The Geography of Climate Change in a Rural Resource-Dependent Town: The Case of McBride, British Columbia

by

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Abstract

British Columbia's (BC) climate change policy has put pressure on the province's rural communities to become 'carbon-neutral'. This research examines the experience of one such community, McBride, a resource-based town in north-eastern BC struggling to reduce its emissions while also trying to restructure its depressed economy. The thesis asks what opportunities and challenges McBride faces to reduce its emissions and transition to a 'low-carbon' community. It focuses on the politics of scale, asking what role the 'local' plays in climate change mitigation, and the distinctive qualities of the 'rural' local scale in these efforts. McBride has several opportunities that might abet the community's transition to a "green economy": abundant renewable energy resources, potential value-added commodity production in the forest sector, and an emerging local agricultural movement. But it also faces geographically specific obstacles to reaching these goals: limited financial and human capital, internal division, restricted political capacity, isolation, and inadequate and misplaced articulations with higher levels of governance. The thesis argues that to confront the impact of climate change, BC must move beyond its urban political bias, and work with the geographic specificities of rural communities across the province. This requires taking a regional approach: building up horizontal connections between rural communities, decentralizing industry and populations across BC, and increasing political and economic resource distribution outside of major population centres. Higher scales of governance must reconceive rural communities, not as technical problems to be 'fixed' with 'aid', but as collaborators in democratic, political, economic, and ecological change.

Keywords: Rural geography; Resource-based communities; Climate change policy; British Columbia; Scale

Dedication

This thesis is dedicated to the citizens of McBride: their help and support was invaluable to this project.

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Chapter 1.

Introduction

Global climate change is undeniable. According to the Intergovernmental Panel on Climate Change, “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level” (2007: 30). Climate change will have drastic effects in the very near future, including rising sea levels, severe weather, and mass species extinction. But it will not only harm the world’s ecosystems: climate change directly impacts people’s livelihoods, food security, and health (IPCC 2007). These impacts will not be distributed evenly. Many societies – especially the most marginalized – will feel the effects of climate change more distinctly and severely (IPCC 2007: 65).

The province of British Columbia (BC), Canada, has started to see the preliminary effects of global warming. A large portion of BC, especially the North, has been warming rapidly: temperatures in some areas are twice the usual average, according to historical climate patterns (BC 2008a). Weather is increasingly unpredictable, with recurrent water shortages and mounting forest fire intensity (Parfitt 2010; BC 2008a). BC’s forests have also endured pine beetle devastation due to warmer winter temperatures (Graine 2010; Parfitt 2010). Many resource-dependent economies have started to suffer because of these changes. Coastal communities may also suffer in the near future from sea level rise, and, overall, BC will most likely experience more severe weather and associated complications (BC 2008a).

Due to its potentially disastrous effects, the problem of climate change has moved to the forefront of many regulatory agendas. For BC, climate change has been specifically addressed in several policy initiatives. The Province ratified a Climate Action Charter in 2007 and a Climate Action Plan in 2008, making climate change and carbon

neutrality one of the provincial government's top priorities (Devine 2010; Wilson 2008). The Climate Action Plan's goals are a 33% reduction in greenhouse gas (GHG) emissions by 2020 and an 80% reduction by 2050. The plan outlines various strategies to reach this goal, including a broad-based revenue neutral carbon tax, a commitment to 93% clean electricity production through the Clean Energy Act, a province-wide Efficiency Incentive Program, new Leadership in Energy and Environmental Design (LEED) building standards, improved public transit, and a zero-net deforestation policy, a 100% carbon-neutral provincial government by 2010among others (BC 2008b). Carbon neutrality is a multi-step process aimed at reducing net carbon emissions to zero. This entails reducing emissions, increasing energy efficiency, and purchasing carbon offsets to mitigate remaining emissions (Devine 2010). Carbon offsets are investments in activities that capture greenhouse gases. Organizations and governments can claim reductions in their carbon footprints by creating or, more commonly, funding an offset activity that balances out the organization's emissions elsewhere (Devine 2010).

The 2007 Climate Action Charter aims to address climate change mitigation at the local scale. The Charter was signed by 180 of BC's 188 municipalities, committing these local governments to the measurement and reduction of their municipal emissions, with an overall target of complete municipal carbon neutrality by 2012. It is important to note that the charter's goal of municipal carbon neutrality by 2012 refers only to governmental operations. Aside from this municipal carbon-neutral goal, the charter also includes other generalized goals for overall community-wide emissions, including:

> Creating complete, compact, more energy efficient rural and urban communities (e.g. foster a built environment that supports a reduction in car dependency and energy use, establish policies and processes that support fast tracking of green development projects, adopt zoning practices that encourage land use patterns that increase density and reduce sprawl.) (BC 2010: 2)

The local government is expected to build on community-wide carbon emissions reductions through effective policy. This charter is a non-mandatory agreement between the municipalities, though, and has no legal binding if these goals are not met.

These policy changes are coming at a time when rural BC is confronted by changing economic and industrial conditions that are weakening many resource-based

communities. Rural communities differ from urban communities in their demographic and economic compositions, and, therefore, policy and economic change affects rural communities in distinctive ways that is often not captured in the policy itself. Currently, rural communities throughout Canada are struggling to transform their economies as the resource industries conventionally sustaining these communities experience major change.

McBride, a small resource-dependent village in central-eastern BC, epitomizes these dynamics. Approximately 37% of the labour force is directly employed in the forest sector, which is showing signs of vulnerability and decline: McBride has the fourth most vulnerable forest in BC according to the Forest Vulnerability Index (Graine 2010)[1]. The 2007-2008 financial crisis and ensuing recession hit McBride's resource-based economy hard. The rising value of the Canadian relative to the US dollar hampered investment in the lumber industry, and the slowdown of the US economy has reduced demand for wood products in one of McBride's main markets (Graine 2010). Many other rural communities throughout Canada face similar challenges.

At the same time in BC, most of these communities, including McBride, signed the Climate Action Charter, committing themselves to emissions reduction and 'sustainable' community transformation. McBride and its citizens face the enormous challenge of working with these new climate change policy initiatives to meet these political and environmental goals, which will require substantial local restructuring. Political pressure is coming directly from the provincial government, but, at the same time, is attached to a much larger movement. Climate change is a global issue, and the environmental movement has become increasingly global in turn. This movement puts pressure on resource-based communities in BC to become 'carbon-conscious'. It remains unclear, however, how this can actually be done. McBride is just one community

[1] The Forest Vulnerability Index measures, "dependence on the forest sector in combination with the extent to which a community possesses a diversified economy. A community will be particularly vulnerable if its economic dependence on the forest sector is high, while its diversity is low" (Cocco 2009: 3).

among many undertaking change, and it is by no means certain they can reduce their emissions with the resources available locally. McBride, then, offers an apposite case study: a struggling rural community simultaneously trying to build up its economy and transform it into something low-carbon and 'environmentally friendly'.

The Village of McBride

The Village of McBride covers 4.43 square kilometers in the Regional District of Fraser-Fort George (RDFFG). It currently has a population of about 660 residents (Statistics Canada 2006), but it serves approximately 2500 people in surrounding communities in the Robson Valley (Graine 2010), the 150-mile long valley that lies between the Rocky and Caribou Mountains along the Fraser River, from Valemount to Dome Creek (Wheeler 1979: 1) (see Figure 1). The communities of the Robson Valley (McBride, Valemount, Dunster, Crescent Spur, Dome Creek, and Tête Jaune Cache) are connected by a common history of growth and development that revolves around the construction of major transportation routes – starting with the Grand Trunk rail and finishing with Highway 16 – and the slow accompanying development of the forest and agricultural industries around these routes.

Figure 1. Map of British Columbia and The Robson Valley

The Valley has significant natural resources and agricultural potential, but none of these industries could reach their potential prior to the 20th century because of geographic isolation. At the turn of century, the Canadian government and the Grand Trunk Railway agreed to build a second transcontinental railway through the Yellowhead Pass (the Robson Valley), terminating in Prince Rupert on the west coast. Surveying of the region began in 1911, and the railroad was constructed between 1912 and 1914. Grand Trunk surveyors chose Mile 90 as a divisional point and town-site because of its abundant water supply and flat terrain, and named it McBride in 1913 after BC premier Sir Richard McBride.

Railway construction brought economic opportunity and development to the area for the first time, and McBride became a thriving tent town, with an estimated two

thousand people working in the area. When construction finished in 1914 most of the workers left, leaving a smaller population of settlers. By the 1920s, the population of approximately 200 people relied solely on the railway for goods and transportation, as there were no reliable roads or highways until the late 60s. The railway was “the lifeline of the valley” (Wheeler 1979: 135). In 1923, the ownership of the railway turned over to the Canadian National Railway Company (Wheeler 1979: 135).

With the construction and activity of the railway, McBride steadily began to develop its economy and infrastructure and in 1932, McBride became incorporated as a village. During this time, McBride’s economy was based mainly around trapping, forestry, and agriculture. Forestry gradually developed in the area, as there were large expanses of forest in the valley, and settlers immediately began to tap into the potential prosperity of this massive natural resource. Loggers mainly relied upon cedar and pine in the early twentieth century for poles, fences and ties, but since then, they log many different species. Overall, the Robson Valley’s forest industry has experienced many booms and busts throughout its development. In the thirties, jobs were scarce, and Adolph Jeck created one of the first mills in the area. Other important early mill operators were the Lammings brothers, who moved their mill to McBride from Alberta in 1943. Eventually a large community would grow around the Lammings' mill site. By the early 1960s, McBride had 12 full-time and 5 part-time mills in operation, but by the end of the decade, many local mill owners had sold their mills to big companies due to increasing costs and high stumpage fees (Wheeler 1979: 166-167).

