 18 – 25) found that climate change engagement is most effective when: a) climate change is framed as a contemporary concern that requires immediate response; b) it reveals that climate change is related to and affects aspects of young people's everyday lives; c) initiatives use plain language and avoid a framing of the issue(s) that induces a feeling of guilt; and d) the source of communication is trustworthy and preferably information is disseminated by peers rather than corporations or politicians (Corner, 2014).

Organisations that engage young people on climate actions

Young people play a critical role in climate change action (Pandve et al., 2009; UNFCCC, 2015d) not only because they will inherit responsibility for managing the impact of climate change but also because they present an enormous and largely untapped capacity (Petrasek MacDonald, 2013) in addressing the challenges of climate change (Johnson, Johnson-Pynn, Lugumya, Kityo & Drescher, 2013). Further, young people are the forerunners of a much-needed cultural shift that prioritizes and supports the development of innovation mindsets and skills that are necessary to address wicked problems such as climate change (Fisher, 2016). In this way, young people can cultivate an understanding that will influence not only their peers but also adults and decisionmakers alike. Investing in education and genuine youth participation rather than tokenistic inclusion is critical to building capable citizenry (Narksompong & Limjirakan, 2015). Agenda 21 promoted the role of young people and their active involvement in the protection of the environment and the promotion of economic and social development explicit (UNSD, 1992).

Global examples. The United Nations Framework Convention on Climate Change (UNFCCC) secretariat has enhanced its work with UN agencies and youth NGOs to empower children and young people to act on climate change through the UN Joint Framework Initiative on Children, Youth and Climate Change. The United Nations Framework Convention on Climate Change (UNFCCC), through its Article 6 calls on governments to implement education and training programs, and to empower and engage all stakeholders and major groups (including young people). Recent dialogues on Article 6 center on climate change education to enable people around the globe to become part of the solution (UNFCCC, 2015e).

In keeping with this focus, the theme of the UN International Youth Day in 2008 was *Youth and Climate Change: Time for Action*. The 2015 International Youth Day focussed on Youth Civic Engagement, aiming to raise awareness and encourage young people to actively support sustainable development and climate action (UNFCCC, 2015f).

In line with the UNFCCC's focus on youth engagement, the Conference of Youth (COY) is an annual gathering of young people prior to the Conference of Parties (COP), organized by YOUNGO (UNFCCC observer constituency of youth non-governmental organisations) to ensure effective and appropriate participation by young people in the intergovernmental meetings. The COY11 manifesto (2015) was developed as a lobby tool for young people and states the key values, aims and visions of young people, beyond COP21.

Other initiatives include one by former US Vice President, Al Gore, who launched a competition called *'Why? Why Not?'* in August 2014. He invited young people (ages 13 to 21) across the globe to challenge the world's leaders on their climate change actions. The contestants were asked to pose their questions to global leaders via a video message; seven were chosen to represent the youth voice at the UN Climate Summit in September, 2014 (Ask Why?WhyNot?, 2014).

Global Power Shift (GPS) is another project, launched by '350.org' and partners such as AVAZZ.org, Greenpeace yesil düsünce, Power Shift Russia, ITU, IdnyAct, UNICEF and many more. GPS began with an international climate leaders' summit of mostly young people in Istanbul in June, 2013. The goal of GPS is to create the cultural and political condition for local communities, institutions and governments to take bold climate action and unleashing climate activism among citizens (GPS, 2018).

North American examples. Numerous organisations in the United States offer platforms to leverage youth climate change engagement and include iMatter, a prominent organisation founded by a 13-year-old in 2007 (formerly Kids. Vs. Global Warming) that grew into a major network, a quest and a plan for young people to stand up and demand immediate climate action in cities. The organisation is dedicated to listen and to amplify the voice of the youngest generation as they will be most impacted by the effects of climate change. Their main concern is to move adults and leaders to work on solutions beyond what is just politically possible. Their executive director, Larry Kraft, stated that young people are the moral authority on climate change (Dunbar, 2017).

'We Are Restless' is a blog for young people to provide written and media-based contributions about issues such as environment and specifically climate change, citizenship & rights, education, economy, gender and health. It is written mainly by volunteers, campaigners, staff and partners of international development agencies.

OurClimate.ca (formerly The Canadian Youth Climate Coalition) was formed by 45 organisations from across Canada in 2006 to bring together young people for climate justice. The organisation demands a system and not only incremental change,and calls on the Canadian government to take recommended action. BYTE is a 'by youth, for youth' organisation created to unite and empower youth throughout the Yukon and Canada's north to bring about change for the wellbeing of everyone.

There are also a number of youth-focused organisations that are co-led by adults and promote youth-led initiatives, such as the Toronto-based *'TakingITGlobal'* which offers a platform to expand opportunities and engagement for young people and publishes case studies of youth leaders taking climate action around the world. The main focus of '*Climate Generation'* is

on equitable solutions in relation to climate change action that address the intersection of economic and social disparity. A consortium of North American universities has created a platform called *'CAMEL'* that provides educational material and a variety of resources and showcases youth-led climate change initiatives.

The Canadian government raises awareness on the severe climate impacts on the arctic and has invited Indigenous and non-Indigenous students from around the world to witness first-hand the impacts during the '2017 Students on Ice' arctic expedition. A second major initiative in Canada is called 'Climate Action 150'; students from 25 Canadian high schools investigated the impacts of climate change in their communities and were encouraged to develop climate actions in response to the observed impacts (Government of Canada, 2017). 'The Ontario Youth Dialogue on Climate Leadership' project empowers students to learn and engage in climate change initiatives via various programs led by Green Learning Canada Foundation (GLCF).

Triggers that Shift Young People from Concern to Action

There is a small but growing body of research that explores the conditions and triggers that shift young people from concern to action in the context of addressing climate change. Many young climate leaders claim that the documentary "An Inconvenient Truth" released in 2006 by former United States Vice President, Al Gore, was a major trigger for their behavioral shift in regards to climate change (Gray, 2016; Loorz, 2008). In general, young people are more informed about climate change than the general public and a study published by the Pew Research Center (Carle, 2015) states that young people in countries such as the US are significantly more likely to express concerns over climate change than older generations. Whereas concern about climate change has the potential to motivate young people to lead

climate initiatives (Stevenson & Peterson, 2015), those concerns can also lead to despair and inaction among young people and adults alike (Willox, 2012).

To better understand how to close the concern to action gap, the University of Oslo is currently completing a large-scale research project called *Voice of the Future* targeting young people from Norway aged 13 - 18 and exploring how they think, feel and perceive climate change, how they make their voices heard, what encourages or hinders their engagement with climate change policies and what conditions empower them (University of Oslo, 2017). Similarly, Fisher (2016) studied life trajectories of 17 young climate activists across the globe to understand how they construct meaning and the reason for their commitment to climate change activism. His findings suggest that young people are most committed to climate activism when an interconnection is drawn between environmental and social justice. Another study, conducted in Malta with three young environmental activists explores their values, self-efficacy, locus of control, knowledge, experience in nature and role models, and concludes that pro-environmental behavior and action is based on a complex web of all of these interacting factors (Buttigieg & Pace, 2013). A study led by Arnold, Cohen, & Warner (2009) explores the influencing factors which contributed to the environmental activism of 12 participants aged 16 – 19 from Nova Scotia, Canada. The study identified parents, outdoor experience in childhood, friends, role models, teachers and youth groups as well as conferences and gatherings as major factors that influenced the young people to engage in environmental activism.

Hu & Chen (2016) employed a new climate change engagement program to effectively engage youth in 12 rural areas of China who were initially not interested in climate change as they felt unaffected and thought of it as a remote issue. The researchers organized focus groups to bring local seniors who experienced extreme climatic events together with adolescents to

discuss local climate over the past decades. The research revealed that the place-based inter-general discussions shifted initially uncertain adolescents to being concerned and supportive of climate change mitigation efforts. The study's authors also emphasized the importance of place-based strategies to make global climate change relevant at the local level and increase understanding of interrelatedness.

Barriers to climate action

Growing evidence from across the behavioral sciences has found that most people regard climate change as a non-urgent and psychologically distant risk - spatially, temporally and socially - which has led to delayed public decision making about mitigation and adaptation responses as well as appropriate actions (van der Linden, Maibach, & Leiserowitz, 2015). The same article goes on to suggest that to shift people's thinking, effective communication requires: a) that climate change is positioned as a present, local and personal risk; b) facilitation of a more effective engagement that integrates the social norms of the specific group; c) clear illustration of benefits and outcomes of immediate action; and d) that messages includes cultural values people can identify with. A UK study claims that the public media tends to hinder rather than support young people to be more engaged in climate action as public communication lacks positive messages about solutions, but instead focuses on disasters and a politicized debate of climate change. As a consequence, most of the young people in the study felt a disconnect between the issue and their everyday lives, and lacked a common understanding of what actions they could take to implement a more climate-conscious lifestyle (Hibberd & Nguyen, 2013). Other studies have found that fear- and scientific uncertainty-induced climate communication is ineffective as a way to encourage personal engagement (O'Neill & Nicholson-Cole, 2009; Moser, 2009) as it overwhelms and immobilizes people or leads them to avoid the topic (Stoknes, 2015).

A Climate Narrative that Mobilizes

Effective climate communication is essential to mobilize people to take action – a challenge many organisations are concerned with given the urgency of the issue for humanity and life on earth (Hansen et al. 2015; Hamilton, 2017, Klein, 2014, McKibben, 2010). Climate communication experts, such as Stoknes (2015), Marshall (2014) and Moser (2017), guide conversations that draw a fine line between alarm and hope, emphasizing the opportunity it entails to question the way we think, live and operate. For example, a recent study by Skurka, Niederdeppe, Romero-Canyas, & Acup (2018) tested the effectiveness of fear and humour messaging to influence climate change-related intentions and risk perception among 18 to 30year-olds in the US and concluded that both have a place to motivate young people in climate change activism although both have trade-offs. Humourous messaging, such as political satire, resonated particularly well with college students; however, messages of fear more positively affected risk perceptions. A major meta-analysis conducted by Tannenbaum *et al* (2015) reveals that fear appeals can be effective, particularly when in combination with visuals, results-oriented messages, and is aimed at women, as they are more receptive to that kind of messaging. Simply conveying climate change facts and statistics to young people who have access to vast amounts of information at their fingertips, is not effective and can become meaningless in a post-truth era. Therefore, climate change communication needs to be crafted in ways that encourage and illustrate pathways for young people to take part in the societal transformation necessary to address climate change (Moser, 2009).

An example of such an approach is evident in the 'Eco-Leaders' program run by the City of Calgary (The City of Calgary, 2016) which is a youth environmental leadership program that supports school-based student teams and their respective teachers to translate environmental and

climate concern into actions by designing and implementing projects that aim to solve real-life problems.

Similarly, the Encyclical by Pope Francis *'On the Care of Our Common Home'* (2015) and his call on the world's 1.2 billion Catholics to act on climate change clearly shifted the discussion from a predominantly political and scientific debate to a discussion of value and ethics, highlighting the connection between environmental protection and social inclusion. NASA climatologist Gavin Schmidt stated that the Pope's Encyclical is likely to have a bigger impact than the Paris negotiations (Zoroya, 2015) because it is reaching over 1 billion Catholics in a way that speaks to their values. And indeed, shortly after the Encyclical's release, 17 percent of Americans and 35 percent of Catholics said that Pope Francis' position on climate change influenced their personal views favorably in regards to the importance and urgency of the issue (Maibach et al., 2015).

Transformation in Relation to Climate Change

"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete." ― R. Buckminster Fuller ―

The growing imperative for a society-wide transformation (Bahadur & Tanner, 2012; Gillard, Gouldson, Paavola, & Van Alstine, 2016; O'Brien & Sygna, 2013) emerged mainly as a result of society's global failure to drastically reduce carbon emission necessary to hold the increase in the global average temperature to below 1.5°C above preindustrial level without large-scale CO_2 removal or geo-engineering (Mitchell et al., 2018). Therefore, effective response to climate change requires social innovation and shifts (Rodima-Taylor et al., 2012). Several authors have stated, unless society undergoes a transformation, climate change in combination with other pressures (population growth, uncontrolled waste management, water acidification

etc.) will impose an externally imposed transformation with catastrophic effects (Ehrlich & Ehrlich, 2013; Hansen et al., 2013; Klein, 2014).

Despite the increasing use of transformation as a term, the concept is still rather vague and Feola (2015) advocates for a more rigorous approach to its application. Also, O'Brien (2012) states that transformation means "different things to different people or groups, and it is not always clear what exactly needs to be transformed and why, whose interest these transformations serve, and what will be the consequences" (p. 670). To add, Feola (2015) also recommends maintaining a "conceptual plurality" (p. 377) that includes multiple representational kinds of approaches needed to address wicked problems such as climate change. Bahadur & Tanner (2012) add that transformation cannot be limited to a single definition and cannot be considered as an isolated research field given that transformation has its roots in a variety of disciplines and also needs to address socio-economic, cultural and political inequalities (Trothmann & Daschkeit, 2014).

A pathway for transformation

Transformation is a process that is part of a culture shift that needs to be both internal and external, a shift in the fundamental values, relationships and processes which form the foundation of our individual and collective worldview (Pelling 2010). Doppelt (2016) draws a path for personal and collective transformation to strengthen individual climate resilience capacity given the climate disruption that society is increasingly confronted with. Doppelt (2016) argues that, unlike any other crisis, there is no foreseeable end to the climate crisis and that because climate change will continue impacting the planet on an unprecedented level for the foreseeable future, it is likely to shatter many of people's beliefs and worldviews.

Speth (2008) concludes that real climate change solutions start with the transformation of human consciousness, and this can be supported by framing climate messages to connect the audience to their values and morals (Hayhoe, 2013; Marshall, 2014; Moser, 2016). Cognitive science has much to offer in regards to effective communication with people and engaging them in a pro-active dialogue in order to understand the implication of climate risks and the required behavior adjustment to minimize these risks (Grothmann & Patt, 2005; Harold, Lorenzoni, Shipley & Coventry, 2016; Leiserowitz, 2006). The research on neuroplasticity reveals that our brains change continuously in response to everything we do and every experience, meaning transformation of our awareness and worldview is possible (Costandi, 2016), and may enable social and political engagement to actively tackle the climate crises.

Fazey *et al* (2017) address modes of governance for encouraging transformation and concepts that can assist the understanding of transformation. Human behaviour is partly driven by desire which, in today's world, is reflected in society's striving for economic growth and consumption (Daniels, 2010) which impedes transformation given the strong social norm attached to it. According to Fazey et al., this highlights that: a) profound engagement with social processes are required; b) humanities and arts need to be more directly involved in the climate change discussion; and c) a deeper understanding of the desired end-state of transformation, which is itself in a process of flux (Sharpe, Fazey, Leicester, Hodgson, & Lyon, 2016), is urgently required. Triple loop-learning refers to incremental learning: the first may change our behaviour; the second our thinking; and the third our perception which can allow a strategy for change (Peschl, 2007). This learning framework has proven to be valuable in the context of transformation for design thinkers and coaches to tackle complex issues such as climate change as it allows individuals or groups to move from improving current practices to creating an

internal identity shift and worldview supporting a system-wide shift (Hargrove, 2003; Leifer &
Steinert, 2011).

Framing transformative climate adaptation

In the current literature, transformation is still strongly associated with adaptation and the
two main frameworks in transformative adaptation are "fitting to" and "fitting with" the
environment (Pérez-Català, 2014, p. 1), although Pelling (2010) refers to "adapting to" and
"adapting with" change (p. 55). In the "fitting to/adapting to" perspective, the environment is
considered as external, and the focus is on how existing systems are responding to augmented
vulnerability and risk by developing adaptation responses that focus on increasing either the
scale or intensity of existing adaptation approaches (Kates, Travis & Wilbanks, 2012; Rickards
& Howden, 2012). The "fitting with/adapting with" perspective is framed as co-evolution
emphasizing the need to consider the root causes of vulnerability within society and revealing
structures that sustain vulnerability and exacerbate the degradation of natural systems (Pelling,
2010). This approach encourages people to decide what and how to change economic, political
and even behavioral structures (Rickards & Howden, 2012). Another important factor
highlighted by Weiland & Petschow (2013) is the recognition that transformative adaptation can
be considered as an evolution of the sustainability and adaptation model, while not necessarily
replacing them. The core question 'how" to achieve a resilient and sustainable society is a
common concern of the three models and all of them play a critical role to inform policy and
research.

Chapter Three: Research Methodology

This chapter begins with the theoretical framework that positions my research questions
within established theories, followed by an introduction and description of the methodology

employed in this research project. This research explored youth-led transformative climate

actions in order to better understand what supports and enables the shift from concern to action

amongst young people aged 18 – 29. A narrative inquiry approach was adopted to this qualitative

research to explore the question: What personal, social, political, economic and structural factors

motivate and enable young people to move from climate change concern to initiating

transformative climate change initiatives? Each narrative focuses on a young person, his/her

initiative, and the enabling factors (e.g., mentors, support networks, resources) and barriers they

encountered. The first phase of research included 10 semi-structured interviews followed by a

thematic analysis. To deepen the narrative, in-depth interviews were conducted with three out of

the ten participants supported by visual methods such as the timeline and rich picture activities.