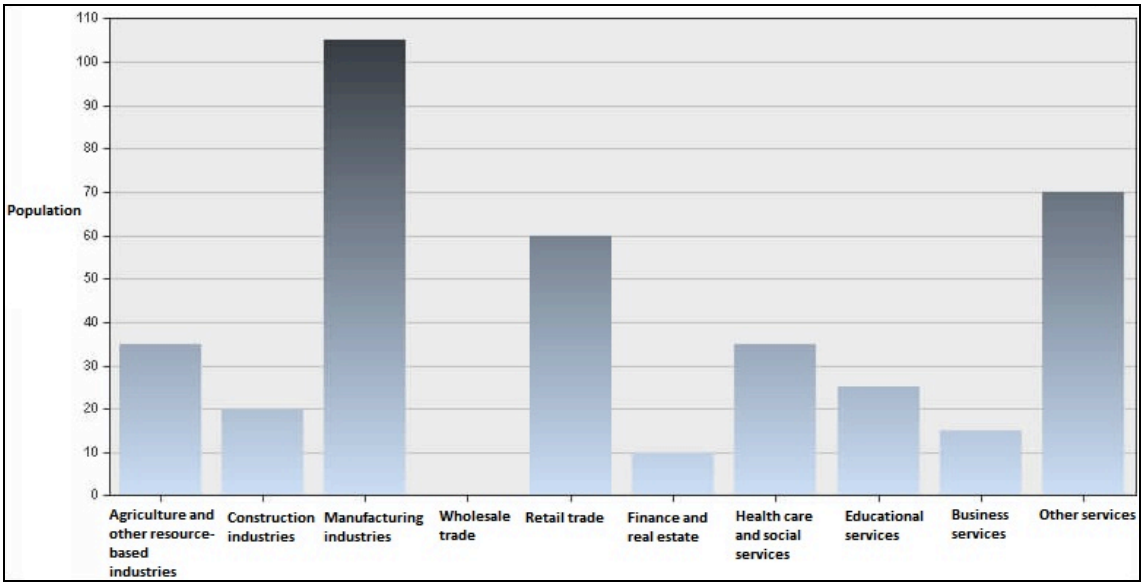
Along with forestry, farming has been an important part of McBride’s and the Robson Valley’s economy and history. Early on, McBride was seen as having good potential for mixed farming: after the construction of the railway, the government offered agricultural plots in the area in order to attract settlers (Wheeler 1979: 59, 175-176). One of the earliest organizations formed in the community was the Farmer’s Institute, founded in 1914, involved with improving not only agricultural practices in the area, but also the overall quality of rural life, like better schools and roads (Wheeler 1979: 63-70). Agricultural development was slow, though, with only a small market in the valley and little access to outside markets due to poor road conditions and limited transportation by rail. Most farmers in the area consequently found it necessary to find additional work (Wheeler 1979: 176, 191).

Eventually, the neighbouring Prince George and Jasper markets grew much larger, and Highway 16 was completed in 1968, creating greater potential for the agricultural and forest industries (Wheeler 1979: 100). The completion of the highway in 1968 was a significant and transformative event in the Robson Valley as it opened it up to the world for the first time. The communities in the Valley no longer had to solely rely on the rail for transport and goods. However, creating a profitable agricultural industry remained difficult due to path dependency (ranching became profitable over agriculture) and the high costs of transportation from such an isolated location. Nevertheless, the highway brought in greater tourist traffic, easier transportation of goods in and out of the community, and greater access to the forest, even though some old-timers regretted McBride's reduced 'self-sufficiency'. The highway reduced the Valley's reliance on the railway, and reoriented everyday life to motorized transport (Wheeler 1979: 100-101, 135).

McBride's present economy has not diversified greatly, with the main industries still being forestry and agriculture, with the addition of industries like tourism and services (Figures 2 and 3). The village has an unemployment rate of 2.7% and a median income of $21,833 before taxes (the Canadian median is $41,401) (Statistics Canada 2006a). Forestry is McBride's main industry, although it has recently declined (Graine 2010). Approximately 60% of the forestry workforce is in logging and trucking, 30% in processing (mills) and 10% in management. The McBride Community Forest Corporation (MCFC), owned by the Village of McBride, officially manages the forest landbase (MCFC 2007). The MCFC is directed by the community forest manager, and consists of an elected board with one permanent board member, the Corporation of the Village of McBride (MCFC 2007). Currently, the MCFC has 2 full-time staff and one part-time contracted assistant from the Village (Marc von der Gonna, email communication, December 1 2011). McBride may be a good case study of a typical resource-dependent BC town, but, at the same time, it offers an interesting case because of its community forest arrangement. Community forests are not very common in BC: currently, there are 58 communities involved in the community forest program province-wide, representing only 1.5% of the total provincial annual harvest (British Columbia Community Forest Association (BCCFA) 2011). The concept of community-run forests in BC was developed in 1945 when Gordon Sloan, from the Royal Commission on the Forest

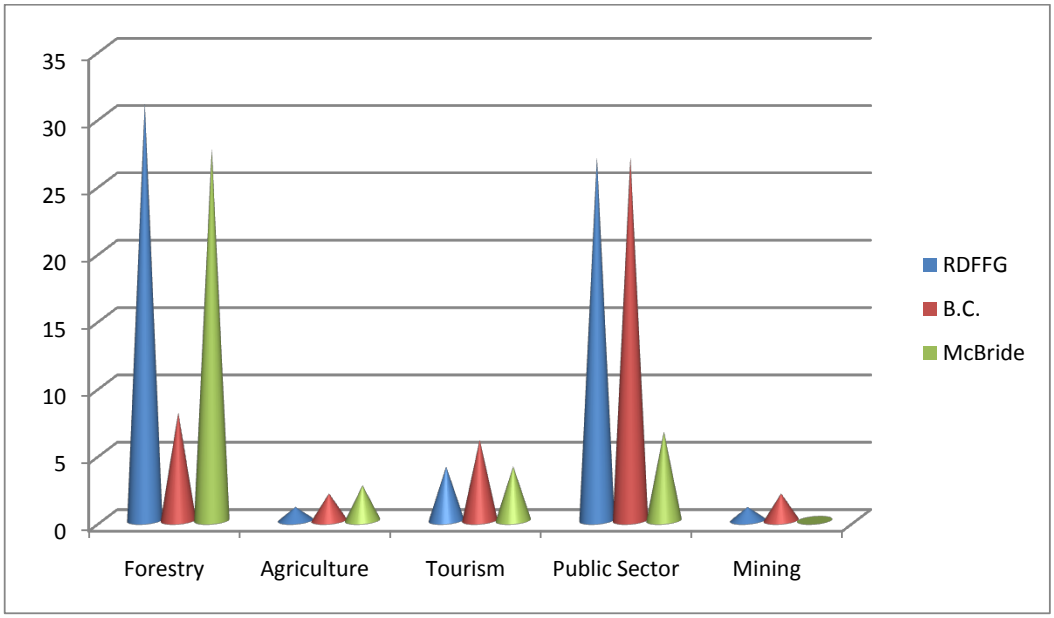
Resources of British Columbia, endorsed the municipal management of local forests. Between then and the 1990s, only four community forests were established. In 1998, BC's Ministry of Forests developed the foundation for the Community Forest Agreement (CFA) program, and in that same year, the Forest Act was amended to recognize this form of tenure. Finally, in 2002, the BC Community Forest Association was established, formally acknowledging the provincial government's firm support of this type of forest tenure (BCCFA 2012).

Figure 2. Industry For Both Sexes: McBride, BC



Source: Statistics Canada (2006a)

Figure 3. Income Dependency per Industry in McBride, BC



Source: Graine (2010)

The MCFC signed a long-term Community Forest Agreement on February 28, 2007, with the Provincial Government's Ministry of Forests, Lands, and Natural Resource Operations. The agreement grants exclusive rights to the MCFC to harvest timber from approximately 60,000 hectares of Crown land surrounding McBride, with an annual allowable cut (AAC) of 50,000 cubic meters (MCFC 2007). For the past 5 years the MCFC have logged the full AAC (Marc von der Gonna, personal communication, June 20th 2011).

The MCFC organizes the harvesting and sale of wood in two different streams. In the first stream, the MCFC contracts local workers to cut and transport raw logs, which are sold to major companies and mills. The second stream is a small market logger program which sub-licenses, by area, small local logging companies to harvest and market the wood themselves, for which they pay the community forest a fee. The MCFC typically has 12 to 35 people working in the bush as loggers and truckers (depending on the time of year) under their small market logger program. Both the MCFC and these small market loggers supply several small local mills. In spring, the MCFC typically has 15 to 20 tree planters working in the bush for 4 to 6 weeks. The community forest's

mandate gives priority to local mills to buy the wood first, at market price, but most of the raw lumber is currently shipped to Prince George, with some going to mills in McBride and Crescent Spur, and to one mill in Barriere (Marc von der gonna, email communication, December 1st 2011; Marc von der gonna, p/c, June 15th 2011) [2].

The MCFC was created partially due to the closure of McBride's corporate mills in 2006, especially the closing of McBride Forest Industries (MFI). MFI took over Zeidler's forest license and mill (for plywood veneer) in 2000, which previously operated in McBride for 30 years and employed approximately 200 people. When MFI was operating, it employed around 140 people (in the mill and bush): all these jobs were lost when the mill closed (Marc von der Gonna, p/c, June 15th 2011; Gene Runtz, p/c, June 24th 2011). Ten years ago, when MFI was still in operation, the forest industry was vibrant. Three cedar post-and-rail mills were in operation too, with a number of other smaller mills, and there was also a full ministry of forest office operating with 30 employees (Marc von der Gonna, p/c, June 15th 2011).

The last decade saw the closure of most of these mills and the ministry office. This decline of the valley's forest industry was partially because of market loss and the change in BC's appurtenancy policy in the early 2000s. Forestry companies no longer had to set up a mill where their forest license was, so many companies found it more profitable to move their mills to larger commercial centers (Lelani Arris, p/c, June 17th 2011; Gene Runtz, p/c, June 24th 2011). Currently, the largest company in the valley is Carrier Lumber. They bought MFI's forest license in 2006, along with many other local mills' forest licenses. They now own the harvesting rights to most of the valley, which totals approximately 300,000 cubic meters of wood annually (Anonymous1, p/c, June 7th 2011). Carrier Lumber employs a small number of local contractors and truckers from McBride, but employees from Prince George do most of the harvesting and trucking (Ken Starchuck, p/c, June 17th 2011).

[2] "Personal communication" will be abbreviated as "p/c" from here on.