Theoretical Framework

The underlying theoretical basis for this study borrows from many theories including

behavioral, cognitive, development and identity formation. More specifically, I frame my

research drawing on: a) theories of change focused on youth engagement and empowerment

theories and b) a transformational climate action framework which is relevant to my research

question and was used to interpret the results of the research and inform the discussion.

Theories of change focused on youth engagement and empowerment. Theories of

change offer effective ways of understanding the factors that support young people to engage in

climate actions and grow into a leadership role. I draw specifically on the research of Jennings,

Parra-Medina, Hilfinger-Messias, & McLoughlin (2006) whose work has contributed towards

the development of a critical social theory of youth empowerment. Critical social theories are

holistic in their approach and focus on emancipatory and collective processes that "give rise to

community social justice and the promotion of social justice" (Campbell, 1991, p.40). Jennings

et al analyze four key models of youth empowerment (i.e., youth empowerment, adolescent empowerment cycle, youth development and empowerment program model, and the transactional partner model) to arrive at a critical theoretical youth empowerment model. Their model of critical youth empowerment (CYE) suggests that engagement requires a safe space in which participation based on equity among generations can take place and which emphasises reflection on interpersonal and sociopolitical processes to effect change. Last, it creates opportunities for individuals and communities to enact (Jennings *et al*, 2006).

The broad theoretical themes and meta-analysis of youth engagement and empowerment drawn out by Collins and Clark (2013) help to further frame potential strategic interventions for young people. The parallels to the previously mentioned CYE are noticeable even though the analysis is embedded in the practitioner-oriented non-governmental organisation (NGO) sphere.

My study draws from the aforementioned theories to frame five key claims about effective youth empowerment:

1) identifying and building on existing capacity and confidence of young people is critical to elevate their ability;

2) young people need to be provided with growth opportunities in which they can be supported by a mentor and diverse partners who can support sustained engagement irrespective of whether such engagement activities are led by them or not;

3) building a strong social and emotional competency as a foundation for cultivating leadership skills in young people is critical and contributes to ensuring that their authentic voices are heard in contexts where their voices are currently missing;

4) providing opportunities and access to training that is inclusive of all young people,

including, and perhaps especially, those who are disadvantaged, and which

recognizes and promotes young people's individual gifts and strengths; and

5) training that familiarizes participants with mainstream institutional processes and

ensures that young people's participation is not limited to grassroots efforts (Kress,

2006; Robinson, 2011; Lewis-Charp, 2003; Libby, 2006; Watts & Flanagan, 2007).

In addition to the above, the theory of change developed by SERES (SERES, 2016) is

also relevant for my study as it relates specifically to transformative learning and sustainability

through to reducing vulnerability to climate change. The SERES framework that guides their

Transformative Sustainability Leadership (TSL) approach has been tested by practitioners

worldwide and provides a systematic method to developing leadership among young people

through education and other opportunities. The TSL builds on the premise that any young person

has the potential to become an influential leader to address the root cause of dysfunctionalities in

their communities. SERES emphasizes that sustainable change needs to take place at the

intersection of people, process and place for individuals to become responsible change makers in

their respective communities to tackle the increasingly unprecedented challenges such as climate

change.

Framing transformative climate action. The emerging theories of transformation in

relation to climate action help to position how the participants of this study viewed

transformation on a personal level but also in regards to the transformative impact of their

climate change initiatives. Neither scholars nor practitioners have settled on a conclusive

theoretical framework for transformation in relation to climate change (Fazey et al., 2018; Feola,

2015; O'Brien & Sygna, 2013). Some argue that such a theory is neither possible nor desirable

(Ison, Blackmore & Iaquinto, 2013). However, there are sufficient concepts on transformation to position the results of my study in regards to climate change transformation. Fazey *et al* (2018) regard transformation as an extensive "concept that includes social, environmental and technical domains" (p. 2) and includes three contextually influenced dimensions in regards to: a) quality and intensity of change, b) spatial distribution and c) speed of change to determine whether a change is transformational or incremental. The authors emphasize the need to be clear about both the conditions prior to transformation, when it is claimed, and the expected or desired condition after the transformation takes place. Fazey *et al* (2018) are of the opinion that transformation can be intentional and therefore induced by agents. Other critical questions to consider are, which kind of knowledge needs to be generated and what kind of learning is required and needs to be promoted to advance transformations (Healy, 2011).

O'Brien & Sygna (2013) have built on the work of Sharma (2007) to identify "three interacting spheres of transformation: a) the practical sphere (inner circle), b) political (middle circle) and c) personal (outer circle) across which transformation occurs" (p. 1). The first of these spheres, the **practical sphere,** they describe as "the core of transformation." (p. 5). This sphere produces tangible outcomes that can be measured and includes technical solutions and innovations of all kinds. According to this understanding of transformation, the practical sphere is the dimension where index and indicator are measured and reported on, for example the biodiversity index. The second or **political sphere** is described as the sphere of socio-political systems that either facilitate or impede transformation. This sphere is also where the natural systems such as ecosystems, food and water systems are managed. Finally, the third or **personal sphere**, is the sphere in which transformation of individuals and worldviews are formed and exercised, leading to interactions with the political and practical spheres. According to the

authors, this is the most powerful sphere as the individuals enact change based on their values, beliefs and worldviews. This multi-sphere model of transformation highlights not only the potential for change at multiple levels, but also emphasizes the intersecting and interconnected nature of these spheres.

Even if the concept of transformation remains fluid, all the aforementioned models and approaches share a commitment to the importance of continual and systematic learning and investigation as an intentional aspect of transformation. In the context of climate change, the dynamic complexity of the systems and ways of living that need to be transformed to avert the challenges posed by climate change are difficult to imagine. To envision a radically different structure in which society will be able to thrive requires an elevated understanding how complex systems work, the role and cultivation of uncertainty, emergence, and many other complex and intersecting concepts from multiple disciplines (Fazey et al., 2018; Lonsdale, Pringle & Turner, 2015). This, in turn, requires the capacity and skills to engage in profound enquiry and the willingness to experiment – both of which are key capacities for transformation (Olsson et al., 2006).

Methodological Research Framework

The focus of the research is to explore and understand the motivation and the meaning participants make of their path from climate concern to action and the transformative characteristics of the climate action(s) they lead or co-lead. In sight of these complex phenomena, a qualitative research approach employing semi-structured interviews and narrative methods was used (Creswell, 2013, 2014; Marshall & Rossman, 2016). The narrative method offered itself as most appropriate for this research as it provided an opportunity to gather and share experiences as expressed in the rich, multi-dimensional description provided by the

participants through their individual stories (Creswell, 2013). Czarniawska-Joerges (2004)

defines narrative as "a spoken or written text giving an account of an event/action or series of

events/actions, chronologically connected" (p. 17). The aim of using a narrative approach was to

collect stories from young people about their lived and told experiences (Creswell, 2013) to shed

light on their capability to transform climate change concern into action.

The approach to the current study is grounded in social constructionism and a relativistic

ontology (Creswell, 2013; Marshall & Rossmann, 2016). Social constructionism assumes

multiple realities and perspectives in which humans individually and collectively engage to make

sense (p. 24) of a situation. As a researcher I am both seeking to understand the perspectives of

the participants and also actively engaged in constructing the truths or findings that are

developed in the analytic process and in the writing up of the research report.

Research design

It is evident from the literature review that personal shifts from climate change concern to

leading or co-leading action is a complex phenomenon and requires a personal transformation.

To explore my research questions, I used a two-tiered approach, the first phase included semi-

structure interviews with ten participants – all young people between the ages of 18-29 who were

leading or co-leading a climate initiative at the time of the research. The second phase of the

research included a semi-structured in-depth interview with three of the ten participants using

narrative methods to explore more deeply the shifts that led these young people from concern to

action, the motivating factors, the transformative aspects of their climate actions, and the role of

mentors and other resources in supporting the development, implementation and sustainment of

their initiatives. To harness the participant's enthusiasm, attain a rich description and make sense

of the participant's initiative and the systems in which it was embedded, I employed visual methods which included:

Timeline mapping. This method is considered as a visual data collection method derived from a larger framework of graphic elicitation designs (Bagnoli, 2009). The timeline reflects a chronological arrangement with visual indicators of significant events experienced by the participant (Berends, 2011). Using it in this study allowed diversified exploration and representation of the participant's life experiences as they related to the research question (Patterson, 2012; Umoqui, 2008). Timelines have been found to strengthen data by enhancing interviewer-participant rapport, mutual understanding and reflexivity through interactive and supportive engagement with a timeline representation of a participant's life (Berends, 2011; Sheridan, Chamberlain, & Dupuis, 2011).

Rich picture. The description of the participant's situation was depicted as a picture using diagrams and symbols, as a way to explore and acknowledge the socio-political systems in which their specific initiative was embedded (Bell, 2016). The purpose of these pictures was to illustrate the intangible aspects that were difficult to verbalize (Walker, 2014). The rich picture method is a mean to capture the participant's environment, context and multifaceted web of interconnection that is often difficult to express in words (Frith, Riley, Archer, & Gleeson, 2005).

Participant recruitment

Snowball sampling is the most widely employed method of sampling in qualitative research according to Noy (2008). It is a non-probability sampling method for gathering research participants through the identification of initial persons who refer additional subject from among their networks (Atkinson, 2001; Lewis-Beck, 2004). Given that I was looking for specific

profiles (see below), the snowball sampling offered itself as the most promising and effective method to find relevant participants. I also had the advantage of knowing a large number of people in Calgary who worked and/or were engaged in the area of climate change, environment, sustainability, immigration, social justice and innovation with each being embedded in larger networks, and I drew on these networks for recruitment.

The call for the research participation was e-mailed out (see Appendix A) via existing and referred environmental, climate, social justice, immigration, first nation and innovation networks in Calgary as well as via representatives of educational institutions in Calgary and Region who were potential participants and/or connectors resulting in 57 initial recruitment emails. Most of those contacted circulated the request among their networks and after three weeks I followed up with the contacts who did not respond. As part of this recruitment, I made a deliberate effort to reach out to women, non-Caucasians as well as young people from First Nations communities to encourage diversity in the sample. Even so, and despite having a rolling recruiting process open from August 2016 to April 2017, it was challenging to find participants who self-identified as leading or co-leading a climate action, met the age bracket, and were women and/or non-Caucasian. At the 'Community Connection 2017' event in Calgary (on February 11, 2017), organized by 'Next Up Calgary' I pitched my thesis in front of 20 young people to further recruit participants and to inquire about the lack of young people leading or co-leading climate actions especially women and non-Caucasian. The result of the discussion will be highlighted in the study limitations in Chapter 7. Given that I exhausted a large number of channels available to me to recruit participants, the ten participants that are leading or co-leading climate action were regarded as sufficient to proceed; this study does not claim to be representative but rather descriptive.

Sample. The recruitment criteria were as follows: age (between 18 and 29 years old), domicile (Southern Alberta), and the young person had to lead or co-lead a climate change initiative (mitigation or adaptation). I also aimed to reflect a diversity of topics in regards to their initiative (e.g. education, energy, food production, waste) as well as gender and ethnicity.

The intent of this study was not to make generalisations from the participants' stories, but to provide insights from the particular life stories as participants described their pathway from concern to climate action (Pinnegar & Daynes, 2007). Ten individuals met the study criteria in regards to age, location and characteristics of initiative – a sample size that is in keeping with the narrative methodology (Huber & Whelan, 1999). This sample was selected to reflect a range of demographics, and the examples and comments are offered are illustrative of the specific time and place of the study, and not as representative of the larger population.

Exclusion criteria for the study

Young people that did not meet the demographic criteria, were not leading a climate initiative nor leading their initiative outside Southern Alberta were excluded from this study.

Data collection methods

Initial interviews. Semi-structured initial interviews of 30 to 40 minutes were conducted with ten young people. Each of these interviews was audiotaped and transcribed by me. Six of the interviews were conducted face-to-face in public locations such as coffee shops or a university campus, and four were conducted via telephone. These interviews were thematically analysed prior to the next stage of interviewing.

In depth interviews. Semi-structured interviews were held with three out of the ten young people with whom I had conducted an initial interview. My selection was guided by my intention for diversity in terms of gender, ethnicity and the characteristics of the climate change

initiatives. All interviews were conducted face-to-face, one was held in a public office building, one at a university and one in a participant's home. The length of each interview was two and a half to three hours. Each of these in-depth interviews was audiotaped and transcribed by me. The semi-structured face-to-face interviews allowed a guided conversation rather than structured queries (Yin, 2016), providing an open framework for a two-way focused conversation about the participant's pathway from concern to action, their climate change initiative, the enabling factors (i.e., mentors, support networks, resources) and barriers they encountered. To navigate the risk of unintended influence over the meaning, the participants were asked to use their own words to interpret their a) timeline and b) rich picture drawings (Gilmore, 2014) as described below:

   Timeline mapping. The timeline served as a guideline for the interview marking each participant's path from awareness to leadership and highlighting significant moments. Participants were asked to draw a timeline and instructed to draw on the first line defining milestones in the evolution of their climate action journey – from climate change awareness, to concern, to development and action(s). Following, on the second line they were asked to highlight resources and people such as family, peers, mentors, friends who played a key role on their climate action journey. On the third line they were asked to mark the barriers and challenges they encountered, points at which they struggled (emotionally), or faced obstacles and barriers (feasibility, missing support of key people, resources etc.) After the participants completed the timeline, they were asked to reflect aloud on what they saw followed by my questions to clarify and elaborate.

   Rich picture. After the participants explained the timeline, they were asked to draw a rich picture diagram that illustrated how the initiative they were leading/co-leading interacted with the system in which it was embedded. This visual method allowed a deeper understanding of the

interactions and connections between the participant's transformative climate change initiative

and the larger system(s) within which it was operating. The participants were instructed to

choose how they wanted to create the rich picture and were assured that there was no right or

wrong way to do that. They were encouraged to use diagrams, symbols and cartoons; use of

words only sparingly, if at all.

Data analysis methods

Before the data analysis was initiated, I had logged transcripts according to type of data,

dates and times and the persons with whom they were collected (Marshall & Rossman, 2016).

The time-line and rich picture visuals were photographed and the interpretations by the three

participants were audio recorded.

Thematic analysis. Riessman (2008) suggests a typology of four analytic strategies such

as a) thematic analysis, b) structural form, c) dialogic/performance analysis and d) visual

analysis of images. For the analysis of the initial ten interviews I conducted a thematic analysis

as I was interested to explore whether parallels emerged from the individual stories. To conduct

the analysis, I employed 'Dedoose', a qualitative web-based data analysis software. The thematic

analysis allowed a concise description of the themes and patterns that emerged from the datasets

(Braun, & Clarke, 2006). I employed an inductive approach to the thematic analysis of the ten

initial interviews, first coding each interview using codes drawn from the interviews themselves.

These codes were then grouped in themes and categories focused on the core ideas, arguments

and conceptual linking that participants shared. The patterns developed during the thematic

analysis were further explored through the second interview and narrative analysis (Boyatzis,

1998).

Narrative analysis. Each of the three participants of the in-depth interviews were asked as part of the interview to interpret their own visual outputs (i.e., time line mapping and rich picture). In a narrative study, the data gathered needs to be analyzed to frame the story as told by the participant. The approach I selected for the narrative research analysis therefore, was a chronological approach given my research questions aimed to reveal a set of key experiences in the participant's life (Denzin, 1989) that unfolded in a chronological order. The timeline the participants were asked to draw framed their narrative from awareness to concern to action in chronological order. This allowed for larger patterns and meanings to emerge, and the factors that shaped their lives, thus reconstructing the individual participant's biography from a particular perspective (Creswell, 2013).

The rich picture then guided their reflections on how their action(s) was/were embedded in larger systems and which aspects of the system(s) they anticipated being transformed through their action(s). I transcribed the three in-depth interviews and re-read each transcript multiple times for the purpose of reconnecting and immersing myself in the participant's story in order to become fully familiar with the data. As a next step, I summarized the full transcript of each of the three participants into a core story that highlighted the 'key events' (Denzin, 1989) related to my research questions. Once completed, I sent the core story of each participant to them for their review asking them to review for accuracy of content and intent, and asking them further to modify, correct and expound on the story such that it would best reflect the story as they understood it (Emden, 1998). I also added the full transcript of the in-depth interview for their reference. All of the three participants made some changes to their core story to reflect more accurately what they were trying to convey.

Ethical considerations

The participants were given the context of the study so that they could make an informed judgment regarding their continued participation. Each participant was informed about the purpose of the study, its sponsorship, the selection process and the ways in which the data would be used. The young people were given a choice as to whether the initial interviews would be conducted in person or via phone/skype. During the recruitment process, I emphasised to each potential participant that all climate change initiatives are valuable, and that I would be selecting to interview based on the specific study criteria. Further, with those I interviewed in the first phase, I clarified that selection for an in-depth interview would be based on defined criteria in terms of diversity and characteristics of the climate change initiative and that, as a result of the limited resources and time frame for the study, only three stories would be explored in more depth. Given the small sample size, the relatively small community of potential participants from which participants were drawn, and the specific nature and characteristics of the initiatives, anonymity was not guaranteed. Each participant was informed about the potential lack of anonymity and the consent process.