Overall, harvest levels have stayed the same in the valley because of Carrier's activity, but employment levels have drastically reduced due to the loss of MFI and other local mills. TRC is the only medium-sized mill left in McBride, converting cedar logs to post-and-rail fencing and cedar mulch, but its operations are very on-and-off due to an unreliable supply of cedar from the community forest. Other than the TRC Cedar mill, there are only a handful of very small-scale mills (one or two employees) remaining. Tom Ryan, TRC owner, talks about the decline of his mill and the forest industry in McBride:

> In 2001 we had 91 employees, I think this week we have 28, and we will be out of logs in 2 weeks and we will be down to about 5 and we'll remain at 5 doing the mulch program for the rest of the year until, probably, late next spring. So I've seen a business and a community go from 250 mill employees down to 30 part-time, down to no full time: there's absolutely no full-time manufacturing in this valley left. (p/c, June 27th 2011)

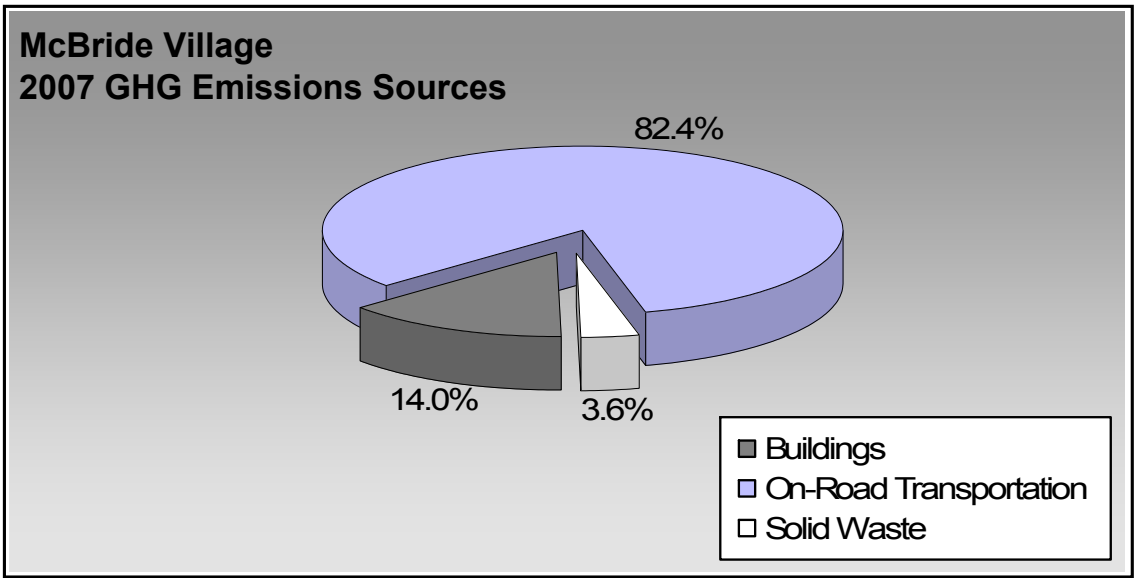
The economic decline in the forest industry has transformed community life in the Robson Valley. The population and labour force in the area is declining, and the population is aging, with more retirees coming to the area, and no compensating movement of younger families due to a lack of economic opportunity. Mill closure caused many younger families to move elsewhere for work, sometimes with the husband leaving the family behind in McBride, and this has split families apart, decreased school enrolment and damaged local businesses throughout the Valley who rely on local citizens. In short, McBride has a diminishing and aging population, with limited expertise outside of forestry and agriculture, so it has been difficult for the community to transform their economy and bring in new business.

The economic and demographic downturn in the Robson Valley has changed McBride's social and political environment, causing more community division and conflict to develop. The compactness and size of the population creates more conflict because everyone in the community knows one another and works together so closely in all facets of life. Any decision the local government or MCFC makes often affects everyone in the community, and the citizens are further able to loudly voice their concerns, as the population is so small and interacts so closely. Consequently, many interviewees and citizens disagree with the management of the local government and MCFC, and there is

significant animosity between important stakeholders in the community, for example, between the MCFC and TRC owner Tom Ryan. There seems to be a division in the community between citizens who completely support and esteem the work of the local government and community forest, and those who are in strong opposition to it. The significant decline of McBride's forest industry has exacerbated this divide, as the community is in desperate need of economic growth, and many people have different visions of how they want this to happen.

Moving forward, McBride has demonstrated an openness to change in an environmentally and economically sustainable direction. The town's Economic Development Action Plan states the community's vision is "to build a legacy for future generations, by creating a healthy and sustainable community through a positive economic development attitude where entrepreneurs can flourish, while preserving our pristine environment" (Graine 2010: 4). A large part of this commitment comes from reducing emissions, and the Village has included a carbon emissions reductions strategy in their Official Community Plan. A community energy and emissions inventory was approximated for McBride in 2007, revealing an emissions profile concentrated mainly on transportation (82.4%) and buildings (14%) (Figure 4) (BC 2010). Most of the transportation emissions are from light trucks, vans, SUVs, and tractor-trailer trucks. The heaviest emissions from the buildings are from propane and heating oil (BC 2010). Therefore, in order to reduce emissions, McBride must concentrate on addressing transportation and buildings emissions.

Figure 4. Updated 2007 GHG Emissions Sources: Village of McBride



Source: BC (2010)

Research Questions

This research project will address some of the challenges McBride faces, by asking what alternative economic strategies can be adopted in the face of potentially massive political, economic, and environmental change. McBride has signed BC's Climate Action Charter, committing itself to complete carbon neutrality by 2012. The big question is: how can it get there with anything resembling a flourishing or adequate level of economic activity? From this overarching question, two research questions guide this research:

1. What does it mean to transition to a low-carbon society in McBride? What would this look like, and how could they get there? What are McBride's distinct opportunities and challenges in moving towards this?
2. How do the politics of this transition work at the local level? What role does the 'local' play in reducing emissions, and how is it invoked? What are its relations to other scales of governance?

As Wilson (2008: 5) notes, "in the past year or so, the concept of carbon neutrality has moved from the fringes of the environmental movement to the Canadian

mainstream". Not only will this project focus on how the local government can become carbon neutral, but also on how the community and its economy - as a whole - can reduce their emissions on a larger scale and move toward a low-carbon and green economy. Climate change policy in BC may help resolve part of this dilemma by providing guidance and aid to communities making this transition, but these policies are likely to be formulated and enforced at a scale that abstracts from the specific ecological, social, political, and economic conditions communities confront. The question is how to apply these wide ranging solutions to a specific place. The community is arguably the scale at which policy action can best take place (Brown 2009), and my objective is to help identify carbon-reducing solutions that might work for McBride.

At the same time, it is crucial to interrogate the idea of scale that underwrites this claim. This is the object of my second research question. Is the local level really the best scale at which to tackle these issues? How is the local scale connected to other scales of governance in the climate change debate? Recent academic literature has focused on the local scale not as an obstacle, but as essential to the dynamics of neoliberal capitalism (Cox 2009; Joseph 2002): the local is not necessarily a "safe-zone" away from neoliberal capitalism but a crucial cog in its functioning. However, and somewhat paradoxically, the local scale is often seen as the scale where real change can take place, especially environmentally and economically sustainable changes (Brown 2009). Miranda Joseph (2002: xxx) believes the local scale is romanticized and mobilized by activist groups within the discourse of the community: "Community generates not an attitude of "whatever" but rather the strongest of passions. Community is one of the most motivating discourses and practices circulating in contemporary society". As we will see, most of these discussions have focused on urban communities. However, urban sustainability is likely only achievable if the needs of rural regions are taken into account, as rural regions are often the source of raw materials that more urban parts of the province draw on: rural energy, forest, and food production being three key examples. The potential importance of the local *rural* scale, and its role in addressing global environmental issues, demands further study.

Thesis Organization

This thesis is organized as follows. Chapter 2 discusses the methods used to answer the research questions. Chapter 3 outlines the theoretical framework used to guide this research. It elaborates on the definition of scale and the post-Fordist shift from the national to the global and local levels. This section concerns the importance of the local and global scales, while analyzing the general lack of focus on the 'rural' scale. The theoretical framework then addresses this absence by examining Innis's staples thesis and Canada's resource dependence, and how Innis's framework needs to recognize the finite nature of resources. Chapter 4 displays the various opportunities present in McBride that will lead the community in a more carbon-conscious and sustainable direction, while Chapter 5 outlines the challenges there are in putting these initiatives in place, reducing McBride's total carbon emissions, and transforming McBride's economy. Chapter 6 – the final chapter – discusses future visions for McBride: where the interviewees would like to see McBride heading and what a carbon-conscious rural community could plausibly look like in the future. It concludes by highlighting the importance of the rural scale and recognizing the geographic specificities of place. There is not one generalized right answer for how these problems can be solved: solutions should be flexible and applicable to the area in question. This requires a regional-based approach, connecting across horizontal and vertical scales, and a move from provincial 'assistance' to 'collaboration' with rural communities.

Chapter 2.

Methods

For this research project, I used a case-study methodology. I chose this methodology because I wanted to explore the effects of climate change policy on a real-life community, as opposed to just looking at the subject more broadly across the province or country. With a case study, I could understand the complexity of these issues holistically, but also in greater detail. Scale is a major focus of my project, especially the local rural scale; using a case study will help illuminate the dynamics of this scale within climate change debates. I chose the Village of McBride as my case study because it is in many ways typical of BC's resource-dependent communities. It has an undiversified and struggling economy, a small population, and is fairly isolated. At the same time, McBride offers an interesting case because it has, at least in theory, more control of its local resource base due to its community forest, and therefore more robust institutional capacity to address changes in its economic base. When communities are asked to work out how they are going to become carbon neutral, it is often assumed that 'local' control will increase the community's ability to formulate and follow through on the changes.

My methods consist of interviews with members of the community and provincial government. I chose to conduct interviews because there are no outside resources on this topic concerning McBride, and little research on this subject for Canada in general. By interviewing McBride's citizens I could get in-depth information and diverse perspectives. Also, interviewing community members is a more direct and 'democratic' process than researching a community through external documents, as you learn more by being there and listening to people who care and know more about the community because it is their home. I interviewed provincial government employees because they organize and design BC's climate change policies, so they offer a different perspective on these issues. I also wanted to find out how the provincial government was helping

communities like McBride reduce their emissions. Overall, the interview process required ethics approval, sampling, conducting, transcribing, and coding components. The SFU research ethics board approved my project in April 2011.