Rigor and trustworthiness.

Rigor. Once I developed the questionnaire for the initial as well as the in-depth interview, I tested it with my supervisor, advisor as well as an external academic who worked with young people to ensure the questions were comprehensive and not leading. I used the same interview questions with each participant. For the second phase, I used multiple methods for the in-depth interview to ensure that the participants had different means to express themself. I also returned the in-depth interview transcripts to the participant for review, and encouraged them to correct, add and modify as it was their story.

Trustworthiness. My own worldview and values could have represented the biggest potential threat to trustworthiness as I could have been prone to confirmation bias and favouring information that confirmed my own values. I followed the advice of Maxwell (2012), Creswell (2014) as well as Cho and Trent (2006) to address this potential risk by incorporating some strategies to assess the accuracy of the findings:

a) **triangulation** – I used data from different source (multiple informants and more than one data-gathering method to strengthen the research (Rossman & Wilson, 1994; Marshall & Rossman, 2016)

b) **member checking** – the three core stories (summarized transcribed in-depth interview) were reviewed and modified by the participants to ensure that their stories are accurately represented

c) **review of the project** by a third party – the analysis and interpretation have been reviewed and, in some cases, challenged by my thesis supervisor throughout the process.

In keeping with the qualitative and narrative methodology, I employed a snowball sampling technique (Biernacki, 1981) for this research, and recruited using the specific characteristics of the participants (e.g., age and level of engagement with climate actions) and the characteristics of the initiatives (e.g., different sectors). That as it is, he issue of sampling bias arises in that I recruited participants primarily from my own networks which may be limited by my own cultural, professional and personal worldviews. I attempted to address this by deliberately reaching out to other networks. There was, however, limited diversity in the resulting pool of participants. I am aware that another

person with a different cultural background and different networks may have had access

to a more diverse group of participants which was not available to me and my networks.

Chapter Four: The Participants

In the following chapter I provide a demographic description of the participants as well as

the characteristics of their specific climate change initiative.

Demographic data

Age: All ten participants were between the ages of 18 – 29 at the time of the interview.

Six were between the ages of 21 and 25 and four between the ages 26 and 27.

Location: Eight of the participating young people lived in Calgary and two in nearby

towns (Cochrane and Olds) at the time of the interview.

Gender: Three self-identify as female and seven as male.

Ethnicity: Nine out of ten were Caucasian and one person had a Thai ethnic background.

Political association: Five of the participants associated with the Liberal Party, one with

the Green Party, one with the Progressive Conservative Party and the remaining three undefined

but a mix of Green/Liberal/NDP.

Education: All of the participants were high school graduates and some level of post-

secondary education. . One participant had completed a technical diploma, eight had completed

or were soon to complete a Bachelor's degree, and one had completed a Master's degree. Of

those completing university degrees, three had a business, management and/or economics

degree, three an environmental science or engineering or environmental policy degree, one a

degree in eco-tourism, one in geography, one in history and currently studying law, and one had

completed a Brew Master diploma.

Climate change initiatives of participants

The climate change initiatives of the ten participants are briefly described below. Eight of the participants at the time of this study were leading or co-leading a climate initiative and two were leading or co-leading two or more climate initiatives. Six of the participants were making a living from their initiative: a) two as full-time entrepreneurs; b) two in parallel to their studies; and c) two as full-time employees in an organisation where they led climate action projects at the time of the interview. Four of the participants were leading/co-leading the initiatives on a voluntary basis. The specific demographic and initiative characteristics of each participant are outlined in Table 1.

Table 1: Summary of climate initiatives and characteristics

Initials Age (Gender)	Climate Change Initiatives	Characteristics
AB 27 (F)	Leading the development and implementation of a waste management plan	The waste reduction initiative at their educational institution puts a mechanism in place to divert waste from landfills to recycling and composting facilities. A strong educational component teaches students about waste reduction that mitigates (direct and embedded) emissions as well as resource scarcity and the need for waste to be treated as a resource when it cannot be avoided.
AV 22 (M)	Leading a compostable coffee cup initiative called 'Green Cup'	The compostable coffee cup initiative targets coffee shops in schools and post-secondary institutions with the purpose to reduce waste and educate on climate resilience. As compostable cups are environmentally friendlier but are more expensive than conventional coffee cups, Green Cup places (ethical) advertising on their cups to offset the extra costs. An important component of the initiative is to bring waste reduction, composting and climate resilience education in a collaborative method to schools and communities. The initiative allows students to share their ideas and knowledge, and empower them to become stewards.
ST 24 (F)	President of a 'Student Energy' Chapter	"Student Energy" is educating and inspiring students on the subject of energy awareness and challenging the current energy system. The energy education is geared to facilitate behavioral shifts, and challenge existing systems to reduce carbon emissions and foster energy reduction, diversification and independence from fossil energy sources.

KL 24 (M)	Co-President at Fuse Collective	The student-led collective educates on sustainable energy, environment and the economy with a particular focus on the interdependence between the three areas. The purpose is to foster critical thinking and approaches to energy in order to reduce carbon emissions as well as short- and long-term negative effects.
GS 26 (M)	Leading aquaponics food production (small scale)	Local aquaponics food production helps to grow food in drier conditions with increasingly volatile weather (the foreseeable climate future of Calgary). It also increases food independence given the food production in California will likely decrease (due to drought) and increase in cost as already experienced by Calgarians. Local food production also reduces GHG emissions due to less intense farming practices and shipping routes.
AV 21 (M)	Leading edible mushroom production on beer brewery waste	This is a waste diversion (upcycling) and local food production project. These mushrooms grown on beer production waste have a higher nutritious factor than traditionally grown mushrooms. This localized closed loop initiative helps to reduce waste and methane emission (beer waste would go into landfills) and provides localized nutritious food sold at the local market – which supports food independence.
GS 22 (M)	Co-leading Urban Farming initiative that connects urban farmers and end-consumers	This local food production initiative is an adaptive measure given that the food supply from California will likely decrease due to drought and soil depletion, reducing supply and therefore increasing costs. Local food production helps to reduce GHG emissions due to less intense farming practices and shipping routes.
	President of bike share program on University Campus	This initiative allows students to rent a bike for an affordable price. To commute by bicycle helps to reduce GHG emissions and enhances transportation alternatives with lots of health co-benefits. The goal is also to shifts students' behaviour and to provide an alternative to their current transportation mode.
TB 27 (M)	Sustainability Director at a community association	The purpose of this (self-initiated) position is to develop a framework with community association members to educate and engage the whole community on subjects like alternative energy, carbon footprint reduction and ways to adapt to climatic changes. The ultimate goal is to induce behavioral shifts to reduce the community's carbon footprint and increase their social justice awareness.
	Leading geothermal energy chapter	This initiative aims to promote an alternative, non-fossil-based energy source. The work includes leading events, attending and speaking on behalf of the organisation to educate and raise awareness of geothermal's potential, especially in Alberta as existing oil wells could be repurposed for heat and power.
	Active member of Green Party co-leading various policy programs	Engaging Calgarians to develop progressive climate policies provincially and federally is the purpose of this role. This also includes analysing energy policies to find better ways to benefit all Albertans and Canadians.

| JS 29 (F) | Co-led a Youth Summit on Energy and Climate Leadership | The annual summit is an opportunity for high school students and teachers (mainly from rural Alberta) to learn and advance energy and climate education in Alberta. Participating teams are asked to return with an action plan/project. At the 2017 Summit, Climate Change was raised for the first time as a main topic and enthusiastically welcomed by participants. |
| MH 25 (M) | Co-leading the Climate Action Network | The Climate Action Network (CAN) mobilizes the grassroots climate movement in Calgary and advocates for government policies to accelerate the rapid and just transition to a carbon-free future for Calgary. The education is geared to support behavioral shifts, and challenge existing systems to reduce carbon emissions and increase citizens' climate resilience. |

Chapter Five: Phase 1 Findings (Thematic Analysis)

The purpose of the ten initial interviews in Phase 1 of this study is threefold: first, to understand the enabling factors that shifted each participant from concern to action(s); second, to get an understanding of the contextual and project-specific characteristics of the climate action projects led by these young people; and third, to identify participants that met the criteria for a follow-up, in-depth interview. In this initial interview (Appendix B), each participant provided a unique story representing their personal path from climate concern to taking action. These stories offered valuable insights that, when looked at together, revealed various themes. Table 2 below illustrates the major themes and the subthemes that emerged from these interviews and how they relate to the research questions of this study.

Table 2: Summary of research questions, themes and subthemes including descriptions

Research questions	Themes	Subthemes	Description of theme and subthemes
#I: What personal, social, political, economic and structural factors motivate and enable young people moving from climate change concern to initiating climate action?	Key Influencers (one)	- Role of Parents - Teachers - People in the Media - Peers	The set of codes captured focused on the participants' developing awareness of climate change and the ways in which people influenced or contributed to the participants shift in their consciousness in ways that contributed to their awareness of the natural environmental and climate change.
	Context (two)	- Context Growing up - Education - Linking Inequality to Climate Impacts	This set of codes highlights the role-specific contexts played in developing awareness, and specifically in their awareness of the environment, and/or their understanding of the interconnected nature of inequality and climate change.
	Personal Characteristics (three)	- Caring - Self-Motivation & Perseverance - Passion - Positive Orientation	This set of codes encapsulates the characteristics that led the participants to seek out answers in order to re-shape the way things are done and the way in which we live.
#II: What are the personal and external (e.g., mentors, support networks, resources) success factors and challenges for climate action leadership among young people?	Support Network (four)	- Mentors - Family - Friends & Peers	This set of codes describes the role of the participants' support network as they are developing and growing their climate initiative and responsibilities.
	Climate Leadership (five)	- Purpose - Empowering and Inspiring Others	This set of codes highlights the ingredient of their leadership that is mainly guided by purpose, and empowering and inspiring others.
#III: What does transformative action look like, conceptually and practically, at a local level?	Transformative Characteristics of Climate Initiatives (six)	- Practical Sphere - Political Sphere - Personal Sphere	This set of codes explores the transformative characteristics of the participants' climate actions and initiatives with regard to tactical, behavioral and system change.

Thematic Analysis of Initial Interviews

The thematic analysis resulted in six key themes that illuminate the factors that contributed to the participants' movement on the pathway from concern to climate action. Each theme and relevant sub-themes are described below as they relate to each of the research questions. Where relevant, I have included quotes from the participants to reflect their thinking and reflection on their own process, using their examples and words. Whereas these themes are described individually, in reality they intersect and overlap with each other in the participants' stories.

Themes related to **Research Question #I:** The first research question asks: What personal, social, political, economic and structural factors motivate and enable young people moving from climate change concern to initiating climate action? The themes that were identified in response to this question describe the triggers that participants identified as prompting a shift in their consciousness and contributing to their growing awareness of environmental issues and climate change. These three themes are organized around key influencers, contexts, and personal characteristics, each with the consequent subthemes.

Theme one: Key influencers

A common thread throughout the various narratives of the participants focused on their developing awareness of climate change and the ways in which people influenced or contributed to the shift in their consciousness and awareness of the environment, environmental issues and climate change. Most of the participants attributed their own openness and curiosity as having led them to seek out answers and being receptive to the messages that key influencers offered. They also stressed the role that positive feedback had in motivating them or keeping them

motivated. The theme, Key Influencers, is elaborated by four subthemes: (1) Parents, (2) Teachers, (3) People in the Media and (4) Peers.

Subtheme 1.1 - Parents: Several of the participants mentioned the strong influence their parents had on shaping their environmental consciousness. This included being influenced by their parents' involvement with environmental activities (e.g., permaculture, recycling) or activities related to other social justice issues. JS, for example, put it this way, "*my Dad is very environmentally conscious. He was the only one in the neighborhood who paid for recycling. Recycling was not a public service at that point, it was an extra service you had to pay for. My father is probably a major driver for me.*" AB had a similar experience, as her parents also instilled a passion for the environment that she described having embodied for as long as she could remember. Both these participants also mentioned that they were often collecting garbage during school breaks instead of playing with other kids.

Subtheme 1.2 - Teachers: For some participants such as GS, a high school teacher played a key role in shaping his understanding that climate change was an issue, and that climate change would affect his future. GS stated: "*I certainly remember being in my junior high geography class and my teacher was saying, look you are living in an age where top qualified scientists almost unanimously agree that the climate is changing due to our impact. We live in an agrarian community here, and our livelihoods are not necessarily guaranteed anymore in the future. I was 14 or 15 years old. I need to go thank my teacher for everything as it guided me through my decisions and studies.*" Similarly, KL was in junior high when he learned about climate change and its negative impact on humans and animals. This reaffirmed his interest in local food, and permaculture. AL mentioned that several teachers of his, in both elementary and high school, had units on climate change and sustainability. He described how this reaffirmed his

interest in local food and other sustainability projects, and said, *"I probably would have learned about it by myself eventually; however, the education system made me aware of climate change of which I was not fully aware at that time."* AV's high school teacher also went the extra mile to inspire his students, *"there was the perfect blend of my parents who planted the seed and then this high school teacher who recognized and fostered my interest, and who was incredibly passionate about the environment and local food which gave me that spin."*

Subtheme 1.3 – People in the media: Several participants attributed Al Gore's movie 'An Inconvenient Truth' released in 2006 as having impacted their awareness and understanding of climate change, highlighting how the messages that experts in the media resonated with them. They spoke in a similar way of David Suzuki and his hosting of 'The Nature of Things' a Canadian television series (Canadian Broadcasting Company, 1979-2017), describing how the show and its host played a major educational role in their lives. For example, TB, who is active in politics, mentioned the motivational impact that an episode of this program had on him. The episode featured Green Party leader, Elizabeth May, and TB described that *"to watch Elisabeth May speak was really resonating with the way I felt, that's when I started to look into politics."*

Subtheme 1.4 - Peers: Participants also mentioned that important to their shift to action was a solid network of likeminded friends who understood and supported them and were also dealing with similar questions and concerns. KL, for example, mentioned, *"knowing other students and being surrounded with friends who have similar world views and values in regards to my field of study (which is economics) is what grounds me to hold onto hope."* AB who said, that she is raising awareness regarding collective voting power to get leaders in place that are responsible and invested in creating a future that is desirable for young people; however, without having a strong peer support network she would not have been able to keep going as passionate

and determined. Similar, JS who champions consumption change to get harmful products off the shelves, mentioned the critical importance of peers to encourage and support each other to taking action and discuss the impacts, no matter how small.

Theme two: Context

Participants also highlighted the role that specific contexts played in their developing awareness, and specifically in their awareness of the natural environment, and/or their understanding of the interconnected nature of poverty and climate change. Climate change awareness for many of the participants was triggered by the social environment – something as simple as a single statement that rang true to them or a single observation that highlighted these connections. The theme Context includes three subthemes: (1) The Context of Growing up, (2) Education, and (3) Linking Inequality to Climate Impacts.

Subtheme 2.1 - Context of growing up: Most of the participants described how their interest in climate change and climate action was also fed by an understanding of the preciousness of an intact natural environment. Most of the participants considered this understanding as critical for their personal shift from concern to action and suggested that this had been instilled early in their lives. For some participants, these early experiences were deeply connected to living in a remote and/or rural environment, and therefore having naturally developed a strong bond with nature. ST for example mentioned growing up on a remote, coastal island in British Columbia and being influenced by both the nature and the First Nations traditions to which she was exposed. ST stated: "*I grew up on Queen Charlotte Islands, now called Haida Gwaii. Respecting the First Nations traditions and the earth became part of my growing up.*" Several participants described having spent a lot of time in nature when they were children as part of their regular outdoor activities. Participants suggested that this had shaped a

deep attachment to the natural environment which was the foundation of their climate concern and ultimately climate actions. GS, who grew up on an industrial farm in Southern Alberta, described feeling strongly attached to the land and farming and at the same time increasingly concerned witnessing the devastating impacts on the land due to industrial farming. He linked his witnessing of this devastation to his interest in sustainable farming suggesting that the trigger for him to take climate action and to get involved in various agricultural research projects was to work towards healthy and sustainable food production and the preservation of the ecosystems that his family and community depended on. Participant AV, connected his climate action to his earliest memories of being outside in nature, in particular to his parents' big vegetable garden, stating, *"my very first childhood memory was hoeing potatoes in our backyard – I still don't know how I feel about that ((laughs))."* Of the ten participants, only two didn't mention explicitly having established a strong tie with the natural environment during their childhood.

Subtheme 2.2 - Education: As with the first theme, wherein a number of the participants identified school as a key influencer, a number of participants attributed various educational experiences as having motivated their shift to action. PS described how he started to connect the dots between social inequality and climate change in a course called development economics in which he learned that the GDP was not the only indicator of development, stating: *"that made me realize that even within our own country we are lagging behind as we have segments of the population that are illiterate and a huge part of society lives below the poverty line. Since that, I understood the parallels to environmental sustainability and keep educating myself."* GS who was a geography student described how much his education and his engaged professors shaped him: *"any sort of activism I have stems from studying geography, getting out and seeing retreating glaciers made me see the impacts."* Similarly, ST remembered her

elementary school experiences vividly, suggesting that the ways in which learning about nature was made fun, had a significant and positive influence on her climate action trajectory: *"our elementary school teacher took us outside every Friday, rain or shine and he made learning about the nature such a playful experience that this became the highlight of our education."*

Subtheme 2.3 - Linking inequality to climate impacts: Similar to climate change awareness, the trigger for climate action for participants was often related to the realisation of social injustice and inequity. Three of the participants who studied development economics mentioned that their studies of social inequity had a big impact on their awareness and understanding of climate change. Each of these participants described how understanding the interconnection between social inequities and climate change was a trigger that shifted them from concern to action. Other participants mentioned how much they were affected by witnessing climate impacts locally and/or abroad on those already made vulnerable through poverty and marginalisation. For example, AL described a time when he realized that those most disadvantaged and least responsible for climate change are often most affected by climate change, "*I was 18 when I went to Kenya to teach children. I was not necessarily interested in climate change even though I knew about it, but when I saw the devastating impact of climate change everything changed.*" PS said what moved him to action was the experience of watching the humanitarian disaster in Haiti after the earthquake in 2010. He mentioned that even though this disaster was not linked to climate change, it highlighted to him how the changing climate is exacerbating human suffering, especially of those already disadvantaged by poverty and disasters. PS stated, "*it was the humanitarian crisis that got me triggered to do something about climate change.*" Likewise, KL said, *"I got involved in climate change because I saw the big disparity and the struggle people go through in less developed countries. This is strongly related*

to the way our economy runs as it imposes environmental and social cost on places where our goods are produced." AL who had opportunities to travel internationally emphasized that spending time with people who have no other choice than to live in a highly polluted environment made him realize how privileged he is and how this motivated him to learn more and ultimately to act. AL stated that, "*seeing what could possibly happen to our own environment was the driver for me to try and stop that. Then I took some courses to get educated and that's when I got excited to create an opportunity to make my own contribution in this challenge.*" The rising of the Civic Camp in Calgary in 2004, (a non-partisan, public advocacy group that invited Calgarians to a regular conversation about building the city people want), was the trigger for MH to get involved in climate actions, specifically to work on the urban agriculture policy, community garden movement and later he became part of the Climate Action Network.

Theme three: Personal characteristics

As previously stated, most of the participants attributed their own openness and curiosity to having led them to seek out answers in order to address climate change by re-shaping the way society functions. They described which main personal characteristics supported their internal shift from being a concerned citizen to becoming an enabled actor. This theme is elaborated by four subthemes: (1) Caring, (2) Self-Motivation & Perseverance, (3) Passion, and (4) Positive Orientation.

Subtheme 3.1 - Caring: As described earlier, four participants mentioned that the main trigger for action was an emotional connection to nature. They were motivated to protect the environments they loved such as the Rocky Mountains, the Prairies and/or loved activities in which they participated (e.g. hiking in an intact natural environment, climbing, and backcountry

camping). For example, JS, who cycles wherever she can, said, "*the way I commute and the way I eat has a direct impact on my carbon footprint and because I want to inflict minimum harm to our beautiful planet, I do care about my own choices I make every day.*" She also mentioned, "*when I inquired where the item was produced and where the food was coming from, my friends told me once that they wish I wouldn't care so much, but of course I care, I care a whole lot, how else could I!*"

Subtheme 3.2 – Self-motivation & perseverance: All the participants described themselves as highly self-driven and self-motivated and most became engaged in initiatives at a very young age either in school or in their social circles. In addition to their drive the young people demonstrated much perseverance to keep going with their small or large initiatives even in the face of setbacks. GS self-described as a person who does not wait for others to make things happen and said, "*we all have an intuitive feeling that we are doing the right thing. I am following my gut. As a young person you got to drive it.*" TB described himself as someone who always had strong beliefs and a sense of certainty about what he should do. For instance, he remembered vividly talking with his parents about climate change and his choice to become an environmental engineer: "*I have been telling my parents from a very young age that climate change is real and going to be a big issue. I was certain about my decision to go into environmental work once I had grown up, but they told me that I shouldn't. My parents insisted that I should become a doctor or a lawyer, the classic well-paying jobs but told them that I need do in what I believe.*" Many of the participants mentioned feeling driven by a moral obligation to lead climate initiatives and not wait for others to get the work done. MH said, *"it's all about that the climate work gets done, as there is no one doing it at the city, and here more than anywhere else it needs to happen."* Some of the participants described being ambitious and enjoying taking

on big responsibilities, even though at times they felt overwhelmed. GS described his sense of

excitement at taking on a leadership role, and stated that, *"to have the opportunity to lead*

something that big is fantastic and at the same time an overwhelming amount of work and

responsibility. I am the only one who puts pressure on myself but now I have a lot of people I

made this promise, and they expect me to come through."

Subtheme 3.3 – Passion: Close to this characteristic of self-motivation & perseverance,

was the strong sense of passion that sustains their drive for their initiatives despite challenges

and doubts. For many, the initiative they developed or co-developed was a channel for their

passion. ST who leads the Student Energy chapter at her university said, "*the work with Student*

Energy has become my outlet to bring my environmental passion into play. Creating an

educational platform is critical to offer a space for young people to debate, create solutions and

*advance their perspective*s." Similarly, MH described his passion for driving change, saying that,

"*40% of my drive is because it needs to get done, 30% is driven by the people factor and 30%*

because it is really fun. I really enjoy thinking about these issues, how we can solve them, change

opinions, and to mobilize people. It is tricky to find ways to shift peoples' opinion and actions

into a climate friendly direction, and to find levers to change the system."

Subtheme 3.4 – Positive orientation: Without exception, participants emphasized

having a positive action orientation was a key element in their approach to dealing with

challenges. All expressed being aware that their impact on the huge issue of climate change is

small but that they saw themselves as part of a gathering, collective momentum that would

support major shifts happening. MH described his recognition that he needed to do something in

response to feeling overwhelmed: "*growing up in an age of climate change and coming to this*

realisation that humanity is faced with an existential crisis is not an easy thing for a teenage boy

to come to terms with. I realized that I needed to get involved, so yes, I stepped up to it."

Research Question II: What are the personal and external (i.e., mentors, support

networks, resources) success factors and challenges for climate action leadership?

The themes that were identified in response to question two, describe personal and

external factors that foster or challenge climate action leadership. Two themes emerged from the

data: Support Networks and Climate Leadership.

Theme four: Support networks

Participants emphasized the importance of having a strong support network in order to

develop and lead their climate initiatives and assume their responsibilities. In addition to the

influence and support of peers as mentioned in point 1.4. this theme reflects the way in which the

participants highlight the importance of their networks in relation to their climate leadership. All

described how having access to and/or having created valuable support networks allowed them

to hone their leadership skills and to develop and implement their initiative(s). This theme is

elaborated by three subthemes: (1) Mentors, (2) Family, and (3) Friends & Peers.

Subtheme 4.1 - Mentors: Most of the participants described having had and/or still

having mentors who support their growth as leaders. Many cited professors and professional

peers in their lives who helped them develop confidence and professionalism in their role

initiating and/or leading a climate initiative. Some told stories of having searched for mentors by

reaching out to people who they saw as kindred spirits. This was the case for GS who told the

story of an innovator in his home community who became his mentor. *"Mr. Renaissance man, as*

we called him, grew up the same way as I did though he is now in his 60s. He dropped the

industrial model and moved to small scale production, and built the solar park in Vulcan,

Alberta and makes a good living. Witnessing his courageous get-up-and-go attitude was super inspiring to me. He took me under his wing and taught me tons; he is definitely a big-time mentor." PS who successfully started an aquaponics food production endeavour said, "*I have what I call a brain trust, it is not formal but I can reach out to about 12 individuals who have all different expertise and I really can depend on them."* TB called himself lucky to have many mentors who made a tremendous difference in his life, recalling *"one of my former bosses was a mentor on many levels. He was the reason I ran as a candidate for the Green Party, if it wasn't for him, I would not be engaged much today. I owe him so much."*

Subtheme 4.2 – Family: The majority of the participants mentioned the value of having a supportive family on whom they could rely whether mentally or in terms of practical help. They often described these relationships as mutually beneficial in relationship to climate awareness. AV, for example, described how his entire family has supported his mushroom project: "*I am a little blessed with my family which is incredibly supportive. My parents and grandparents and my brother help me to make mushroom beds and help me out wherever they can. My grandparents really enjoy the project so they help me out for weekends in a row.*"

Subtheme 4.2 - Friends and peers: Similar to the previous section, participants not only highlighted the importance of a solid network of like-minded peers and friends in supporting their shift to action but also to provide support in their (new) role as a leader or co-leader of a climate initiative. Most mentioned that it was important for them to be able to spend time with like-minded people to recharge their batteries – particularly as their worldviews and climate change work are often challenged in Alberta's conservative political and economic context. AL mentioned that, "*most of my friends are like-minded and are equally engaged in projects that have a social or environmental impact on the world. As we encourage each other, we are*

becoming even better social and environmental stewards." ST also felt supported by her friends and stated "a*ll my friends are very supportive and excited that I am so passionate about my role with Student Energy, so everybody has accepted that this is a priority for me.*" AB added with a smile, *"my partner is proud that I have become such a strong recycling champion and he got even excited about the worm composter in our kitchen after being appalled for the first little while."*

Theme five: Climate leadership

Two other strong themes in the findings related to the participants' success factors in leading or co-leading their climate initiative(s) are the two subthemes: (1) Purpose and (2) Empowering and Inspiring Others. Having a strong purpose was also mentioned by the participants in relation to overcoming setbacks and challenges.

Subtheme 5.1 – Purpose: The analysis suggests that participants' sense of purpose is one of the key drivers for their passion and is something that sustains their climate leadership throughout difficult times and challenges. All participants said that feeling a strong purpose and having a long-term vision in their work helps them to overcome challenges that are partly related to the conservative political context in Alberta and partly to public apathy just generally.

PS, who worked on an innovative food production method, mentioned that what keeps him going is the sense that he and his team might be a big player in a positive shift "we *can have an enormous impact and we can be leaders in it. I want to do it for my country, as well as a global citizen. I consider myself as extremely blessed to do this."* Four of the participants turned their climate action into a social enterprise, two of them were employed in their field of passion and one made it a political career, another participant enrolled in a post-grad environmental law program and two participating students led a group related to energy at their respective

universities (at the time of the interview). PS also mentioned, *"it became clear that my climate action idea could become a business, but not a money suck which is not helping the problem. I knew it had to be a social enterprise, making some money and at the same time also doing a great thing, that just nails it."*

All of the participants mentioned the difficulties of working in Calgary, a city that is driven by the oil and gas industry on which so many people depend financially and, therefore, often see climate action as a threat to their way of life. TB who deliberately moved to Calgary to support elevating the climate discussion had to deal with major setback but seeing a strong purpose in his work helped him to carry on, "*my activism in an oil and gas place when I arrived felt almost like a lost cause. I feel bad saying this but it was not until I started to meet like-minded people that I was able to gain back my momentum and my sense of purpose. But I could say it is very lonely out there in Calgary for people who are moving in the climate action world. So, as a message out there, please come and join the movement.*" Some of the participants struggled with the apathy of their colleagues who are not interested in climate change and would not go out of their way to make a difference. Even though AB is strongly driven by her climate mission, she also described how the defensive attitude of some of her peers who work in the oil and gas industry made it challenging for her "i*t's really hard to make people change when they are so comfortable and their jobs rely on the oil and gas industry.*"

Subtheme 5.2 - Empowering and inspiring others. A key theme in the interview data that arose in relationship to leadership was the empowerment of others. The majority of participants mentioned that their indicator for a successful climate action leadership is the ability to empower and inspire others. Not only because it creates a positive loop but also because empowering and inspiring others is required to trigger an avalanche of actions needed to meet

the Paris targets, namely keeping the global temperature below 2-degrees Celsius by the end of this century. AL, for example, who works with many schools and students, emphasised the importance to his own work in climate change, of empowering and educating children. "*I learned way more about the environment from being out in the community trying to make a difference than in any class room. The kids need to be empowered, but first of all they need the relevant education to sharpen their critical thinking so they can find their own credible sources of information. Providing them with opportunities and resources to make their own change is the best we can do.*" For MH who works with different communities, the center piece of his climate change work is to encourage people to tap into their own climate action leadership potential and lead or co-lead actions. *"Encouraging more engaged and active citizenry helps us building resilience overall as a society and it connects with what people do already in this area such as urban agriculture and lower carbon modes of living."* Inspiration is often reciprocal. GS said that he loves it when his clients feel inspired because that makes him feel he is on the right path "*'I go to the restaurant to deliver 80 pounds of kale and the chef said, 'you are living the dream man, you are doing it', and that feels good.*"

Research Question III: What does transformative action looks like, conceptually and practically, on a local level?

The themes that were identified in response to research question three, describe the transformative, or potentially transformative, characteristics of the participants' climate initiatives. These themes are organized around the (1) Practical, (2) Political and (3) Personal Sphere, referring to the "three spheres of transformation" as outlined by O'Brien & Sygna (2013) and Sharma (2007) and explained in Chapter Three - Theoretical framework.

Theme six: Transformative characteristics

　　All of the participants when asked whether they would consider their climate initiative as transformative, in the sense that their initiative supports a system shift, answered in the affirmative. The common notion of the participants is that their initiatives are small drops in a large sea, but that in these ways are small but important to a larger transformation and encourages them to keep going. Many of the participants indicated that their overarching goal was to build a more informed, conscious, and climate-engaged community-at-large that is eventually able to lead a truly sustainable and climate resilient lifestyle.

　　Subtheme 6.1 – Practical sphere (refers also to climate mitigation and adaptation initiatives, as per chapter 3, theoretical framework): AB, who leads the waste management program at a college, mentioned that her initiative aims to be transformative on two levels, one practical and the other aspirational: *"first, the way we share information with students who are mainly newcomers and encourage them to reduce waste, and second, getting post-secondary institutions together to talk about common goal of sustainability, it's not about competition it's about shared goals."* MH, who works though his Climate Action Network on various initiatives that are led by different groups, similarly described his work as focused on a practical way *"the solar campaign I helped with was very much focused on how we build societies that generate energy in a more distributed way, that provide the benefits of energy distribution to marginalized communities, especially First Nations and communities that have been impacted by resource extraction."* And GS explained that he sees his initiative as transformative in a practical sense because of its focus on local food and educating others in his community about both where food comes from and the importance of local food production: *"it is reconnecting individuals to their food source and that is a huge issue because people don't know where the lettuce seed is coming*

from and how energy intensive the existing food system is. It brings the farm closer to the people

and the people closer to their food so it is exciting as people are seeing the importance of this

connection for the wellbeing of all."

Subtheme 6.2 – Political sphere (refers to system and structure, as per Chapter Three,

theoretical framework): all participants made comments that suggested they are aware they are

living in a time that is and will increasingly be affected by climate change. Further, this was

suggested as a motivator for them to include a strong mobilisation and education component in

their initiatives in order to highlight the interconnectedness of climate change with the way we

consume, make decisions, live and see the world, the larger us, and how to help shifting the

larger system. TB is the most directly connected into the political sphere, as he is on a political

career path and he describes the transformative potential of his initiatives in relationship to the

political structure. TB suggested that he is focused on transformation on a large scale in order to

make substantial changes and have substantial impacts as this quote suggests, "*I would like to*

thread all my learnings of my various involvements together and work on solutions to shift to a

just society and bring these ideas to parliament to make big changes."

Subtheme 6.3 – Personal sphere (referring to individual and collective beliefs, values

and worldviews as per Chapter Three, theoretical framework): The analysis of the interviews

revealed that the process from concern to action has transformed the majority of the participants

personally. Many described this personal transformation in terms of their understanding of their

own role in society. For example, AL described his impact on society, stating, "*it is pretty cool to*

convince people to shift things around and start making a pretty big impact." The ways in which

participants' initiatives transformed other people on a very personal level was also described as

having a positive impact on their own motivation. JS said proudly, "*a young woman from*

Medicine Hat who participated in the summit was triggered to engage more on the issues of energy and water. She eventually became part of the UN youth participation initiative and is now working with them. Without the trigger of this summit she would most likely not have had this chance". ST adds, *"the networks that students can establish at the Student Energy Summits are really impactful. I am just so passionate working with this organisation because it truly transforms so many people."*

Additional themes from other research questions

Two additional themes were identified in the analysis that did not relate directly to the primary research questions but are relevant to the discussion of youth and triggers movement from concern to climate action. These themes were: Grief and Influence on Support Networks.

Grief: Although this theme does not relate to my research questions, it is worth mentioning here because of the growing awareness of the role of climate grief in response to climate apathy and inaction (Clayton et al., 2015; Willox, 2012; Stoknes, 2014, 2015).