I conducted 32 semi-structured interviews during the summer of 2011, as many interviews as possible given time constraints (I had a one month stay in McBride) and interviewees' availability during my stay. I used purposeful and snowball sampling to find interviewees. I chose this sampling method because of the community's small size and limited time and resources. Also, I wanted to make sure I interviewed the most informed citizens in order to get thorough answers. Random sampling would not have allowed me to do this, as I discovered that many people in McBride are uninformed on this subject, and feel unable to speak to it.

Before I moved to McBride, I contacted members of the local government and community forest association by phone and email to set up initial interviews, because I presumed these government employees would be the most knowledgeable about McBride's environmental policies and emissions reductions plans. I moved to McBride in June 2011 and developed further contacts from these first interviewees and from living in the community. I used these initial interviews as a way to being the snowballing process. From the municipal employee contacts and further, I was able to get a diverse range of views and opinions on this subject matter, revealing the diversity of people in the community. In total, I interviewed various members of local government (10 in total), provincial government (4 in total), forest sector (5 in total), chamber of commerce (3 in total), local renewable Independent Power Producers (IPPs) (5 in total), farmers (3 in total), and informed citizens not directly involved in any of these sectors (2 in total) (see Appendix A for list of interviewees). The interviewees' ages ranged from mid-twenties to mid-eighties, and their backgrounds varied. Some were born and raised in the valley, some were new residents, and most had different roles in the community. All care greatly for the future of the Robson Valley, even if they have different visions of what it should look like.

My interviews identified the role of the interviewee in the community, their thoughts on climate change policy, McBride's current socio-economic conditions, local emissions reductions opportunities, the challenges faced in putting these in place, and

their future visions of McBride (see Appendix B). The setting of the interviews depended on the interviewees' wants/needs, from the interviewee's place of work, home, a public place chosen by interviewee, or telephone. In total, twenty-five of the interviews were conducted in McBride, one in Prince George (with a member of the regional district government), one in Vancouver (with the CEO of a bioenergy company, ecoTECH), and five over the phone. Some of the interviews were one-on-one and some were in a group, again, depending on the interviewee's wishes. The interviews spanned 30 to 90 minutes, and privacy was assured to each participant according to SFU's research ethics board. Each interviewee signed a consent form beforehand, informing them of all the details of the study, as well as their rights to privacy. All interviews were digitally recorded (with the participant's agreement) to get the most accurate information possible. I also supplemented the digital recording by taking brief notes throughout the interviews, but the digital recording allowed me to listen and engage with the interviewees without having to take detailed notes during the conversation.

After conducting the interviews, I transcribed and coded them, in order to get the most accurate understanding of the discussion. After transcribing the interviews from the recordings into separate documents, I manually coded the transcripts, which required combing the transcripts multiple times to formulate codes and assign them to the various themes that emerged during the interviews. I developed five master codes in total (present state of McBride, challenges, opportunities, future visions, and scale), and many sub-codes. Coding allowed me to organize the interviews and understand the various patterns that emerged during the research. I supplemented this interview data with secondary resources for the purpose of triangulation. These resources include provincial policy documents, websites, newspapers, academic papers, public and private reports, and books. I chose these resources to fill gaps in the interview data and to give the project a well-rounded contextual grounding.

For the entire research process, I worked in coordination with the BC office of the Canadian Centre for Policy Alternatives, a Vancouver-based public policy research institute, as part of a their project "Carbon Neutral Rural Communities: Case Studies". There are currently three other cities participating in this research project: Port Alberni, Logan Lake and Queen Charlotte City. This study seeks to explore the myriad challenges facing rural communities in British Columbia as those communities seek to

reduce their greenhouse gas emissions. The findings will appear in a final report which will address how different rural communities, faced with different regional, geographic, social and economic challenges, can move in a socially just manner towards a low or lower carbon-intensive future.

Chapter 3.

Theoretical Framework

Rural Climate Change Adaptation and Mitigation

My research is premised upon the fact that rural communities must, and in fact already do, adjust to climate change differently than urban communities. My thesis questions the significance of the rural context within climate change debates, and thus draws on previous research conducted on climate change mitigation and adaptation in rural environments. Unfortunately, there is not much to lean on. Researchers have scarcely examined how rural communities in North America can adapt to and/or mitigate climate change (Alavalapati, & Mercer 2011; Sander-Regier et al 2009; Lal, Robinson & Gore 2005; Davidson, Williamson, & Parkins 2003). Most current literature examines larger scales of climate change mitigation—primarily the national and provincial levels—as well as climate change impacts on specific sectors like tourism, agriculture, and forestry (Lal, Alavalapati, & Mercer 2011; Sander-Regier et al 2009). Moreover, much climate change research focuses on geophysical impacts, without a concentration on the social dimensions. Yet, we know that an "important step in mitigation and adaptation will be to examine the ways that climate change risks manifest themselves in particular social localities" (Davidson, Williamson, & Parkins 2003: 2252). Canadian municipal governments and community groups have received little guidance on how they should respond to climate change, especially those in smaller rural municipalities (Sander-Regier et al 2009; Robinson & Gore 2005;). We need to understand the local rural context from a *socio*-environmental perspective, as rural communities will face distinct and potentially disproportionate effects from climate change (depending, of course, on their geographic, economic, and social conditions) (Lal, Alavalapati, & Mercer 2011; Davidson, Williamson, & Parkins 2003).

Climate change adaptation is particularly important in rural communities because many are economically dependent on natural resources and extractive activities (Wall & Marzall 2006). For agrarian-based communities, climate change might increase CO2 intake and lengthen the growing season, but it may also increase flooding, droughts, weeds, pathogens, and pests (Lal, Alavalapati, & Mercer 2011). Communities relying on forestry will experience varying climate change impacts, such as shifting forest species distribution and biodiversity, increased wildfires, and various pest and disease epidemics (such as the mountain pine beetle epidemic in British Columbia) (Lal, Alavalapati, & Mercer 2011). Many rural communities also depend on outdoor recreational tourism to support their economies. The effects of climate change on tourism are highly uncertain, potentially both positive and negative, at least in the short term. However, rural communities relying on winter-based recreation, fishing, and forest biodiversity, for example, could see a diminishing tourist industry (Lal, Alavalapati, & Mercer 2011; Davidson, Williamson, & Parkins 2003). In general, rural economies are less diversified in their disproportionate reliance on natural resources. Rural communities also usually have smaller per capita incomes, and consequently less financial capacity to adapt to, let alone mitigate, climate-driven or other environmental change (Lal, Alavalapati, & Mercer 2011). Any significant change to these resources could destroy a community's extant economic base.

Many generalizable demographic and social patterns in rural communities augment this vulnerability to climate change. They have smaller populations than urban and suburban zones, so there is limited human or other forms of capital available for climate change mitigation and adaptation planning (Davidson, Williamson, & Parkins 2003), by which I mean not only population, but the amount of expertise and education in a community. Rural communities often lack a wide range of technical expertise relative to urban centres and frequently have low educational diversity (the population's education is often undiversified and based on the primary resource-industry, i.e. there is not a diversity of career paths like engineers, doctors, and other experts) (Sander-Regier et al 2009; Wall & Marzall 2006). They are therefore generally less equipped to organize emissions reduction projects and diversify their economies. Increasingly, young adults are moving out to pursue economic and educational opportunities in larger urban centers. What is left are aging populations, both more physically vulnerable and out of

the work force, thus less able to work on community growth and adaption, as the aging population have higher rates of disability and illness (Lal, Alavalapati, & Mercer 2011; Sander-Regier et al 2009). Also, Sander-Regier et al (2009: 50) argue that decreasing demographic diversity and increasing age in rural communities can diminish local leadership and social capital:

> Residents worry that their community's social capital may erode as its demographic makeup changes. They also see that adaptive capacity is tied strongly to local leadership. Certain individuals were regularly pointed to as providing disproportionate amounts of service to the community; these individuals are often involved in both local government institutions and community organizations. To facilitate succession in community leadership and to avoid volunteer burnout and donor fatigue, residents recognize they must find ways to involve participants from new social and demographic groups, but have yet to find ways of doing so.

In total, rural communities will face different hurdles to reduce their emissions and adapt to climate change due to broad economic and socio-political patterns, and these hurdles limit rural communities' ability to mitigate the effects of climate change.

Defining Scale

My concentration on rural communities in this thesis focuses on the concept of scale: how does the rural *scale* differ from other scales – be it urban, national, or global – and why is this important when researching climate change, which, while obviously uneven, is so clearly a global phenomenon? Before delving into the idea of the 'rural scale', it is worth first considering the changing definition and importance of scale in current academic literature. Although "scale" has always been central to geographic research, its status and definition have changed over time. According to Brenner (2001), scale has often been blended with other core spatial concepts like place, locality, territory and space. Yet it is crucial to distinguish scale from these terms, as it has different geographical properties and holds its own crucial place in the analysis of global and sub-global political economic and political ecological systems. Brenner (1998: 460) claims that, until recently, with few exceptions "scales were viewed as relatively stable, nested geographical arenas inside of which the production of space occurred, rather than as constitutive elements of this process".

Recent scholarship, however, emphasizes scale as a dynamic and socio-political process, and many have stressed that scale is socially, historically and politically constructed (Brenner 2001; Brenner 1998; Swyngedouw 1997; Smith 1993). Scale is no longer understood as static, bounded, and given, as it appears in the fixed categories like local, regional, national, or global (Jonas 2006; Marston, Jones, & Woodward 2005; Law 2004; Swyngedouw 2004; Brenner 2001; Smith 2000; Brenner 1998; Delaney and Leitner 1997). Allen and Cochrane (2007) have broken down the concept, arguing that scale is ultimately *political*: it changes over time, driven by different political motives.

Others have expanded on the equally important *nested* quality of scale: scales are not merely neat containers of smaller versions of themselves, like a Russian doll. Instead, they converge, conflict and overlap (Cox 2009; Brenner 1998). Mansfield (2005) argues that no place can ever be captured by a single scale because all scales, from the local to the national to the global, are not only dynamic, but also relational, i.e. they are connected, and depend entirely upon each other. Lefebvre (1991) famously notes that scales do not exist in isolation, but intertwine with and superimpose each other. As Brenner (2001: 605) puts it, you must look at the "upwards, downwards and sidewards links to other geographical scales situated within tangled scalar hierarchies and dispersed interscalar networks".