All of the participants mentioned that once they became aware of the negative impact of climate change, they experienced a phase of profound concern in their lives. GS described his own experience of grief, *"it is easy as a young person to feel powerless and overwhelmed looking at the size of the problem. Climate depression has been documented; that it is a real thing."* TB who moved intentionally to Calgary to infuse the city with some climate activism said, "*I had moments I was in despair and that's common among activists. When I moved to Calgary, the first year I was here, I was often in this space of despair.*"

Influence on support network: In return the participants are also having a noticeable impact on their family members who are becoming more climate-literate and environmentally conscious regarding their climate footprint. AL's passion is indeed infectious which is positively

affecting his family. "*My family is supportive even though they are not necessarily all environmental stewards. Although, I am having an increasingly positive effect on them because I am just so passionate about the work I am doing.*"

Chapter Six: Phase 2 Findings (Narrative Analysis)

"*People's stories are never just their stories. Stories connect us with the larger stories, with the cultural narratives that shape our shared meanings*". – Wade Clark Roof (1993) –

Each of the three in-depth interviews builds on the themes that arose in the first thematic analysis of the 10 interviews and further deepens and illustrates how different each path is with a range of opportunities, barriers, supporters and questions. The interview protocol is in Appendix B. As a collection, the individual stories provide more profound insight and understanding than any one story (Polkinghorne 1995, Seidmann 1991). So, let their stories be told.

TB's Story of Moving from Climate Concern to Climate Action

In his narrative TB shares the insights, wisdom, ideas and passion that have informed his climate path. Given the multiple climate initiatives he is pursuing, the narrative we co-generated highlights the initiatives in which he is currently most engaged, in addition to his political activities as a member of the Green Party:

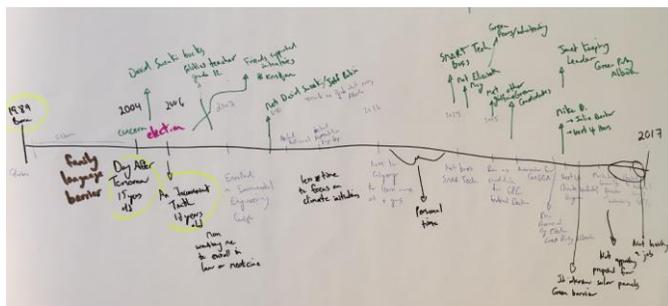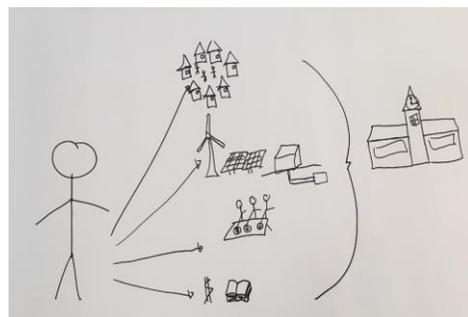Illustration 1: Timeline (TB)   Illustration 2: Rich Picture (TB)

From my earliest childhood memory, I was the one in the family who took care of recycling and really cared about the environment because it just made sense to me. If you look at my story though, you would think that activism runs in my blood but it doesn't. I look back in my family history but it is not there. It is just that I have always been a unique-minded person and always felt that there was something different about me. Since I can remember I was interested in space, gazing at the stars and pondering the universe, which offered fertile ground to explore other big questions.

I was also one of the only Asian people in my community therefore I could identify with people who were different and who were marginalized. Whether it was ethnicity or gender equity, I felt that I could relate to many groups because there were many times in my life where I struggled a lot myself. At a young age there is not much that fazes you, and the alarmist wakeup call of the movie "The Day After Tomorrow" in 2004 was probably something I needed at that time and maybe was something young people in general needed. This was the beginning of my climate awareness and concern which left me as a 15-year-old in a state of alarm and triggered further research on climate change. I recall that I kept telling my parents that if we don't take immediate care of the environment, the real extreme scenarios are going to happen and told them that 20 years down the road there will be much more severe and extreme weather events. When Al Gore's movie "The Inconvenient Truth" was released in 2006, this showed evidence that I was right, and since I had already predicted this, I felt pretty smart ((laughs)). I was also reading David Suzuki's books which were also really impactful as he connected the dots between social justice and environmental issues - he was one of my idols since childhood and I was so fortunate to meet him twice and shake hands with him.

I was in a big high school and was offered a lot of opportunities to get engaged in all sorts of initiatives. I was very active during high school mostly on social issues, but also environmental issues. In Grade 11 or 12, my politics teacher got me really interested in politics, because of the way he taught and because of his broad knowledge. I was therefore keen to learn more and to see how politics could be used to address environmental issues. For me everything was like a chess game. I realized that this is only one aspect of the broader issue and again if it was not for him, I would not have gotten interested in politics.

During that period of time, the federal election was happening which allowed us to look at political issues and systems as part of our curriculum. With surprise, I discovered that no other party than the Green Party was talking about environmental issues which was a major wakeup call for me and I decided to support their program so that more people could become aware of climate change and environmental issues. Even though only few people could relate to my drive, I did not feel isolated as I was so driven and saw purpose in what I was doing. At 15 years old, I felt as though I accomplished a fair bit already - I initiated our school newspaper, started community groups within our high school, was elected to be on the student council twice, and was playing competitive hockey throughout.

When I think of what pushed me from concern to action, the two movies I mentioned really played a big role in pushing me into taking actions. When Al Gore's movie was released, I was 17 which is really an important age because during that time you ponder about the field you want to study at university. So, I decided to enrol in environmental engineering and for the following five years I just dove into the science and technical aspect of things, learning to fix problems and quantifying pollution. I wanted to know the technical aspect and bring that into

politics (my end goal was always to be in politics), and I knew that being an environmental engineer would give me credibility.

　　　Though in undergrad I was discovering myself while being away from home and had to figure out how to be an adult. I studied at a progressive university in the east and was embedded in environmentally conscious surroundings. During my undergrad I continued to be involved and was elected for the student council while representing my engineering department and also involved in other environmental things. I just always felt I need to know what was going on, it was – like – in my DNA.

　　　It may have been in my DNA, but it was not in my family's DNA. My family was disconnected from environmental issues and politics and so were my friends. Though there was one friend in particular throughout my high school years, who was always there for everything I did and was always there to say 'you can do it, you can do it'. Even if he did not agree with everything I said, he was always there working in the background and supported me with all my initiatives. So, we never had major conversations about climate change or anything like that but he was always supporting me to get on stage or getting things organized.

　　　By contrast, before I went into environmental engineering all my Mom wanted was that I become a lawyer or a doctor - those were the only two choices. It was a huge struggle and fight for me to even go into environmental engineering as she kept questioning why I would select a field in which there are not sufficient jobs. Being a star gazer, I always looked into the future and realized that environmental issues were already a cause of major problems and increasingly so, therefore I knew it would be a profession in demand. After a lot of struggle, she eventually let me go into the program, which was not easy. But I now understand that all she wanted was for me to fit in and make "a lot of money".

So, as I said, I am a stargazer and one of my big passions is learning about the universe and I am an avid reader of everything that NASA discovers and releases in relation to space. So, knowing that we are the only living beings to our current knowledge and that we don't address climate issues nor collaborate to tackle the issues is tremendously irrational and really hurtful. Yes, so for me it is a calling as I have the foresight in me and have an understanding or rather knowledge that we need to take major actions. This was the main driver for me to move across the country and leave my family and friends to be here in Calgary. Calgary was the only place I applied for jobs as I wanted to get involved in climate change discussions right here to better understand the issues. My boss at a technology company here in Calgary ran for the Green Party and totally understood where I was coming from, so supported me a great deal.

However, the first two years I was in Calgary it was super tough. After the job with my progressive boss, nothing was really working out from a personal and a professional level. The apartment that my partner and Iwere supposed to move into got flooded in 2013. The landlord at the time found us another place which was run down and sketchy, so that took a huge toll on our relationship which ended shortly afterwards. At around the same time I had a car accident and lost my job - there was just a lot of negative air during that time. So, these first couple of years in Calgary were consumed by me dealing with my own struggles, but much needed as it helped me to grow as a person. Yes, easy to say in hindsight ((laughs)).

In 2014 I was ready to get active with the Green Party and in 2015 I ran as the MP (member of parliament) candidate in Calgary. Just imagine, I definitely could not sustain the fire without the support of Elisabeth May who first ignited my flame to get into politics back in high school. In 2015, I became an ambassador for CanGEA (Canadian Geothermal Energy Association) and looked at policy and political barriers for geothermal. This opportunity was

offered to me because I ran as a candidate for the Green Party – which opened up my network and encouraged other people to help me to move into different directions.

My girlfriend is my biggest supporter; if it wasn't for her, I would not have been able to do any of this. After a few full days of door knocking and having many people say "I don't want to talk to you", she kept saying if this is really what you want and if your end-goal is to be in parliament, especially for the Green Party, you have to work your ass off. To this day she still keeps saying, 'go network, remain involved.'

Then in 2016, I enrolled in the 'Next Up' leadership program here in Calgary. They taught us all about the different climate change and social justice issues and gave us the tools to run climate leadership initiatives. The network and friendships I gained through this program were super important. You need to know your allies in Alberta. This is huge even though it is a very small network. The 'Next Up' program motivated me to get more involved with my community and shortly after I completed the program, I became the sustainability director for my community association. We, as a team, were able to have the community association endorse the UN's sustainable development goals, which was a major move for us. It has now been a couple of years and I try to delegate as much as possible to empower the team.

But there have been barriers…the most recent barrier is not having paid work. So that prevents me from fully working on the various projects as I have to keep applying for jobs. And it really messes with your emotions. You go through ups and downs, you are feeling depressed and feeling you are not worth anything. The fact that I am running for the Green Party is also a barrier for finding a job, it came up in a couple of interviews and they voiced concern.

That said, I am committed to being involved in politics because I believe that the best way to fight for climate action is to vote. I tell them all, be an informed voter, learn who your

MP is, what they stand for what their platform is. To vote is the most powerful thing you can do for the climate. Unfortunately, we have to play by the rules, until we fix them, and we can only really fix them on the governmental level. A lot of people also have reached out to me because of my community association work and seek advice on how to get involved. This is exactly what I wanted to see, people who actually want to take action, do something. I give them opportunities to get engaged such as writing newspaper article or to help run programs and connect them with other climate activists.

Transformation happens because somebody is willing to stand up to take the first step and when people see that climate change affects people that are marginalized more than people who have money and privilege to adapt. We need a narrative that touches people. As with any change, you first have to understand where people come from to be able to relate on a personal level to have more open discussions and then tackle the issues that they were first not able or willing to discuss. It worked with my community association, therefore this can work anywhere. I realized, even if I don't do anything, just being there, being present, they are thinking how they can reduce their footprint. The community and the board start shifting and getting into great initiatives which is again influencing the community members, and from there it influences other people and eventually how they vote. That's why it is so important to be part of a community association. It seems there is a thirst to collaborate. The more people start to buy in, the more they are open to hearing different opinions and the more there is demand for accountability and eventually the transformation is in motion. People start seeing that climate change is also a social issue which helps people to start caring about it more. It is mostly the social, the person link, that is getting people to shift, not necessarily the technical aspects of it. If you want to induce change

you have to know where the community is at on this topic before you are trying to engage with them.

ST's Story of Moving from Climate Concern to Climate Action

ST's narrative reflects the emphasis she placed on how growing up in a vast and pristine natural environment resulted for her in a strong sense of caring about and bonding with nature. Throughout her interview, ST described how this sense of caring for and bonds with nature has driven her decisions as a strong champion for climate change action and personal wellbeing:

Illustration 3: Timeline by ST
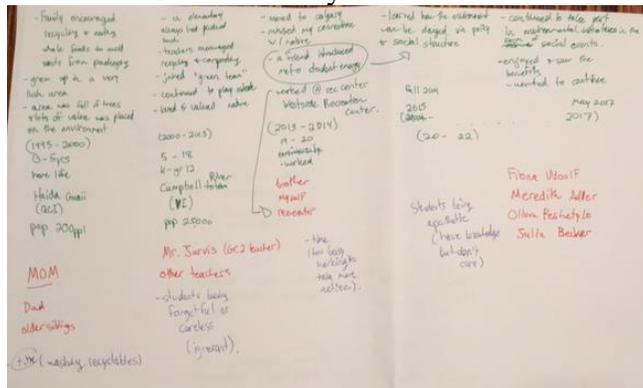
Illustration 4: Picture by ST
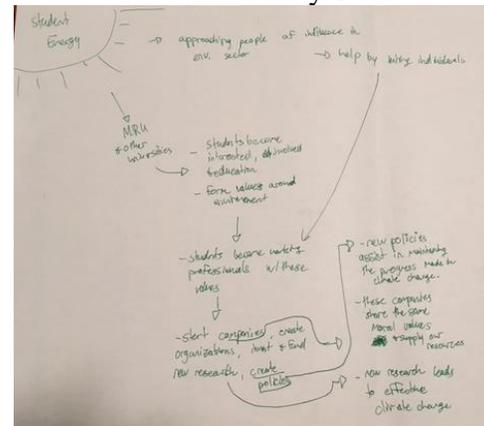
When I was three months old, we moved to Haida Gwaii on a little island with 200 people as my dad, who is a logger, got a job there. The people there were involved in logging, fishing and a few in farming. and therefore greatly valued the health of their natural environment. We were taught that in order to have a good life and enjoy the gifts of the earth, we must take care of nature by graciously accepting and replenishing what the earth has given us. We learned that "healthy" food does not come in packages, and that food should be used as fuel for physical activities and perhaps to celebrate a special event. This way of thinking was initiated by my mom from the moment I was born. She was concerned about our family's health so most

of our entertainment as a kid was coming from being outside, not watching TV. She was also conscientious about the value of a well-functioning community and saw how the environment played a role in that. Beside growing up with Christian stories, I also grew up with First Nation stories, which must have informed my inclusive world view and my respect for the land, water and air. My mom was always taking care of the environment. I would say she is a little bit of a hippy; she grew up in the 60s so she loved Mother Earth, being at one and in peace with everything ((laughs)). We did a lot of gardening and composting, cooking and baking, doing what we would to nurture ourselves and the environment simultaneously. My mom just liked this older kind of living. My dad was also an environmental champion, opposed clear cutting and stood up to his management when he disagreed with how things were being run.

We moved to Campbell River when I was five years old which seemed like a big city to me given the population of around 30,000 people at that time. I was really missing my 200-person village,however, we lived a bit outside of town and had a big vegetable garden and grew fruit. I had a fantastic elementary school teacher who had this perfect balance of letting us be kids, but also educating us and setting boundaries. He was also courageous as he would stand up to school management when he disagreed. We looked at him as this magical man who sang, played the ukulele, and literally builttreehouses in our classroom. He instilled a love of life in me, which was enriched by blessings and giving thanks to the earth. Also, in the higher grades, the teachers there explored the implications for the environment that humans caused, so we had recycling programs, composting lessons and he explained why we should not throw food into the trash. There was a lot of public awareness and I came to understand that environmental behavior has to become a social norm for us to see any major changes. For the longest time, I thought if you littered something bad would happen. I equated littering with something evil and I still kind

of think like that. It's like somebody is stealing something; it is that bad and still is. It is just so wrong!

In 2013, I moved to Calgary to study at university, which was another major shift given that I was away from my family for the first time and I had to adjust to a big city life. For the first year in Calgary, I just worked and lived downtown as I had a lot of growing up to do. I tremendously missed nature, that was the toughest part.

I started my Environmental Science studies in fall 2014 and got almost immediately involved with Student Energy (SE) at the University of Calgary as the result of a friendship built on a shared gluten intolerance. At that time, Student Energy was in its grassroots and she needed a second person to help her revitalize the group. It resonated immediately as I value the importance of fostering strong communities, which is what Student Energy is all about – creating networks for young professionals so they may collaboratively find ways to minimize our impact on the environment and to share ideas with a broader public. This was such a great opportunity and very far out of my comfort zone, but I wanted to grow and, in particular, learn how to market and advertise concepts, as well as how to establish solid networks. In short, to become a professional climate leader. I also wanted to learn how to engage people to become emotionally invested in climate action.

Students who were inspired by Student Energy go out into the world to make a tangible difference, like working on important climate policies that may lead into laws, or they invent some energy reduction measurement. All these student-triggered shifts make a real difference – from reducing our carbon footprint to changing the way we approach climate change. Those individuals may have found their way by themselves but it might have taken a longer time without the support of Student Energy. Student Energy is also a really great vessel to help people

like me; I am unlikely to invent anything but the organisation helps to foster the passion of

people who are interested in transforming the way we use energy, and the way we live. We love

innovative ideas and we know that's the way of the future. So, when people grow out of Student

Energy and move on into the world, they are likely to stay connected with the organisation either

as alumni and some as active mentors for the Student Energy members. And of course, we hope

that they hold on the values Student Energy has instilled in them. This all helps to building a

larger community of change makers who are capable to be a part of the lager social

transformation that is necessary.

Actually, at the beginning I was unprepared to lead the Student Energy chapter but,

thanks to the incredible support, I grew into the position and, to be honest, I enjoyed working

with Student Energy much more than school. At the International Student Energy Summit, I met

such high-calibre people with such gravitas. They left a profound impression on me and inspired

me to put myself out there and to actively research, learn, implement, and grow with the overall

goal of following my passion.

To be involved in climate change makes me feel hopeful because I don't really see an

alternative. I am also kind of thinking, well, if I am doing everything I can, then this is enough,

because that is all I can do even if it looks insufficient. Caring and taking an active role has been

ingrained for so long, it makes me feel good. My relationship with the environment is like with a

friend – I support any of my friends going through a hard time, so I do the same for the

environment. As I was with Student Energy, I was obviously with some like-minded people and

talking with them helped me to sustain my engagement. Sometimes it is difficult to deal with

people that don't care. So, I just became apathetic to their apathy and I tell them, I know you

don't care and I don't care about your not-caring because I care. Being playful about it helps me

and it is a good tactic to keep it light. The apathy of people just gets worse the more stressed out

society becomes. That's one of the ways in which the whole "self care" movement may help,

people are more likely to assist others and put energy into their surrounding environment if they

have been taking care of themselves.

GS's Story of Moving from Climate Concern to Climate Action

GS's zest and passion to finding new ways to produce local food and reducing GHG

emissions is infectious. For the first interview, I met him at the University of Calgary and then

later on at the Simon Fraser University in Vancouver where he had even more rich stories to

share.

Illustration 5: Timeline by GS

Illustration 6: Picture by GS

I grew up on an industrial farm with 5,000 acres of barley, wheat, rye and canola and the traditional Southern Alberta crop mix which is an energy and land intensive practice and clearly has a huge carbon footprint and I became intimately aware of its environmental harm. I first and foremost am and was always environmentalleaning therefore I was never as involved with the farm as my brother was but was always passionate about small-scale farming.

It was at high school – junior high – where we discussed the Kyoto Protocol (1997), its purpose and implication. I recognized this is going to be a massive problem to solve and a defining issue for me growing up and especially for people my age. This understanding has always been sort of driven by an existential anxiety; growing up in a farming family I know how precarious things can get if your livelihood is totally dependent on weather. Learning that we are altering the climate patterns, I think that was when I began to think about the changing climate conditions and the consequences such as drought and extreme weather events. The high school teacher also discussed with us during an environmental studies class what small things we can do. They were minor actions, but a lot of the school kids took away a lot from what this one teacher was trying to convey – which was that you have to take care of the environment.

I worked with an incredible person in our community for a few years in his greenhouse; he was called the 'Renaissance Man'. In this sea of people earning money and growing canola over large areas of land, he had his small farm growing native grasses in solar-powered greenhouses, doing very well for himself financially and employing about 10 people. He built a business based on sustainable practices. He was a true innovator and I was so impressed by what he did. He could have easily gone down the conventional farming path but he didn't, and, because of this, he achieved something very unique and impactful. Getting exposed to different ideas was, and still is, the most critical part. He exposed me to what's possible locally, and for

me it was logical to apply sustainable practices because I saw that generations after me will not

be able to farm if we don't change. It was critical for me to see what is possible, seeing it applied

and how people are able to thrive with a less energy intensive lifestyle. The passion for the land

and sustainable food production was running in my veins and having grown up surrounded by

farming in Southern Alberta, I had a much clearer idea what needs to get done to become truly

sustainable and connected to the land.

I moved to Calgary to study Geography, and not long into my studies in 2014, I took the

opportunity to study one semester at the University of Oslo in the geoscience department. That

year a major climate march took place in Oslo with thousands of attendees, mostly average

people standing with the groups of scientists on stage, who were waiving their fists calling for

more drastic actions; it was such an amazing demonstration of solidarity. I was standing in the

crowd with thousands of people also concerned about climate change. It was not just a fringe set

of people that are deeply concerned, and Norway is in a similar situation as Alberta (Canada) in

terms of natural resources. Both are blessed with rich oil and gas reserves, but struggle with the

challenge to transition away from them. So, it was great to see that kind of activism in Oslo and

helped me envision it back in Alberta. It was an important experience for me to witness these

people who understand the climate risks we are exposing ourselves to and are speaking up and

demanding more actions. The march was a pretty big defining moment and later on that night we

went to the Nobel Laureate Museum, where the Intergovernmental Panel on Climate Change

(IPCC) was awarded with the Nobel Peace Prize in 2007 for its work on climate change, together

with former US Vice-President Al Gore. Some people distributed little books at the event, sort of

little pocket guides about climate change, and on the back cover it was written 'not sold in

Canada', and that really hit me. I spent time working up in Fort McMurray, and I know the

extent of the impacts of our carbon intense society, so it was not surprising to see the restriction. In Oslo we had major public discussions what a low-carbon future would look like and so that was really eye-opening.

I think I always seek out the people I need. It is very important as a young person to see that there are always opportunities for some sort of mentorship and if you can pick the brain of a person you trust you really get something from it. People like to help other people and they are going to expose you to a whole lot of interconnections with other people and new ideas.

As mentioned, my experience in Oslo inspired me tremendously, so I brought the idea for a bike-share program back home. I realized over there that having a low impact lifestyle doesn't decrease our quality of life. On the contrary, people are healthier and much happier. For me the key question was how can we, in a capitalist society, abate GHG emissions, compete and make money but doing it in a way that is less harmful. So, this first climate initiative was just a small experiment, low carbon entrepreneurship I guess, though it takes time and you need to be persistent. The bike program succeeded and is still successful even though I passed it on to other people when I left university. In 2016 I became involved with urban farming with Rod Olson of Leaf and Lyre and YYC growers, which turned into a research project at the University of Calgary. This research focused on trying to quantify and analyze the potential for urban food production, which is critical for moving towards low-carbon methods of growing food. This culminated in the concept of Climate Smart Food, which is food that is deliberately produced and consumed because of its associated low-carbon footprint.

In the winter of 2016/17, I spent a month in Malaysia and Borneo. That was the first time I saw so much ecological destruction. Even compared to the oil sands, this was on another scale. We drove across the whole island on a motorbike, 80% of the island, approximately 1600 km^2

were covered by palm oil plantations, and only in-between were these small pockets of pure

abundant rainforest with orangutan and a tremendous biodiversity. It just hit me how big of a

problem this is. Honestly, I was in despair and felt pretty hopeless after that trip. When you see it

on a scale like that you ask yourself whether the small actions you are doing have any impact.

But, at the same time, you see that it is driven by people trying to earn a living and aiming to join

the ranks of the middle class – so who are we to judge? Their environment allows them to grow

the palm oil that is used for the cosmetics and foods we also use. This is a massive, massive

global problem. And when I think of my small-scale research, to quantify how many grams of

carbon I am trying to sequester in a garden – grams!!! So, this experience in Borneo was clearly

a trigger for me to work on climate smart agriculture. Once I finished the research projects I had

on the go, I became increasingly interested with what agriculture can do to reduce emissions

related to food production and transportation. That's how I came across climate smart agriculture

and the encompassing views of it. Before I started working in 2017 with a Vancouver-based

company that offers climate smart solutions, I worked for a few months as the horticultural

advisor in Laos on a climate smart village project, driven by the Laos Government and supported

by the Canadian Government through Cuso International.

       The climate smart agriculture firm I am working with now aims to come up with

solutions to disease and insect pressure though sustainable practices that can be implemented

globally - but this is only one small solution. Finding a more robust model could change the way

we produce and consume food. It is very important that we think beyond just how food is

produced, otherwise the most efficient will always win, no matter at what cost to the larger

society. To me, we need to find ways to descale our economic system that has become so

tremendously hyperbolic - there is nothing wrong with the simple lifestyle. We think our

solutions to lowering emissions are a panacea of transformative technology but it could be something so simple. Understanding the existing system and its flaws is a critical first step to address the root causes. In the case of agricultural systems, the issues have become so intertwined with our daily lives that one not single solution leads to transformation. Diet and health will trigger the biggest transformation. The benefit for pursuing a transformation with this makes us healthier. I think a huge part of our current diet has led to high emissions of greenhouse gases - a high beef diet, we know is not good for us or the planet. People are thinking more critically about the food choices and, in downtown Vancouver, there are lots of options for people to fulfil their choices.

To feed nine billion by 2050 is definitely the biggest challenge humanity will have to face, and to face it in a changing climate is a daunting task. We need to reduce the impacts and resources we are using to produce food, which is a huge challenge for water, fertilizer inputs and machinery costs. These are the issues we want to solve piece by piece. We cannot breed plants fast enough that are able to adapt to a changing climate. By 2050 in most places in the world the seeds stock that people have is not going to be suitable to the climate we have then, it is changing too fast. Enhancing the germplasm of agricultural plants takes a long time, so we need as many solutions as possible.

Synthesis

With their differences and similarities, these stories suggest that the pathway from being a concerned observer to become an informed actor and leader of a climate change initiative is similar to the findings in Buttigieg & Pace's (2013) work on the pro-environmental behavior. Buttigieg & Pace also claim that these shifts are triggered by a complex web of events and actions that enable these shifts. My analysis reveals a strong passion and perseverance among

these young people that enables them to take part in the shaping of a low carbon and climate resilient future. Each participant was able to develop a solid understanding of the complex interconnections between the environmental, social, economic and political factors that are at play which encouraged them to act on climate change rather than going down the path of ignorance and denial. In addition to the first set of 10 interviews which informed the thematic analysis, the chronological narratives allowed a more nuanced understanding of the triggers that led the participants from climate concern to taking climate actions. Their stories also illustrate how their climate initiative has a direct or indirect transformative impact on a practical, political and personal level, referring to the three spheres of transformation. As previously stated, the thematic and narrative analysis of this small set of descriptive samples cannot be regarded as representative, however they offer a picture of the engagement of young people in climate actions. The thematic analysis results specify that:

1. Care for the environment was mostly instilled at an early age by parents, caregivers and/ or peers, enabling the participants to create a strong bond with the natural environment

2. Teachers were critical to educate on climate change and to foster interest and passion to get engaged

3. Social justice awareness is a driver for climate action

4. Feeling a strong purpose in their work (leading or co-leading a climate initiatives) helps the participants to deal with climate grief and to overcome the sense of hopelessness and paralysation

5. Young people have an incredible capacity and resilience to understand and deal with complexities, and to lead climate initiatives tackling some of these issues

6. Curious minds will find their own teachers; they do, however, need to be nurtured, challenged, and exposed to new ideas and worldviews

7. Mentors are critical to expand the horizons of young people and entrust them with the confidence to be capable champions for transformative climate change actions

8. Young people need to be given space and be supported to develop their climate leadership skills, and

9. Young people see the need for transformative climate actions in order to change existing social, economic and political systems that are the root cause of our climate crisis.

The next chapter will discuss the implications of these findings in more detail for the field of youth engagement to enable young people to shift from a place of concern to informed climate change agents.

Chapter Seven: Discussion

"Climate change does not allow us to continue with business as usual. It demands deep-seated, innovative, and world-changing ideas that engage with social, the technological and the economic spheres of our carbon-intensive lifestyles." Elshof (2011)

Young people play a critical role in transforming systems for a livable climate-altered future and, as this quote suggests, the need for them to be able to innovate and adapt in order to thrive in the Anthropocene. The research outlined in this thesis reflects not only my interests as a professional who led a municipality's climate change adaptation plan but also as an academic and concerned citizen who aims to understand how young people can be supported and motivated to get engaged in a task that is colossal. The future of life on earth as we know it is at

stake and "if it is life we want" (Moser, 2017) we need to make fundamental or rather transformative changes. I trust in human potential and believe every colossal task starts with a small step, and therefore needs to focus on the local, the particular, the individual. However, we need to deliberately support and enable young people in particular to become bold in initiating and leading transformative climate change actions.

Reflection on the findings

The findings from both this study (thematic and narrative analysis) evidence the complex factors at play that enable young people to shift from a place of climate change concern to informed agents of change with the aim of transforming aspects of the larger social, environmental, economic and political systems within which the actions they lead or co-lead occur. In the following section, I organize my discussion of the findings around the three research questions guiding this study, namely: 1) What personal, social, political, economic and structural factors motivate and enable young people moving from climate change concern to initiating climate action?; 2) What are the personal and external (i.e., mentors, support networks, resources) success factors and challenges for climate action leadership among young people?; and 3) What does transformative action look like, conceptually and practically, on a local level?

What personal, social, political, economic and structural factors motivate and enable young people moving from climate change concern to initiating climate action?

The findings in this study strongly support the existing literature on the role of parents, caregivers, teachers and peers on the development of an attitude of caring for the environment later in life (Damerell, Howe, & Milner-Gulland 2013; Davis J. 2009; Engdahl, I., 2015). This literature suggests that significant others play a critical role in influencing the development of a positive relationship with the natural environment at an early age that translates to caring for the

environment later in life. This literature argues that early exposure and support promotes

environmentally sustainable behaviours throughout a person's life (Hirsh, 2016; Lirsch, 2015;

Thomas, & Thomson, 2004).

Parents. For the majority of the participants in this study, care for the environment was

instilled at an early age and contributed to the participants creating strong bonds with the natural

environment. They recalled happy memories of family camping, hiking trips, outdoor playtime

while growing up. Also, activities such as gardening with their parents, and learning about the

importance of healthy soil, clean water and air to the production of wholesome, fresh food. One

participant was encouraged by his parents to join with them in helping out with community

social and environmental justice gatherings. He described feeling proud that they were always

the first to arrive and the last to leave.

Parents who live an environmentally conscious lifestyle and who can provide access to

the natural environment, encourage their children to follow suit and pass on a worldview that is

favorable to environmental and climate awareness (Lauterbach, 2016; Moore, 2015). Francis

(1988) claimed that children who can play in unstructured natural settings develop a strong

connection to nature and the world around them as well as the capacity to collaborate. Although

there is no single factor that can explain why people shift from awareness to displaying pro-

environmental behaviour (Kollmuss, 2002), the participants' stories suggest that their upbringing

instilled not only awareness but also an elevated notion of responsibility and care for the natural

environment. Evident, for example, in the two participants' stories about how trashing the

environment felt so wrong and feeling compelled to collect garbage in the school yard as

children and occasionally still as adults. All participants mentioned how much they enjoy the

outdoors with their friends and peers. They also described how they associate such environments

with replenishment, reflection and comfort and, as a result, they are keen to protect what they love.

As more people and young people grow up in predominantly urban environments with limited – if any – access to the natural environment, these findings suggest the need to intentionally embed time in nature in extra curricula and family activities. Even if it is "only" playing in an urban park, this contact with nature is required if a society is to cultivate a deeper sense of connection and care for the environment. People who don't have a relationship with nature, are less likely to value or aim to protect it (Louv, 2005). Children today spend less time outdoors than any generation in history, and a regular engagement with nature where they feel a sense of belonging that is free of perceived dangers is regarded as a privilege. The same survey indicates that less than 1/3 of adults in the United States (US) claim to be very satisfied with the outdoor places that were available and/or accessible to them in which their children can play (Case et al., 2017). Similar results were found in a British study by Natural England (Hunt et al., 2016) illustrated by the Time Magazine headline: "UK kids spend less time outside than prisoner inmates" (Rhodan, 2016). This concerning trend is perhaps why environmental organisations such as the David Suzuki Foundation, Sierra Club, World Wildlife Fund and other smaller organisations are funding public education campaigns to encourage caregivers to enjoy the outdoors with their children.

Teachers. The literature on the role of the teachers in influencing children's values and behaviours is vast, and Alcott (2017) shows that students who feel encouraged by their teachers are far more likely to continue their education beyond the age of 16. The teacher/student relationship and support can be a powerful motivator (Davis, 2003; Henry & Thorsen, 2018; Korthagen, Attema-Noordewier, & Zwart, 2014; Roorda, 2011) for students to learn better, faster

and take more initiative to explore new subjects (Koca, 2016; Pitzer & Skinner, 2017). The

narratives of the participants confirm the critical influence of teachers on their motivation to

learn about the environment, how it interconnects with society and the impact of climate change

locally and globally. In many of their stories, they described how teachers instilled a sense of

caring for the environment, fostered curiosity and encouraged climate engagement outside the

class room.

Public figures. The role of public figures in building climate awareness and challenging

worldviews has also been shown to be significant. Myers et al. (2017) researched Americans'

perception of climate change before and after the release of Pope Francis' climate change

encyclical, Laudato Si (including his visit to the US) to assess the impact of the Pope's message.

The research evidence shows that people's motivation to act on climate change was positively

influenced in ways that increased and strengthened their belief in and attitudes about climate

change. Myers *et al* suggest this is because the Pope's messages enabled people to connect

climate change action to their values and sense of moral responsibility.