The Changing Importance of Scale

The concept of scale has thus expanded to concern the more dynamic processes of scalar construction, both the socio-political nature of scale and its nested structure. There have also been major changes in global scalar organization over the past century, reflecting changing political economic dynamics: in periods where capital is not accumulating successfully, we see significant territorial reconfigurations and scalar reorganization (Brenner 1998: 472; Harvey 1989: 431).

The post-1970s shift from a Fordist-Keynesian to a neoliberal mode of capitalism entailed precisely these processes of scalar reorganization (Brenner 1998). The Fordist-Keynesian era posited the nation as the principal organizational scale. More recently, however, the national scale has arguably become less fundamental, or at least

fundamental in a different way, while the local and global have grown in significance (Cox 2009; Brenner 1998). Many geographers emphasize the changing importance of this “glocal” scale: Swyngedouw (2007), Brenner (1998), and Peck and Tickell (1994) among them. Swyngedouw (2007) coined the term “glocalization” to describe the hollowing out of the national scale via new forms of neoliberal globalization that have expanded international flows, amplifying the importance of both the local and global scales. Peck and Tickell (1994) anticipate Swyngedouw in their discussion of neoliberalism as a “global-local disorder”, while Brenner (1998: 459) interprets the present round of neoliberal globalization as, “a multidimensional process of re-scaling in which both cities and states are being reterritorialized in the conflictual search for “glocal” scalar fixes”.

Although these authors generally agree on the changing importance and declining significance of the nation-state, none suggest the national scale is no longer relevant (Brenner 1998). The state still matters a great deal (Cox 2009; Mansfield 2005), despite recent discussions of scalar reorganization that question the contemporary status of the nation-state (Brenner 2004; Swyngedouw 1997). Cox (2009) also questions the literature’s emphasis on the ‘local’, which he sees as exaggerated. Joseph (2002: 152) questions the emergence of “glocal” literature as well, arguing that these scales were always important part to capitalism, and the “seductiveness of the global/localization story” lies in our yearning to romanticize the local scale. Indeed, she claims capitalism depends on the discourse of local community to legitimate social hierarchies. The ongoing theme of the ‘local scale’ and ‘community’ in scalar literature sometimes suggests the possibility of a middle-level scale, which may also help address socio-environmental problems. Often, something called the ‘region’ has been proposed as this principal middle scale, a topic that will be revisited in Chapter 6.

Yet, while many question the idea of the ‘local’ (Cox 2009; Mansfield 2005; Joseph 2002), they do not distinguish between *rural* versus *urban* local scales. In fact, most of the literature has a strong and unreflective focus on the urban local scale alone

(Brenner 1998). Harvey (1989) suggests that the urban scale has been the most fundamental arena for capitalism's "spatial fixes": the urban space is constantly reorganized in order to solve crises of capital[3]. In his *Limits to Capital* (1999: 373), Harvey discusses the significance of urbanization to capitalism's "uneven geographical development". Harvey further reiterates on capitalism's inherent uneven development in *Spaces of Global Capitalism* (2006), arguing that, historically, the growth of neoliberalism has spurred numerous crises of capital worldwide. Capitalism tends to concentrate capital and labour in urban centers, while simultaneously increasing interscalar connections through transportation and communication structures. This develops unevenly, though, producing an antagonism between the rural and urban, or the "centre" and "periphery" (1999: 419). Harvey (1999: 373) argues the rural scale is unimportant to capitalism: an undeveloped and "relatively empty region".

Given this framing of scale derived from the urban, how can the rural be understood? Is there anything particular to the rural local scale that distinguishes it from the urban, or are they interchangeable? The literature on scale might then potentially apply well to the case study of McBride: the urban may be virtually substitutable for the rural. Alternatively, and, it would seem, more likely, the literature might be missing a significant component by leaving out the rural, taking it as interchangeable, or as unimportant and undeveloped. The politics of scale might function differently in the rural context, and our recognition of this difference could reveal the importance of the rural in today's global economy.

It is important to keep this in mind when examining the politics of scale in McBride and in global climate change debates. In the context of my research, the politics of scale are crucial, and solicits key questions for my study: How is the local scale

[3] Scale is an 'arena' in this case because the urban environment is the *space* in which capital reorganizes itself during times of crises. It is important to note that scale is not just an 'arena' but also a 'means to' and a 'product of' capitalism's "spatial fixes". The urban scale is a means to capitalism's spatial fixes as it is purposely used as a way to solve crises through reorganization: it is a means to fix and reproduce capitalism. It is also a 'product of' capitalism's spatial fixes because through the process of reorganization, we are actually defining and producing scale itself.

understood in the debate regarding climate change? What role does the local play in these debates? Is it the "most important" scale, or one of the most important, in today's economy? How does the rural fit with the question of the local scale, and why is it ignored by the literature on scale? How are these various scales of governance constructed and intertwined in BC's resource sector? Any attempt on the part of McBride – a "local" community – to confront climate change – a "global" crisis – must address the politics of scale that structure the terms of the problem.

Innis's Staple Thesis

One way to address the missing 'rural' in an examination of scale is the work of Harold Innis. Innis focused on the 'local', emphasizing the importance of the historical and geographic context of Canada. He recognized the primary resource sector as the core of the Canadian economy (Innis 1995; Innis 1933). These primary resource industries (like agriculture, mining, and forestry) are often based in rural communities, not urban metropoles—rural communities are obviously vital to the Canadian economy. As Hayter (2000: 31) notes, "Most Canadians may live in urban areas in occupations that are not resource related, but resource-based company towns remain prevalent and still define Canada's global economic role". Barnes (1996) describes Innis's work on Canada as "local modeling": Innis shunned universal explanations of Canadian political economy, concentrating instead on the specificities of context when examining a problem.

Innis' work is important for this research because it examines the local as it is enmeshed in the web of the national scale - Canada - and the global scale, in international primary commodity markets. This is fundamental to Innis's staples thesis, an explanation of Canada's resource-dependency. The staples thesis explains Canada's global economic marginality as a function of its dependence on the export of a small number of primary resources (Barnes, Hayter & Hay 2001; Barnes 1996; Innis 1995; Innis 1933). International primary commodity markets are volatile, creating booms and busts, and staples are mostly produced for export. This creates a dependent and unequal relationship with foreign metropoles, and hinders industrial diversification (Barnes, Hayter & Hay 2001; Innis 1995; Innis 1933). Innis described this uneven

relationship in a different time, though, when Canada was still a virtual colony of British industry. More recently, however, the scale of this unequal relationship has changed. There is no longer a dependent and unequal relationship between Canada and foreign metropoles, but between rural communities - like McBride - and *domestic* metropoles. Overall, then, this dependency is now between rural and urban environments *within* Canada. Rural communities are experiencing the volatility of the boom-bust economy, and are exporting only a few primary resources to urban metropoles. In many of his publications, Innis described the negative effect this has on British Columbia specifically: "The lumber industry of British Columbia…as in the case of all industries producing construction material, has been particularly subject to depression" (Innis 1933: 107).

The staples thesis, unlike a lot of research on scale, focuses on small resource-dependent towns. These communities get locked into global resource markets, making them particularly vulnerable (Barnes, Hayter & Hay 2001; Innis 1933). They experience cycles of rapid growth during good times and economic abandonment during times of crisis. Moreover, they are often relatively powerless in the face of this process (Innis 1933). This is frequently the pattern for rural towns in BC and Canada (Barnes, Hayter & Hay 2001). These communities are extremely exposed to market fluctuations as their economies are often undiversified, and this vulnerability is evident in the disparity between rural and urban standards of living (Innis 1933: 128). This disparity is true even today. From 1980 to 2000, Canada's rural-urban income gap ranged from $3,725 to $4,821 in favour of urban regions, with BC's rural-urban income gap averaging at $3,783. Therefore, in each Canadian province, incomes in rural regions are lower than those in urban regions, and this pattern has persisted for the past four decades (Statistics Canada 2004). In 2000, the average income of BC's rural regions was $20,742, whereas the average income of the urban regions was $24,341. This statistic holds true for McBride: McBride's median income before taxes is $21,833 (Statistics Canada 2006a), whereas metro Vancouver's median income is $25,032 (Statistics Canada 2006b). Furthermore, urban metropoles have more political power and control of the hinterlands. As Innis (1933: 134) says, "The sheltered metropolitan areas tend to impose burden on regions exposed to world fluctuations."

The staples thesis, then, offers a good preliminary framework for looking at McBride, a struggling and vulnerable resource-based community, currently experiencing

political pressure from BC's core to change during this period of volatility. McBride has experienced the booms and busts of the forest industry throughout its whole history (Wheeler 1979), and this economic over-dependence on one industry – forestry – has made it much harder to weather the downturns, since there is so little diversification. In addition, Innis illustrates the importance of transportation in the development of the Canadian and British Columbian staples economies. The construction of Canada's railroads and highways enabled resources extraction to occur in the hinterlands (Innis 1995; Innis 1933). This point helps us furthermore understand McBride's experience, as their resource-based economy developed in direct connection to the construction of the Grand Trunk railway and later, Highway 16; their economy has been greatly transformed by changing transportation routes.

However, I do not want to suggest that Innis framework is all we need. It is helpful as a rough outline, but it misses a lot. It does not fully address, or even consider, current environmental concerns. Innis assumes infinite resource booms and busts in his work, which is tantamount to assuming infinite resource availability, at least at any scale larger than the regional. When recounting Canada's economic history, he describes it as a series of shifts between different booming staples, from the fur trade, to fish, to lumber, and onwards. This is an ongoing cycle according to Innis: when one resource is exhausted or not in demand, the Canadian economy can always find a new resource (Innis 1995):

> The gold rushes hastened the shift to new staples and contributed to the difficulties of the long depression, but once the shift was made the basis was provided for the great boom. There were no gold rushes to soften the depression of the thirties, and the shift from wheat to live-stock and dairying in western Canada was accomplished.... (Innis 1995: 116)

Perhaps the key point illuminated by a return to Innis, then, is that according to his framework, McBride may be in a bust now, but its resource-based economy will eventually boom again. Current ecological and political economic conditions would seem to suggest this is not necessarily guaranteed.