Half of my study participants referred specifically to the influence of Al Gore's movie

'An Inconvenient Truth' (2006), and the positive effect it had on their awareness of climate

change and the need for climate action. Beattie, Sale, & Mcguire (2011) concluded that Al

Gore's movie had a disconcerting effect on viewers that resulted in them feeling more motivated

to take action on climate change. In addition, after watching the film the participants in Beattie *et*

al's study expressed optimism that their actions would have a positive impact and described not

feeling powerless in spite of the overwhelming complexity of the climate change issue. Nisbet

(2014) studied how prominent public intellectuals shape the political public discourse, and

recognises a need for more media and public forums that offer critical reflection and space for

dissenting opinions. He suggests that discussions of climate change by public figures currently tend to polarize leaving the public to chose between competing perspectives. As a result, a set of different voices and viewpoints are left out which weakens the public's ability to understand the complexity of climate change for society at large. However, my research implies that trusted people, including trusted public figures, increase activism behaviour in (young) people if a connection of support and shared values form the basis of the sustained climate messages that move their minds and hearts. Evident through the chronological narratives, the participants then evolved in their understanding and capability to critically analyse viewpoints from different sources and translate their sensemaking into action.

Social Justice. The majority of the participants were also triggered to take climate action by witnessing and/or coming to an understanding of how climate change impacts were connected to and often exacerbated social injustice. This finding is supported by Fisher (2016) and Stapleton (2018) who highlight how understanding the interconnections between environmental and social justice helps young people make sense of climate change and is often the reason they commit to climate change activism. This relationship was especially evident in the narrative inquiry where all three participants mentioned seeing climate change as a driver of social vulnerabilities and inequalities. This finding implies that discussion of values and social justice is a critical part of climate change education with young people. Highlighting this is essential for students to better understand the seriousness of the climate change threat and how it can exacerbate existing inequalities and impact all levels of society.

Another important factor in the shift from climate concern to action of the participants can be described as resilience. Resilience here is defined as the process of responding and adapting well to challenges, setbacks and even crises (APA, 2018). There is still a limited

understanding why certain people are more resilient than others and are able to cope with

adverse events or with great difficulties in their lives (Vitelli, 2018); however, the resilience

portfolio model by Grych (2014) frames individual resilience as relying on three primary

components: self-regulation, interpersonal relationship and meaning making. The findings

suggest that the participants have a resilience orientation. Their stories and comments highlight a

capacity to understand the gravity of climate change and its impacts while not becoming

overwhelmed by this awareness. In other words, they understand how challenging climate

change is but remain able to orient themselves towards a hope for change. This hopeful

orientation has been found to be an important psychological basis for fostering climate action

and requires to be nurtured in young people to draw the connection local action and significant

global outcomes (Li & Monroe, 2017). Another way of describing this resilience orientation is

what Duckworth (2016) describes as 'grit', defined as "perseverance and passion for long-term

goals" (p. 2). In most cases, the participants described pursuing and maintaining their initiatives,

regardless of whether they engaged in the initiative for their livelihood or on a volunteer basis,

and pursuing these initiatives with determination despite the obstacles and adversities they

encountered.

What are the personal and external (i.e., mentors, support networks, resources)

success factors and challenges for climate action leadership among young people?

There are many intersecting factors that influence climate action leadership among young

people. The findings illuminate that mentors were critical to supporting and expanding the

horizons of the participants. To be given space to experiment and, at the same time, be given

support to develop their leadership skills was critical for all of the participants. Martinek,

Schilling, & Hellison (2006) make the case that compassionate and caring leadership skills can

indeed be fostered among any young person which enables them to become strong leaders. Their

study exemplifies that groups of adolescents in both a low-income and minority program were

able to transform from self-serving participants to taking an active responsible leadership role.

Similar Carter, Grace, & Miller (2016) emphasise in the CERES report that with the relevant

kind of learning "any young person can become a highly influential and impactful leader" (p 3).

Contemporary literature on leadership agrees that leadership is a skill that can be learned and that

certain traits can support a successful leadership such as an inherently charismatic and caring

personality and strategic abilities (Allen, Shankman, & Miguel, 2012, Crosby, 2017; Kotter &

Rathgeber, 2006; Kouzes & Posner, 2007; Parks & Bennis, 2005).

The chronological narratives highlight how the three participants' personal orientations,

their sense of purpose and perseverance, have driven and continue to drive their commitment to

climate action despite encountering difficulties and experiencing self-doubt. The entrepreneurial

spirit, which Ehrlichman (2017) defines as being a) in tune with own passion, b) continuous

questioning how things can be improved, c) optimistic in nature, d) able to take calculated risks,

and e) translating ideas into actions. These are traits that are evident in all participants who are

driven by passion and perseverance, and as mentioned in the thematic analysis, the sense of

purpose is a key driver. In order to remain engaged in climate change leadership, it is critical for

young people to feel a sense of agency and that they have mechanisms in place to foster an

optimistic orientation, despite personal setbacks and insufficient climate action on a

governmental level (Stevenson & Peterson, 2015; Thew, 2018). The skills and personal traits

associated with entrepreneurialism are evident in most of the participants' stories. This

entrepreneurial approach was especially evident among the four young people who had

developed a small social enterprise out of their climate change initiative.

In addition to these internal or personal factors, it became clear from these three narratives, that having mentors in their lives who believed that they were able do something meaningful and opened up new horizons for them, was also a critical factor in these young people's climate action leadership. The role of mentors surfaced as a strong theme in the initial interviews and was elaborated in more detail in all three of the chronological stories. The young people framed these mentors as kindred spirits who were therefore able to connect with them at the level of both a heart and mind. The literature confirms that successful mentor/mentee relationships are characterized by personal connection, shared values, mutual respect and expressions of clear expectations (Mains & MacLean, 2017; Straus, Johnson, Marquez, & Feldman, 2013). Positive mentoring, defined as the opportunity for a learning relationship Brewer (2016), seems to resonate with the mentor experiences of the participants. Brewer argues that the mentor/mentee rapport is about the openness of the relationship that the mentee experiences through acceptance and reassurance by the mentor. This may include a critical dimension; however, this is guided by a personal and intellectual connection and always on the basis of shared learning.

Although these participants did not encounter difficulties in accessing mentors and supporters, less outgoing individuals might find it more difficult. The finding that mentors played such a critical role in participants' journey to climate action suggests that it may be valuable to more systematically match mentors with young people in order to develop climate change awareness and spark action. This could involve, for example, a mentor/mentee matchmaker platform that specifically matches young climate advocates with more senior climate champions. There are a number of e-mentoring platforms available for young professionals, students and women such as MentorCity, iCouldBe, Mogul etc. There are also

climate-oriented platforms such as Climate Guides, an initiative led out of Vancouver that offers

a four-month mentorship program for youth who have a project idea to address climate change.

The EIT Climate-KIC is a European knowledge and innovation community that aims to

accelerate the transition to a zero-carbon economy and offers a variety of engagement

possibilities and network opportunities for young people. However, a climate mentor/mentee

platform for young people seeking guidance on their path but yet unclear about a specific

initiative was not identified at the time this research paper was submitted.

What does transformative action look like, conceptually and practically, on a local level?

The three in-depth narrative explorations illuminate how the young people interviewed

for this study saw the need for transformative climate action in order to change existing social,

economic and political systems that are at the root of the climate crisis. In each case, the

narrative inquiry deepened the conversation about their projects and their leadership role, and

also the question of transformation. Participants described how their climate action(s) is/are

contributing to the transformation of systems and shared their thoughts about the barriers they

have encountered in relation to achieving transformational outcomes. It is noteworthy that all

three participants started with episodic (individual small actions without awareness of the larger

context) climate actions and then moved gradually into more transformative climate actions (e.g.,

of agricultural systems, climate policy and politics and personal transformation), linking this

shift to their personal progression in understanding themselves and interconnections with the

world around them. Although what is considered transformative can be debated, Rickards &

Howden (2012) support the notion that small individual actions may trigger change and

emphasise that these small actions may reach a threshold beyond which they can collectively be viewed as transformative.

Their keenness to expose themselves to different cultures, social realities and worldviews also highlights the ways in which these young people demonstrate their readiness and capacity for deep personal change that reshapes values and aspirations and for developing a vision for a climate-altered future (Skamp, 2011). Referring again to the "three spheres of transformation" outlined by O'Brien & Sygna (2013) and Sharma (2007), this change is in the personal sphere where transformation of beliefs, values and worldviews occur. For some participants, this is experienced as a gradual transformation and, for others, a more drastic one resulting from confrontation with situations and causing a radical shift of values and worldviews. As outlined in the thematic analysis, participants operated through their climate initiative in the practical as well as political and personal sphere.

In the three narratives, all the participants talked about the need to change social norms to support a transformative rather than an incremental shift and thus to make important strides to mitigate climate change. These findings are supported by other researchers who suggest that transformation is part of a cultural shift that needs to be both personal and external, in the fundamental values, relationships and processes which form the foundation of our individual and collective worldview (Fazey *et al*, 2018; Pelling, 2010; Vaughter, 2016).

Study Limitations

A key limitation of this study is replicability. The research takes place in a particular setting with unique people that have a certain point of view at a certain point in time and that is likely to shift over time, making it difficult to replicate (Wiersma, 2000). Even though this study will not be generalizable in the probabilistic sense, some of the findings may indicate tendencies

and may be transferable with caution (Marshall & Rossman, 2016). As with any research, the

current study reflects the limitations and constraints of the selected methodology and/or methods.

In addition, as the sole researcher, the study is or may be limited by my specific interview style,

my selection of questions and my interpretation of the findings. To counter some of this

potential, my thesis supervisor reviewed my initial analyses and supervised the process to ensure

that I applied the required rigor.

In the section 'participant recruitment' in Chapter 3, I outlined the difficulty I

experienced recruiting woman and non-Caucasian participants for this study. It is important to

highlight the following limitations related to this lack of gender and ethnic diversity among the

participants. I was particularly surprised by the difficulties of recruiting women as I saw in my

own milieu that more women were engaged in climate change and environmental issues than

men. Once I noticed this, I asked participants I had already recruited and also enquired into this

with a group of young people at the 'Community Connection 2017' event in Calgary to help me

understand the absence of women and non-Caucasian participants. The summarized feedback I

received from young individuals in Calgary is a) Calgary is not yet a fertile ground for climate

activism/actions as a large percentage of people profit or rather have profited from the oil and

gas industry. In the current downturn, climate activism is also seen as a betrayal by some; b)

climate activism has partially to do with financial privilege and education. Many young people

in the study's target age group (18 – 29) who are from minority groups may not get the support

of their families to spend their time on climate action as minority groups have the tendency to

want to fit in and be seen as financially successful. Some may have to work at a young age to

support their own studies and/or family members; and being involved in climate work is often

linked to voluntary work; c) the culture in Calgary is still strongly male-dominated and skews

towards the cultivation of male leadership. As a consequence, young women lack opportunities

for leadership roles, role models and female mentors, d) climate leadership, especially if it is

supposed provide a livelihood, is attached to high-risk entrepreneurship and therefore requires

preferably a position of financial freedom.

Covering all aspects related to young people and their climate change concern to action

path as well as their personal transformation and the transformation they intend to achieve

through their climate initiative is beyond the scope of this study. Given the limitation of

resources, it was also not feasible to interview the people involved in the climate initiatives led

by the participants to measure the real-world impact of their initiatives. Some of these limitations

could be addressed through future research with different groups and in different context to

identify trends. The following chapter will provide recommendation for future research.

Chapter Eight: Recommendation and Conclusion

Recommendation for Future Research

The findings from this study contribute to the increasing body of research about what

supports and enables the shift from climate concern to action among young people. From the

literature reviewed for this study, it is evident that more research is needed to understand the

social, political, economic and structural factors that motivate and enable young people to lead or

co-lead climate initiatives, and what factors might sustain such engagement. As I designed this

study, some of the themes that repeatedly surfaced from the literature included the role of

gender, grief and the influence on social networks. The findings from this study mirror some of

the key themes identified in the literature such as triggers that shift young people from concern to

action, youth engagement and transformative climate action. The narratives and responses of

youth participants in this study deepen our understanding of the factors that spark and support the shift from young people's climate awareness and concern to action: instill care for the environment; the importance of education, teachers and mentors to foster interest and zest for climate action; the importance of social justice awareness which can be a driver for climate action; young people's capacity and resilience to deal with complex issues such as climate change; their understanding of the need for transformative climate action; and the suggestion of several recommendations for research and practice.

Climate leadership among young women and non-Caucasian young people: The underrepresentation of women and non-Caucasian youth, although potentially specific to the context (i.e., Calgary), suggests that further research will be critical to explore what kind of support would enable climate leadership among young women and non-Caucasian young people who are likely more relegated to the margins and have generally less access to personal and financial support as mentioned by young people at the 'Community Connection 2017' workshop in Calgary. To work towards a whole of society engagement in climate action, and in particular the active engagement of youth as climate action leaders, it will be critical to promote the participation of underrepresented groups to meet the rapidly accelerating global climate crisis at the scale and pace necessary.

Influence on support network: The participants' perceived influence on their family members' knowledge of climate change and among their peers was noticeable in the participants responses and the three extended narratives. It may be valuable, therefore, to further explore how youth serve as climate action catalysts within their families and communities, and to examine the mechanisms of this influence and how this might be identified and maximized. This has

implications for research (i.e., the need for more specific research on this phenomenon) and for practice.

Personal resilience: (which includes dealing with climate grief and people's apathy). Although not a focus of this study, the issue of climate grief and people's apathy arose in the responses and stories of participants. Given that the issue of climate grief is likely to grow as the impacts of climate change increase and affect a larger and more diverse population of young people, it will be valuable to further research what kind of support is required to strengthen the resilience of young people that experience climate grief and are exposed to climate change apathy. All of the participants mentioned moments of despair or grief during their research on the topic of climate change or while they witnessed environmental destruction first-hand. They also described personality attributes (e.g. action-oriented attitude to be part of the solution) and external factors (e.g. having a strong peer network) that supported their capacity to manage these emotions and continue to take action. Though all the participants described being able to translate their sense of despair into their climate initiative(s), this may be a result of personality qualities that not all young people have and/or specific external resources and support that are not available or accessible to all young people. As a result, it will be increasingly important to better understand the specific mechanisms and how they support young people managing and/or translating their despair into climate action. This includes exploring the role gender, socio-economic status, ethnicity and culture, especially given that young people marginalized by any of these and other factors are more directly and profoundly impacted by climate change. The issue of climate grief is likely to grow as the impacts of climate change increase.

Another challenge that emerged in the analysis concerned people's apathy; the number one challenge participants identified is the experience of apathy they are confronted with even

among their friends and colleagues. Clearly more research is required to understand both what contributes to this apathy and how young people, especially those engaged in climate action, can contribute to the minimizing of this apathy and enhance engagement of those with whom they interact. This may be a particularly challenging issue in communities/regions, such as Calgary, where investment in the economic benefits of oil and gas can limit engagement in climate action and potentially contribute to social stimga regarding youth's engagement in climate action and climate change leadership.

Concluding Thoughts

By exploring different journeys and the underlying stories, this research has provided some insight and knowledge regarding what supports young people to become aware of climate change and their shift from climate concern to climate action and leadership. The context in which this study was conducted is as unique as every other context based on its demographics, political orientation, economy and geography; however, certain aspects are likely to apply to other situations in which young people initiate and lead climate actions.

With this study, I have attempted to summarize the lessons learned from studying young people who are leading or co-leading transformative climate action who have generously shared their insights with me. However relevant the findings, this is a snapshot in time and space. I have attempted to represent the views and understanding of these young people as closely as possible but also recognize that this report is based on my interpretation of their comments, and that the stories I have shared are co-generated. The young people interviewed for this study are transforming aspects of large and complex systems, demonstrating a zest for life, learning and action that hopefully motivates other young people and older adults alike to play a part in transformative climate action. Given the urgency of the action needed to protect the global

environment and the challenges young people are confronted with, I hope that the findings in this report inspire further research into the complex factors that facilitate young people's interest in climate action and their engagement as leaders and agents of transformative change.

Appendix A – Recruitment

Hello ((Name))

Many thanks for your interest in participating in my study. As discussed on the phone or in person ((Name)) shared with me your contact information as you are leading or co-leading a climate change initiative.

I would like to first introduce myself before I describe the purpose of the study and walk you through the process. My name is Susanna Niederer, and this research project is part of the requirement for a Master of Arts in Disaster and Emergency at Royal Roads University (RRU). My credentials with Royal Roads University can be established with Dr. Robin Cox, head of the RRU Disaster and Emergency Management.

My research aims to explore youth-led transformative climate initiatives of young people aged 18 – 29 from Southern Alberta, Canada to better understand what supports and enables the sift from climate concern to action. I will employ a narrative inquiry approach to explore the question: What personal, social, political, factors motivate and enable young people to move from climate change concern to initiating transformative climate change actions.

As a first step I would like to schedule a semi-structured 20 - 40 min interview with interested participants to explore what motivates and supports young people moving from climate concern to initiating climate actions and what kind of climate change activities these young people in Southern Alberta are undertaking.

In a second phase I will select three to five participants from the initial group of participants to deepen my understanding of the influencing factors that led them from climate concern to action. In addition, I will also further explore the kind of initiative they are leading or co-leading and whether they embrace transformative characteristics. The 2-3 hours in-depth interview will include also visual methods.

The findings are to inform existing theories of youth engagement and provide example and impacts of youth-led transformative climate initiatives.