This is partly because Innis takes no account of the need for resource conservation. Canada cannot depend on unlimited resource capital, especially with the

current state of the environment and the already obvious effects of climate change. The next “boom”, if it is indeed ever to arrive, needs to change its disposition in a more sustainable direction. Innis was very skeptical of conservation practices in general (Innis 1995). He believed conservation was a notion circulated by the government through “propaganda”. This “propaganda” identified the depletion of natural resources as critical to the wellbeing of the country, but Innis thought there was a fundamental flaw in this viewpoint. Natural resources are extracted more during boom periods and less during bust periods. Resources go through natural cycles of boom-and-bust, and if depleted, or if demand changes, the economy will turn to a new staple or move in a different direction (Innis 1995). Therefore, there is no need for conservation, which in fact hinders “progress”:

> The drive of modern technology with the modern pecuniary economy involves exhaustion of natural resources and getting on to something else. Depletion of pulpwood enables hydroelectric power to be turned from paper plants to other industries in the interests of progress and higher standards of living. The problems of conservation are concerned with restricting technology... (Innis 1995: 206)

Although Innis’ staples thesis offers a good preliminary framework for my thesis because of its concentration on the rural scale, it needs to be updated to include not only the conservation but also the potential exhaustion—with no reasonable expectation of 'regeneration'—of natural resources like forests. What would a post-industrial and sustainable forestry “boom” look like for McBride, if it were even possible? Moreover, how would the politics of scale work in that transformation? The standard scalar relationships in Innis’ staples cycle involve companies coming into rural communities to extract staples, while the government aids this process through the construction of necessary transportation networks and associate institutional and physical infrastructure (Innis 1995). The 'naturalness' of this scalar relationship can no longer be taken for granted. Will capital come back to the rural without intensive resource extraction? If so, what forms would it take? What would be the role of municipal, provincial, and federal governments in this transformation? The end of the traditional boom-bust cycle produces new scalar problems for the rural. We cannot sweep existing institutions under the rug, but at the same time, these rural communities - and Canada as a whole - need to

sustainably transform the traditional structure of the staples economy, which might very well mean no longer being a 'staples' economy (in the Innisian sense) at all.

Chapter 4.

Initiatives

There are several initiatives currently underway in McBride to help lower emissions and shift the Robson Valley to a "low-carbon economy". These initiatives are coming from all scales of governance as well as from people's private homes and businesses. In this chapter, I will discuss potential opportunities for local emissions reductions, as well as projects presently helping McBride transition to a less carbon-intensive future. These projects include a variety of municipal and provincial government programs, renewable energy production, building retrofits, transportation emissions strategies, and an expanding local agriculture movement. I will also connect these initiatives to the larger question of scale, addressing some of the critical questions brought up in chapter 3: Is there anything particular to the rural scale that distinguishes it from the urban? What role does the 'local' scale play in climate change debates? A discussion of McBride's carbon-reducing projects will answer some of these questions, illuminating climate change opportunities specific to McBride's geography and history.

The Municipal Government and The McBride Community Forest

McBride's municipal government has been actively involved in emissions reduction plans. Notably, the local government amended its Official Community Plan (OCP) to encourage GHG reductions. In the OCP they recognize their inability to reduce emissions by a full 33% by 2020 (as mandated by BC's Climate Action Plan) because of uncontrollable highway transportation passing through the area, but include a number of other objectives for reducing local emissions. These objectives include supporting a wood stove exchange program, anti-idling policy, green building standards, renewable energy generation, replacing old equipment with low emission equipment, promoting

GHG-reducing education programs, encouraging carpooling, and working with the regional district to meet these goals[4]. Councillor Mike Moseley wants to put up anti-idling signs around the community, because many local residents unnecessarily idle their vehicles in winter (p/c, June 3rd 2011). This, however, flags in an almost mundane way some of the specific challenges facing rural communities trying to achieve 'carbon neutrality' or broader emissions reductions targets. For a while in Vancouver, the anti-idling policy (which has proven a complete joke in practice) means one thing; for the vast majority of urban traffic, not idling is merely an inconvenience. In McBride, however, this policy would unsafe for big trucks in the winter, which have to idle for safety reasons. Recognizing this, anti-idling policy is included in the OCP's GHG objectives "where it is safe and reasonable to do so", as many policies and technologies assumed to be easily implementable in an urban context cannot be safely applied to an area like McBride. "Reasonable" becomes a key word here: in many cases, rural communities cannot reasonably apply climate change policy on the ground, as they face different geographic challenges than urban environments (discussed further in chapter 5). As Gordon Simmons – retired employee of both the regional and local government – emphasizes:

> We're reasonable and safe, and I think that's missing in the whole legislation. When you're sitting at 40 below and you've got an electric car, it just doesn't work. That's not safe for the people that are using it; that's not reasonable. But as technology progresses, or better stuff comes on the market, then the village council has already agreed that this is a reasonable way to go, to purchase [more efficient equipment] in that direction. (p/c, June 23rd 2011)

The local government is taking other small steps to reduce local emissions and create a sustainable community, steps that are applicable to the local context and can be *reasonably* applied to McBride's geography. For example, everyone, including tourists, drives small distances around town because there are not many sidewalks. To encourage more walking, the local government plans to build more sidewalks, install solar lights and plant trees around the walkways, and build parks to make the town more

[4] The Wood Stove Exchange Program is a provincial program encouraging British Columbians to exchange their older inefficient wood stoves for new lower-emission stoves (BC n.d.).

aesthetically appealing and safe (Anonymous3, p/c, June 9th, 2011). As Mayor Mike Frasier notes:

> We're out on the highway, we're picking up garbage, and we're trying to keep the town clean, and we're planting trees, and we're doing this kind of stuff to make this place look better. It feels better, people are more comfortable in a place like this, and I think that's half the battle. (p/c, June 23rd 2011)

The Village of McBride is also constructing an eco-sensitive wastewater facility, to be completed by 2013, which will clean McBride's wastewater through a system of three lagoons. Previously, McBride's effluent was released untreated into the Fraser River (Anonymous1, p/c, June 7th 2011). The MCFC partially financed this initiative, as some of its profits go back into community projects. Overall, the local government has been actively reducing its own emissions by using more efficient equipment, while simultaneously trying to educate the public. For example, it brought BC Hydro into the community several times to conduct workshops on reducing personal consumption.

The Village of McBride tries to uphold its environmental principles in the management of the MCFC. The MCFC stresses green values in its framework and philosophy, as evidenced in the McBride Community Forest Concept (2007) – a proposal released by the MCFC detailing its objectives and organization – and in several interviews with MCFC participants (discussed further in Chapter 5). Community Forest Manager Marc von der Gonna believes the community forest structure itself helps maintain these principles:

> You have the opportunity to manage the landscape, to protect values that are important to the community, whether they be visual quality, water quality, or recreational opportunities, that type of thing. Because you have definite area to manage, you can become quite intimate with that land base, you're not sort of shifting from place to place. And because it's a long-term license, you can make investment into the land base knowing that you'll reap the benefit from that land base. (p/c, June 15th 2011)

This is an example of how focusing on the 'local' in climate change and sustainability debates can lead to positive results. The municipal government and MCFC work so closely with the environment, they are, at times, better able to solve environmental issues at a smaller scale because they understand the complexities of the area, as

opposed to someone from the provincial government trying to manage a land base in the Robson Valley from Victoria with no prior knowledge of the region.

When I originally came to McBride, I wanted to focus exclusively on the community forest's environmental strategies. I was curious if they were implementing any offsets or emissions reduction programs in the forest. According to Provincial2, employee of Carbon Neutral Operations and Climate Outreach for the Ministry of Environment, "there's lots of investment happening and a lot of offset projects are happening in small communities like Port Alice, up in north-east BC, and those kinds of investments and projects help people have jobs and it helps create business opportunities for people" (p/c, July 8th 2011). Was this the case in McBride?

Interestingly, the community forest has implemented neither offset nor emissions reduction projects. Many interviewees recognize the local forest's potential for offset projects, but this process is evidently more complicated than it sounds. von der Gonna spoke of the complex and laborious nature of building an offset project. Due to a lack of manpower, he alone would have to design a proposal, do a full carbon accounting (which is extremely difficult and time consuming), and then, after all that, risk not getting it approved by the provincial government. He questions the value they would receive from constructing an offset project:

> Do the numbers line up? Is it worth my while to try and figure all this out and jump through all the hoops, and then realize that this is great and I can do it, but I'm going to lose 5 dollars a tonne of carbon storage, because it's going to cost me 25 dollars a tonne to do, and they're only going to give me 20 dollars as an offset…. It's new: it's a whole new way of thinking and it's a whole new process and, for us, sometimes it's better to go second then to be first. Let somebody else work out all the bugs. (von der Gonna, p/c, June 15th 2011)

Provincial4, employee from BC's Ministry of Community, Sport and Cultural Development, echoes this, going into further detail about the difficulty of building an offset project in BC:

> That forestry piece is very complicated. The climate action secretariat, the MOE [Ministry of Environment], has just developed a big forestry conservation offset protocol and it's hundreds of pages long and it's very dense and complicated to get through, and so there we know local governments are interested in the forestry piece and would like

> to work with them to help kind of smooth out that process and make it more accessible for them, but it is complicated as it currently stands. (p/c, July 8th 2011)

Even with this complexity, von der Gonna and other local government representatives (Councillor Rick Thompson and Mayor Mike Frasier) seem positive about pursuing this opportunity in the future, when the process becomes clearer.

Other community members are more skeptical of carbon offsets. Some disagree with the idea itself, believing it to be a false market that does not provide any real environmental benefits. Local woodlot owner Ray Thiessen is especially critical:

> This whole carbon exchange thing is as moronic as the stock market is. It doesn't do the environment any bloody good. I think it's a way of delaying the pain of actually using your head...Oh sure, it just sits there, but, I'm sorry, you don't just build a community by having huge tracts of land being held that are actually productive, that have the ability to sustain people by their fertility, and just leave them there so that somebody else can continue bad practices somewhere else. (p/c, June 22nd 2011)

Others agree: Larry Stamm calls carbon offsets "criminality to the highest degree" (p/c, June 25th 2011), and Lelani Arris questions both the environmental benefits of plantation-style offset projects as well as the illusory nature of carbon accounting (p/c, June 17th 2011). Can you really calculate carbon losses and gains? What about the other environmental benefits of a forest? Are those just ignored? Arris and Stamm also have misgivings of the economic benefits of carbon offsets. Would the community actually profit? What forestry jobs would be lost if land was set aside? Could McBride really build its economy around carbon offsets? These questions are yet to be answered, as carbon offset projects in BC are still in their initial stages. The local government does not want to begin this process until other communities establish projects and the process of building carbon offsets becomes clearer at a provincial scale. Scale is important in the question of McBride creating a carbon-offset project, then, as the MCFC feels McBride – a small rural community – cannot work out the complications of this process at such a small scale. Higher levels of governance need to add clarity to this process, and offer more guidance and aid to small communities looking at carbon offsets as a viable local industry.