If you are interest in the study, I would like to schedule the structured 20 – 40 min interview with you, asking you about your background, motivation, supporting factors and type of initiative you are leading or co-leading. And before we conduct the interview, I would send you a consent form that will explain the purpose of the study, how the data will be used, confidentiality and that that you have the right to withdraw from the process at any time.

I am looking forward to hearing from you. Again, many thanks and best regards,

Susanna

Appendix B – Interview Guide

Initial Interview
Hello ((Name)), Thanks again for agreeing to participate in this research, for having signed and returned the consent form and taking the time for this screening interview.

Please feel free to ask questions any time during the interview. If at any point you feel uncomfortable let me know and I will skip to the next question or end the interview. As mentioned in the consent form, you are free to withdraw at any time without prejudice. If at any stage you decide to withdraw and want to have your data destroyed, we will do so.

The purpose of my research is to explore with young people from South Alberta aged 18-29 what supports and enables the shift from concern to action in youth-led transformative climate initiatives through a set of initial short interviews, and in a second phase three to five in-depth interviews. Using this a narrative inquiry approach I will draw out the enabling factors, outcomes and impact through semi-structured interviews and visual methods. The findings will inform existing theories of youth engagement and provide examples of youth-led transformative climate adaptation initiatives.
I am employed by The City of Calgary, but will conduct the research as an RRU graduate student and not as a City of Calgary employee. The City of Calgary will thus have no influence on the research or access to any details emerging from it. I have no financial or moral obligation towards The City of Calgary as my graduate studies are entirely self-financed and I am undertaking this study in my own time.
I anticipate the interview taking between 20 and 40 minutes to complete. Please be aware that I will not be able to reimburse you for the time participating in this study.
I will audio record and transcribe this interview to ensure that I capture your comments accurately. Do you have any questions? Are you ready to start with the interview?
Let's start with the questions then:
Q1 - Age
How old are you?
Q2 - Gender
What gender do you identify with?
Q3 - Location
Where do currently live?
Q4 – Ethnic group?
Which ethnic group do you identify with?

Q5 – Political view?
What political party represents your political view? Or comes closest to it?

Q6 - Education
What is the highest level of education you have completed?
Secondary school? High school? Diploma? Bachelors? Masters?

> **Q6.1** What is/was your Major

Q7 - Occupation
In case you are no more a student, or you are working part time what is your occupation?

Q8 – Climate change initiative
Are you leading or co-leading a climate change initiative? ((IF NO, end interview))
((If YES, continue with questions))

Q8.1 What is your role?

Q9 – Description of climate change initiative
Can you please describe your climate change initiative?
Q10 – Transformative climate change action
Transformative climate change action is considered to move responses beyond 'business as usual' to rethinking our existing ways of doing things, and ultimately re-defining the social, political or economic structures that address the root causes of vulnerabilities to climate change. In what ways would you consider your initiative as transformative?

IF yes – please tell me how?
IF not sure – ((explore what the initiative tries to achieve)).

Q11 – Reason for climate change interest
What inspired you to become interested in climate change in the first place?
Q12 – Reason for engagement
What motivated you to move from concern to action? In other words what encouraged you to become engaged in this climate change initiative?
Q13 – Sustainment
What keeps you engaged in this initiative?
Q14 – What do other people i.e. family, friends, network think about your climate change involvement?
What are their reactions?
Q15 – Target group
Who or what is the target of your initiative?
Q16 - Team
How many people are involved in the initiative, including volunteers, and paid staff?
Q17 – Compensation and Time
Do you get compensated for your work? And How many hours per week do you work for this initiative?
Q18 - Support
Do you have or have you had a mentor or someone in particular who motivated you to begin this initiative??
If YES – what role does he or she play? How does he/she support you specifically?
If NO – do you wish you had a mentor/supporter?

Q19 – Time investment
I will be selecting 3-5 participants to deepen the narrative inquiry based on criteria related to diversity of participants and climate initiative. If I would like to have an in-depth interview with you would you be available for a two to three-hour interview and possible follow up questions?

Q20 - Outreach

Would you be willing to have you and some or your story videotaped for academic and educational purposes beyond this research?

Q21 – Anything I have missed

Is there anything else you think I might be interested to know about your initiative and/or about the process that sparked you to move from concern to action?

That is the end of the interview.

Do you have any questions?

Many thanks for answering my questions.

In-depth Interview

Thanks for agreeing to take part in this in-depth interview and for having returned the signed consent form.

My research aims to explore youth-led transformative climate actions of three young people aged 18 – 29 from Southern Alberta to better understand what supports and enables the sift from concern to action. I will employ a narrative inquiry and explore the participant's initiative, the enabling factors, outcome and impact through semi-structured interviews and visual methods to create a rich narrative.

As mentioned previously, by participating in this in-depth interview you will help me to understand the triggers that shift the thinking from being aware to being concerned about climate change to taking actions. But also, what enables climate actions, the mechanisms to overcome barriers, what role some of the people play associated with the initiative and the impact of the initiative. I am also most interested to find out how youth-led transformative climate actions do manifest itself conceptually and practically on a local level.

The findings are to inform existing theories of youth engagement and provide examples and impacts of youth led transformative climate actions.

Please be aware that I will not be able to reimburse you for the time participating in this study. In case you don't feel comfortable to complete an activity or answer a question, please let me know, and I will then skip to the next activity or question unless you want to stop the interview.

If at any point during this process you would like to stop, or want to take a break, please feel free to let me know as we can stop and re-assess whether and how we want to continue. This is as much your process as mine and it is important for me that you feel comfortable guiding and shaping our shared conversation about your experience.

To facilitate my note-taking, I would like to audio tape our conversation. to ensure that I don't miss any of your comments and then later on transcribe the recording.

You have mentioned on the consent form that you agree to the audio and video recording. However, I would like to review the consent you signed earlier prior to the initial interview and provide an opportunity for you to ask any questions you might have about the consent of the interview.

We have planned this interview to last no longer than 2.5h. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning.

Do you have any questions before we dive into the interview or are you ready to get started?
Visual methods and questions

Exercise #1: Time line mapping
My objective applying the time line mapping exercise is to understand:
1. the triggers and process steps that led the participants from climate change awareness to concern to action,
2. which role the support network (i.e. mentors, family, peers etc.) plays and played in the development as well as sustainment of their climate action(s),

3. what were and are the challenges and how are the participants managing them.

Instructions for participants
I would like you to draw a timeline map that arranges important key decisions points regarding your climate action(s), starting from being aware and concerned about climate change to getting informed about the issue and reflecting on solutions to eventually taking it off the ground. And also, who played a key role along the way that facilitated the evolution and what were the barriers.

This will help me to better understand your initiative's story and context, and how external factors influenced it.

Please use three parallel time lines
1. On the first line please draw defining milestones of your evolution (climate action journey)
   - key points along the journey - from climate change awareness to concern to development and implementation of your action(s)
2. On the second parallel line please draw your resources/people that facilitated the evolution
   - finding resources and support
   - who (family, peers, mentors, friends) played a key role at which point in jour climate action journey
3. On the third parallel line please draw at which point you encountered barriers and challenges
   - points at which you struggled (emotionally), faced obstacles and barriers (feasibility, missing support of key people, resources etc.)

After you have drawn your map, I will ask you to walk me through.
Time: Please take 10 min to draw the timeline, followed by a 45min discussion.

Comments SN: I will hand out a print of the instructions for the participants and an example of a timeline on a different topic. I will provide an A2 white sheet with pencils in different colors.

Prompting questions (building on the initial interview and on the participant's elaboration of the time line). My aim is to further unpack triggers for shifts and evolution as well as importance of support network.

Concern to action (prompting questions)
- Looking at your timeline, what do you observe? Is there anything that becomes evident to you?
- Looking back, in terms of your climate path from awareness to concern to action, what have you noticed about yourself? How has that all impacted or changed you?
- What has been the most positive experience during your journey?
- How do you encourage other youth to take climate action?
- Is there such a thing as an ultimate state you want to reach with your climate action(s)?

- How has your climate action(s) impacted your community and/or people who have been involved with?
- What are your measures of success in view of your initiative and has the impact of initiative met these criteria?
- Have you developed a mid and long-term plan for your initiative? Do you plan for the next 2-4 years - If yes, what do your plans include? If no, where do you intend to take your initiative?

Mentors, support network (prompting questions)
- When in doubt or overwhelmed who do you contact?
- Looking at your network of people who take also actions or are involved in climate change, what kind of support network or specific mentorships do they most need?
- What would you advise other youth in terms of finding a mentor and a support network that helps them to take their climate actions off the ground and allows them to sustain it?
- Can you share your experience how you ensure that other people in your community share their concerns and get engaged on climate actions that are important to them?
- What kind of community is most important for you to keep you engaged and to keep enacting change? How does this community look like?
- What do you need to thrive in your climate change work?
- In an ideal world, from whom do you wish to get more support?

Challenges (prompting questions)
- What do you consider as biggest challenge and how do you tackle them?
- How do you help peers and friends to deal with set-backs, what do you advise them?

> **Exercise #2 - System in which your initiative is embedded (rich picture)**
> My objective applying the rich picture exercise is to understand:
> 1. the complex environment in which the participant acts as an agent of change,
> 2. how their initiative(s) are embedded in and interact with existing systems,
> 3. which elements of the system are challenged or transformed by their climate action(s),
> 4. how may these individual changes aggregate over time and space to reach a threshold beyond which they can collectively be viewed as transformative.

Instructions
I would like you to draw a rich picture or map that illustrates how your climate action(s) is positioned and interacts with the larger system in which it is embedded (economic, educational, environmental, political, social, technological, etc.). Which part of the existing systems do you aim to challenge and transform and how.

Please use simple diagrams, symbols, cartoon and words as provided in the example to give you an idea how an illustration may look like. The purpose of this rich picture is to establish a shared understanding between us of how your initiative(s) is positioned in a larger system, where are the touchpoints and where does it disrupt aspects of the existing system. Please also highlight existing or emerging circumstances that support or hinder your initiative.

Please take following in consideration
- Illustrate how your climate action(s) is positioned and interacts with the larger system in which it is embedded (economic, educational, environmental, political, social, technological, etc.).
- Where does your climate action(s) complement and/or collide with the larger system?
- Which part of the existing systems do you aim to challenge and transform and how?
- Where do you see your climate action(s)/initiative(s) shifts, challenges, disrupts, cracks, erodes, transforms existing systems
- How is your support network positioned in the larger system and how it interconnects with it?
- Note/draw all the critical people, organisations that allow your actions(s)/initiative to thrive as well as those organisations or people that block or challenge your initiatives and draw key elements and linkages between them

After you have drawn your map, I will ask you to walk me through.

Time: Please take 10 min to draw the timeline, followed by a 45min discussion.
Comments SN: I will hand out a print of the instructions for the participants and an example of a timeline on a different topic. I will provide an A2 white sheet with pencils in different colors. Before the end of the interview I will ask the participants whether they are willing to participate in a photo elicitation with other participants.
Prompting questions (building on the initial interview, the timeline and on the participant's elaboration of her/his rich picture). May aim is to further unpack how the participants see themselves in a larger system and how they see their transformative role.
- Looking at your own rich picture what do you observe? Is there anything that becomes evident to you?

- How do you understand transformation in the context of climate change? (depth, breadth and speed of change)
- How do you see transformation to happen even though for the most part even young people are not willing to go out of their way to make a difference (as you have mentioned at the last interview)?
- What else besides your climate change actions will be critical to minimize vulnerability to climate change?
- What impact do you aim to have?
    - Which element of the system need to change in order to make an impact you are aiming for?
- Which part of the system do you think needs to be transformed and **to which state**?
    - What role does your climate action(s) play in that?
- What do you see needs to happen for a transformation to take place on a large scale in order to reduce greatly our emissions and allows us to adapt to the climate impacts we cannot avoid anymore?
    - How do you encourage change in other fields you are not directly connected or engaged with?
    - Which aspect or issue is mostly overlooked?
    - Which people or organisations should be included in the conversation but are most often left out?
- How do you think can behavioral change among a larger public be effectively induced?
- How do you walk the fine line between raising climate change awareness without alarming people into fear, apathy or inaction?
- How do you instill hope among people you interact with that their actions, no matter how small is making and can make a difference?
- Why do you more young men than women are leading or co-leading climate actions?

This is the end of the interview; do you have any questions?

Many thanks for your time. If you have any question or further comments please don't hesitate to ask now or you can contact me via my email address.

Again, many thanks for your participation.

Appendix C – Informed Consent Form

Consent form

My name is Susanna Niederer, and this research project is part of the requirement for a Master of Arts in Disaster and Emergency at Royal Roads University (RRU). My credentials with Royal Roads University can be established by telephoning Ms. Robin Cox, head of the RRU Disaster and Emergency Management program, (250)-882-3939.

This document constitutes an agreement to participate in my research project. The purpose of my research is to explore with young people from Southern Alberta age 18 – 30, what supports and enables the shift from concern to action in youth-led transformative climate initiatives through a set of initial short interviews and in a second phase three to five in-depth interviews. Using a narrative inquiry approach, I will draw out the enabling factors, outcomes and impact through semi-structured interviews and visual methods.

Adopting a narrative approach, I first interviewed ten young people using a semi-structured interview guide. I then deepen the conversation with three out of the ten participants to explore the specific questions: a) what personal, social, political, economic and structural factors motivated, supported and enabled them to move from concern about climate change to lead or co-lead climate actions; b) what are the enabling factors (e.g., mentors, support networks, resources) and barriers they encounter(ed) and; c) in which way these actions are considered as transformative. My goal is to inform theories of youth engagement and mobilisation in relation to climate change while also enhancing understanding of what transformative action means at a local level.

The research will consist of closed and open-ended questions, interview as well as visual methods such a rich picture, photo elicitation and timeline mapping. The foreseen questions will refer to the personal experience of the initiative and the characteristics of it.

Prior to the in-depth interview I will conduct an initial interview with all young people who are interested to participate in the study. The initial interview will take 20 to 40 minutes and will be audiotaped. The information from these initial interviews will be analyzed for general themes related to the focus on what motivates and supports youth moving from climate concern to action.

In addition to submitting my final report to Royal Roads University in partial fulfillment for a Master of Disaster and Emergency Management degree. The final thesis will also be published through deposit with the Library and Archives Canada, through the Thesis Canada Portal, and the ProQuest/UMDI database. I will also share my research findings with the RRU ResiliencebyDesign Research Lab that is leading the Alberta Resilient Communities (ARC) program given that this research will be integrated in their overarching research.

Information will be recorded in hand-written format and audiotaped. At no time will any comment be attributed to you unless your specific agreement to attribute that comment has been obtained beforehand.

During the course of the research project, information from this study will be kept in locked files that only I can open. Any personal information that could identify you will be removed or

changed before files are shared with other researchers or results are made public. After the research has been completed all documentation will be kept strictly confidential. An electronic copy, with no public access will be held for a period of one year at Royal Roads University. In certain circumstances, the report may be reviewed by future disaster and emergency management learners, provided permission has been obtained from me.

Even though I am employed by The City of Calgary, The City of Calgary will have no influence on the research or access to the details of the research as I will conduct the research in the function of an RRU graduate student and not as a City employee. In regards to this research, I have no financial or moral obligation towards The City of Calgary as the graduate studies are entirely self-financed and my private time will be used to conduct this study.

By participating in the research project, you will help us to understand the triggers that shift the thinking about climate change issue to action, what enables climate action, and the mechanisms to overcome barriers. And very importantly how youth-led transformative climate change initiative do manifest conceptually and practically on a local level.

If you do choose to participate, you are free to withdraw at any time without prejudice. If you decide at any stage to withdraw and want to have your data destroyed, we will do so. And if you choose not to participate in this research project, this information will also be maintained in confidence.

You will have access to the raw data you have shared with us until the study records have been destroyed, the records will be kept for a minimum of two years. Please indicate below if you are interested to receive a summary of the final report.

Please be aware that I will not be able to reimburse you for the time participating in this study.

Consent form

I confirm that I am 18 years of age or older.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I agree to participate in a **screening interview** as part of this study.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I agree that if invited, I will participate in a **case-study interview** as part of this study.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I understand that these **case study** interviews will be videotaped and I agree to have images of me (still or video) used in the report on this research, on the RbD website, and/or in publications and I understand that as a result I may be identified by my image.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I understand that I can choose to have my name used in association with any quotes, photos, or videotape images produced as a result of this research. I understand that by initialing "yes" I am agreeing to have my name used.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I understand that I can choose to have images of myself, or my initiative used in reports, publications, or videotapes emerging from this research. I understand that by initialing "yes" I am agreeing to have these images used, and that by doing so, I waive anonymity and confidentiality.

| **Yes** | **No** |
| Please Initial _____ | Please Initial _____ |

I have read this document about the study or it was read to me. I know the possible risks and benefits. I know that being in this study is my choice. I choose to be in this study. I know that I can quit at any time. I know that it is my choice to be video/audio taped and to have my image or images of my initiative used as part of any reports, publications, videos related to this project and the RbD website. I have received, on the date signed, a copy of this document containing one page.

_____   _____
Name   Date

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