It is uncertain whether the MCFC will build a BC-certified offset project, as it is a complicated process that has both benefits and drawbacks. Yet, there are different conceptions of carbon offsets aside from the ones certified by BC's Pacific Carbon Trust. Local restaurant owner and organic farmer Nelson Hicks, has a unique take on the idea of carbon offsetting. Hicks owns a 50-acre farm just outside town, where he lives and grows organic food for local consumption. Interestingly, Hicks only grows food on 5 acres of his land: he set aside the other 45 acres as untouched forest, left in its natural state. This, he says, is his way of giving back to nature and offsetting his family's carbon footprint. When I asked him why he did this, he said:

> Somebody has to. It has to start somewhere and it has to start soon, or there won't be any of us around and I think I'm paying forward for my children. (p/c, June 27th 2011)

This is a novel concept: a personal carbon offset, not to be purchased or bought, but simply for the sake of offsetting the private consumption of one family. There is no carbon accounting or paperwork involved, and no profit made on Hicks' account. Clearly this practice cannot work everywhere, as most do not have this amount of land, but his example offers a different and potentially simpler way of thinking about carbon offsets.

Renewable Energy

McBride may have a 'green' opportunity in renewable energy production, due to the abundance of natural resources in the Robson Valley: large expanses of forests and rivers. The village government is strongly promoting renewable energy as an alternate industry the valley can latch on to, which will not only supply renewable energy to the provincial grid, but also increase local revenue and employment. Bioenergy and run-of-the-river (ROR) projects have the most local promise, but several interviewees also spoke about possible solar, wind, and geothermal energy production. Although some people think this industry is economically unsustainable, as it would not provide enough permanent jobs (Ray Thiessen, p/c, June 22nd 2011), most people look to renewable energy as the industry of McBride's future. Moreover, the provincial government is strongly encouraging renewable energy production in rural communities as a way to

diversify economically and meet carbon neutral commitments (Provincial2, p/c, July 8th 2011).

The potential of renewable energy in McBride is not without debate, especially when discussing public versus private renewable energy development. Some interviewees believe free enterprise should take over energy development in BC, while others are weary of the private ownership of public resources. This public versus private debate extends province-wide, coming directly out of the changes in BC's energy policy. In 2002, BC released an energy plan focused on both public ownership and more private sector opportunities in energy development. In this plan, BC Hydro would actually purchase energy from private energy producers (BC 2007b; Calvert 2007; BC 2002). According to the Province, this growth in private sector energy development will increase trade, regional economic growth, efficiency, and help supply BC's growing energy demand without using fiscal resources (BC 2002).

Many are critical of this transition to private ownership, arguing that increasing private ownership of energy production will drastically raise energy prices in BC (Calvert 2007). Independent power producers currently have the exclusive rights to develop all small run-of-the-river and wind power projects in BC, and these companies are allowed to export this energy out of the country, decreasing the province's future energy security as well. Also, foreign ownership is allowed and, currently, only 10 companies hold two-fifths of all run-of-the-river applications, causing many to question the regional economic benefits of private energy development. Many communities feel they do not have the power to control and protect their natural resources, as Bill 30, passed by the Province in 2006, allows private companies to develop projects without the approval of the municipality (Calvert 2007). Overall, public versus private ownership of renewable energy production is a complex and debated issue (which I will touch on more in Chapter 6). McBride residents are divided on this subject, even if many support the overall growth of the renewable energy industry in the valley.

Bioenergy

McBride has an opportunity to use its forest resources for bioenergy production, which will aid in diversifying McBride's forest industry. The community forest produces a

lot of economically valueless waste wood. About 60% of logged lumber has no profitable market (decadent cedar and pine beetle lumber), and is usually left in landing piles or burned (Rick Thompson, p/c, June 20th 2011). However, this wood could be used in a bioenergy plant and provide BC with clean energy. The MCFC would benefit from the sale of wood waste, and the community would benefit from local economic growth and employment opportunities. Bioenergy plants are one of the few renewable energy industries that employ as many people *after* the construction of the facility, as it requires a lot of maintenance. von der Gonna strongly approves of local bioenergy production, saying, "…in the future, if everything goes as well as I would hope, I think that we have huge potential to have as a main anchor industry, commodity industry, something in the bioenergy fiber type realm, where we're making electricity, or we're making heat, or we're making pellets, or we're somehow using all that waste material" (p/c, June 15th 2011).

The ecoTECH Energy Group plans to construct a combined heat and power bioenergy generating facility on the old Lamming Mills site near McBride. The MCFC will be ecoTECH's sole supplier of fuel in the form of waste wood. The power station aims to produce up to 60 megawatts per hour in winter conditions (when run-of-the-river power is at its lowest), with a mean annualized average of 36 megawatts per hour, using combined cycle steam systems. In this way, ecoTECH plans to work with the local river-of-the-river IPP's to produce power when the ROR's are not. The surplus heat will be used by two other businesses attached to the bioenergy plant: a hydroponic produce greenhouse and an indoor aquaculture facility. These facilities will produce "beyond organic" and "full-circle food", i.e. no fertilizers and pesticides will be used, and all the waste from fish production will be utilized in the hydroponic greenhouse, with the greenhouse's plant waste being used to feed herbivorous fish and worms for carnivorous fish. The food produced by the greenhouses and aquaculture facilities will then be shipped to local and regional supermarkets. ecoTECH is currently awaiting confirmation from a large BC-owned supermarket chain, which will be their main client (Colin Hall, p/c, July 18th 2011).

Along with local fish and produce, this plant will produce green energy, permanent year-round employment, and reduce transportation emissions and costs associated with shipping food. ecoTECH is also open to providing heat/energy to other

green businesses once the plant is constructed, potentially creating additional local economic and employment prospects. Overall, the facility will provide 236 permanent and temporary jobs. These jobs will suit a diversity of people, as Pete Hollist – retired forestry worker and local bioenergy expert – mentions, "[the] whole concept of the biomass thing is it covers all aspects of that range of employable people, from very highly qualified university business people, right down to the other end: the mill worker, the person who works in the greenhouse" (p/c, June 23rd 2011). ecoTECH and the local run-of-the-river projects are awaiting BC Hydro's upgrade of the 138 kVA power transmission line from McBride through to Valemount, a necessary upgrade for conveying energy to the province (discussed in chapter 5). Because of this, the ecoTECH plant will be constructed in two phases: the first a smaller heat-producing plant for produce and fish production, the second a larger plant, which would sell power to BC Hydro.

Some McBride residents are wary of local bioenergy production, as they think it will overexploit the valley's forest resources. "I'm not in favour of [bioenergy] on a large scale because it commits too much wood. We think we're already overharvesting…and if you start putting more pressure on the forest, I think that creates more of an ecological deficit than otherwise" (Roy Howard, p/c, June 20th 2011). Both Stamm and Hicks doubt that burning oil to truck in waste wood really provides a net energy benefit (Stamm, p/c, June 25th 2011; Hicks, p/c, June 27th 2011). Would more energy be produced than used for wood shipment? Might this even *increase* net emissions? Other interviewees support the idea of bioenergy, but are critical of ecoTECH. Hollist was an early bioenergy advocate in the community, believing McBride to be a perfect location because of its forest species composition. Nevertheless, he is skeptical of ecoTECH because he does not think they are a sufficiently "established" company (p/c, June 23rd 2011). Phil Marsh, chief technology officer of BC Biocarbon, is also enthusiastic about bioenergy, but believes energy should be produced solely for local consumption by a smaller locally owned plant. He believes this model should be applied in rural communities across Canada (p/c, June 25th 2011). Nevertheless, the ecoTECH plant excites many local residents. The local newspaper, *The Valley Sentinel*, described a recent ecoTECH job fair held in McBride,"[o]ptimism, hope and excitement are the emotions that best

described the atmosphere at the ecoTECH Job Fair at the Robson Valley Community Hall on Saturday, October 29" (Betts 2011).

Run-of-the-river

In the Robson Valley, there are many people interested in producing run-of-the-river (ROR) renewable energy. The valley's topography is perfect for ROR production because considerable volumes of water come down from the surrounding mountains in the form of rivers and creeks. McBride native Duke Peterson is an independent power producer (IPP) who enthusiastically supports the development of more local ROR projects. He believes ROR offers endless economic and environmental benefits:

> The IPPs, independent power producers, that are contemplating doing these run of the river projects, will provide a lot of economic activity for this valley, a huge amount. And so, every job that we can create, we can have jobs that are doing something that's clean and actually prevent carbon going into the air. (p/c, June 16th 2011)

His company, Holmes Hydro Inc., is developing ten hydroelectric run-of-the-river projects in the Holmes River Watershed near McBride, which will generate a maximum of 76.5 megawatts during the spring freshet. All these projects will be above fish-bearing areas of the watershed in order to have as little negative environmental impact as possible (Peterson, p/c, June 16th 2011). Holmes Hydro Inc. previously built two run-of-the-river projects in Valemount and East Twin Creek, and sold both in 2007 to a large company (Brookfield Power) before deciding to develop ten additional projects (Peterson, p/c, June 16th 2011; Gordon Simmons, p/c, June 23rd 2011). Along with Holmes Hydro Inc., there are additional local IPPs hoping to build more ROR projects. Gordon Simmons discussed numerous other projects in the works, including one in Tête Jaune, one in the Cottonwood area, and one in Small River (p/c, June 23rd 2011). ROR projects will bring more employment to the valley, but most of these jobs are not permanent. As Gene Runtz explains, "It's initially quite a few jobs to get those things set up, and then a lot less, but they still have to be maintained" (p/c, June 24th 2011). Unlike bioenergy, ROR employs many people during construction and less for maintenance, but overall, ROR helps support local IPPs, provides some employment, and delivers green energy to the province.

Like bioenergy, some citizens are apprehensive about run-of-the-river projects in the valley and potential damage to river ecosystems. Lelani Arris says "there are associated environmental concerns with those as well: not greenhouse gas emissions, but other impacts of putting in dams on the local rivers" (p/c, June 17th 2011). Many others reiterated these concerns, like Roy Howard, who thinks "…this Valley, on kind of a grid-scale level, probably has more potential with small run of the river stuff than anything else, but that's maybe got more environmental concerns than the other potentials too" (p/c, June 20th 2011). Run-of-the-river projects can adversely affect tourism by limiting river accessibility, as most require some form of a dam. These dams can also harm the environment, as the above interviewees noted, by changing the stream flow and siltation of a riverbed, potentially hurting river wildlife as well. Developers also need to build transmission lines and roads to access the river, which can damage the local forest environment (Calvert 2007).

While discussing ROR projects in McBride, many interviewees brought up the debate between private versus public ownership of renewable energy. Nancy Taylor, Pete Amyoony, and Larry Stamm are uneasy about the IPPs' privatization of communal water resources and think all hydropower should be publicly owned:

> And what about like the selling off of, privatizing public resources, like come on! Like, all of these run of the river projects, it seems immoral to me. It seems unethical that they take water that belongs to all of us. It doesn't belong to anybody, it belongs to everybody at the same time, and they're letting private people develop it and profit off of it, and sell power. (Nancy Taylor, p/c, June 25th 2011)

Contrastingly, Tom Ryan thinks the government has too much control over IPPs. According to him, "BC Hydro's set up as a crown corporation to make money, there's no question about it, but when they dictate that you've got to sell it for this and buy it for this, I think that government ought to back off a little bit and let free-enterprise take over" (p/c, June 27th 2011). Whether one side of the debate is right or wrong is not the question: what matters is what works best in McBride (discussed further in Chapter 6). Clearly, McBride residents have very different opinions on this subject, but most still recognize the great potential ROR has in the area, even with its associated trade-offs.

Solar/wind/geothermal

Both bioenergy and run-of-the-river projects have the most renewable energy promise in the valley, but a few interviewees discussed the smaller potential of solar, wind, and geothermal projects. Solar power may be locally applicable, but since winter daylight is very limited, only small-scale personal solar power is really suitable to the area:

> There's a lot of very small-scale…especially because there are still places that are far enough off the grid that it's been economical for them to use solar. Solar is a little dicey here because of how far north we are and the amount of rain and cloud cover that we get it: it can supplement, but it's certainly not something you can rely on. (Lelani Arris, p/c, June 17th 2011)

Roy Howard owns Rocky Mountain Solar Company, a local Dunster company that installs solar electric (photovoltaic) panels, solar hot water systems, and wind power. Locally, he has installed six solar hot water systems (one in Prince George) and four off-grid solar electric systems. Even with the small amount of winter daylight, Howard still thinks small-scale solar is locally appropriate (p/c, June 20th 2011). However, the initial financial burden of these systems is often a barrier:

> Financially, it's really tough for people to bite the bullet and say that they want to go put in a solar PV system, because electricity is so cheap here and because the government is not willing to put up any incentives for that. It was better under, and it still is better under, solar hot water because those systems actually pay for themselves. The solar PV systems or small wind, they don't pay themselves. (Howard, p/c, June 20th 2011)

Wind power may not "pay for itself", but it is a potentially valuable industry in McBride. The valley has both a flat open area and high ridge-tops that get a lot of wind year-round. No companies have conducted any feasibility testing in the area, though, so the potential for wind power in the valley is still uncertain (Anonymous1, p/c, June 7th 2011):

> To have wind power economically, you need to do a feasibility study for quite a while, and what I've seen for wind power, is they choose ridges, a high point somewhere, that have a steady heavy wind. And McBride, although we talk anecdotally about how windy McBride is, I'm not sure it's enough. (Duke Peterson, p/c, June 16th 2011)

Howard installed a small windmill at the McBride airport: this is the only on-grid windmill in the area. This windmill feeds energy to the pilot's lounge at the airport, but Howard believes the windmill's energy production will never pay for its original cost. Wind power is only productive on a large scale, unless it is off-grid for private use (Howard, p/c, June 20th 2011). Overall, there is potential for wind power on ridge-tops, but a lot of capital is necessary for large-scale wind farms, and ROR and bioenergy production are more suitable to McBride's topography.

Howard may be the most informed local on solar and wind energy, but he is also enthusiastic about local geothermal energy production. According to Howard, Kinbasket Lake (located just southeast of Valemount) contains an ideal hot spring, with one of the highest geothermal energy production capacities in all of Canada. Howard believes the Village of Valemount should pursue this development, but no one has jumped on this project yet because of, according to Howard, the availability of cheap electricity in BC (Howard, p/c, June 20th 2011). Nevertheless, Howard emphasizes the economic and environmental benefits of geothermal energy:

> I would like to hit on this geothermal thing. There's a really ideal spot that used to be a really nice hot spring…So that is a potential that somebody could jump on…People are looking at that, but it's just moving so slowly, whereas these run of the river things, they just take a couple of years for somebody to jump on, then they're producing electricity. This one is a bigger potential and is much less environmentally damaging. (p/c, June 20th 2011)

Clearly, many McBride citizens see a future in a local renewable energy industry, especially in bioenergy and run-of-the-river projects. Although many interviewees were concerned about the trade-offs associated with these developments, many were more excited by the vision of McBride moving in a greener economic direction. These projects could deliver green energy province-wide while building up and diversifying McBride's economy. Solar and wind renewable energy do not have as much local promise, but could be useful for off-grid private homes and businesses in reducing some personal emissions and saving money. Overall, the large potential for renewable energy in McBride illuminates the specific opportunities rural environments have in reducing emissions and moving in a more sustainable direction. Unlike urban environments, the

rural scale has large expanses of natural resources that can be used in the production of renewable energy.

Building and Transportation Emissions Reductions Plans

As stated in the introduction, 82.4% of McBride's emissions come from transportation, 14% from buildings (BC 2010). This section deals with how public and private institutions are currently reducing these emissions. The Robson Valley's cold winter requires a lot of building heat energy, and with no natural gas and unreliable electricity, many local residents still rely on propane and heating oil. Combined, these comprise 5% of residential energy consumption in McBride, but 82% of all CO2e from residential buildings[5] (BC 2007a). Currently, many local residents are retrofitting their homes and businesses to reduce emissions and energy costs.

The local government is working on reducing its buildings emissions, as per the carbon neutral commitments under the Climate Action Charter (Anonymous1, p/c, June 7th 2011). The municipality owns a building complex which houses the municipal government's office, a doctor's and dentist's office, the post office, and the liquor store, so it can address a large chunk of building emissions by retrofit. A propane generator currently heats the building, so the Village is looking to install new insulation and either a heat pump or wood waste generator. Currently, however, it does not have the $600,000 these upgrades require (Anonymous1, p/c, June 7th 2011).

The community recreation center – another locally important government building managed by the regional district– is currently undergoing a large retrofit. The recreation centre received $400,000 from Towns for Tomorrow and $650,000 from other provincial and federal grants to do a heat reclaim. The regional district is installing heat pumps,

[5] "CO2e" is an abbreviation for "carbon dioxide equivalent", and accounts for other greenhouse gases (like methane) that contribute to climate change. It does this by converting all other greenhouse gas impacts into one metric, measured by the gases' equivalent greenhouse impact to carbon dioxide (Berners-Lee and Clark 2010)

energy efficient lights, and re-insulating the ceiling and roof to help drastically reduce energy consumption. Currently, the recreation center's two compressors (which remove heat from flooring to create ice) use 1.3 million BTU hourly, and are active for 7 months during the winter sporting season. The heat pumps will save this energy, and some of the heat produced will heat the community hall next-door. The recreation centre will install LEDs, reducing by 95% the power previously used on lighting. The ceiling will be reinsulated and transformed into what is called a "low-e ceiling", doubling the ceiling's insulation capability. In the future, they also plan on putting solar paneling on the roof (Lyle Lewis, p/c, June 23rd 2011). This recreation center is one of the central buildings in community life, so this retrofit is a big step in the right direction.

BC's Climate Action Plan requires all public institutions to become carbon neutral, and this includes all public schools. Principal Derek Shaw wants to retrofit McBride's high school, but his proposed project was denied. Shaw wanted to install a solar hot water system on their roof, as the building is presently heated by a propane-generated hot water system. Shaw plans on resubmitting this proposal in the near future (p/c, June 22nd 2011). Shaw has taken other small steps to reduce energy consumption in the high school. For example, he initiated a program to automatically shut off computers when not in use. The computers in the school used to be on all the time, until Shaw estimated that turning off the computers when they were inactive would save the school $400 dollars a year (per computer) in energy costs. The computers now shut down automatically every 30 minutes (Shaw, p/c, June 22nd 2011). These may be small steps but are important in the grand scheme of public institutional energy-use in McBride, as McBride only has one high school.

McBride citizens have also addressed building emissions on a smaller scale in their homes and businesses. Lyle Lewis has seen a recent upsurge of retrofits in the community:

> Definitely you see people insulating more throughout housing, as well as any of the buildings. If you look around…the buildings around town, a lot of the businesses, have done a lot of work on their roofs, insulating, trying to capture, get some of the heat kept in the buildings, and I know a lot of them have changed over their lighting as well. That's a start. (p/c, June 23rd 2011)

Many interviewees describe the importance of taking these steps in their homes, while emphasizing numerous associated benefits. These changes not only reduce emissions but also help save money:

> People are encouraged to do big things, but they're not encouraged to do little things, like the encouragement of wrap grants and repairing your house and insulating and that: it's unreal the energy you can save by doing little things. I had my house done last year through a wrap grant, and up until last year, the typical winter I used four tons of pellets to heat my house, and was always cold. Last year, which was the coldest winter we've had for a long time and the longest, I used a ton and a quarter of pellets and was warm all winter. (Peter Amyoony, p/c, June 25th 2011)

According to many, the local, provincial, and federal government need to push these kinds of smaller changes (Howard, p/c, June 20th 2011; Shaw, p/c, June 22nd 2011; Pete Amyoony, p/c, June 25th 2011).

On another note, there have not been many projects addressing transportation emissions. McBride is geographically isolated. People have to drive long distances, and goods have to be trucked into the community. The valley's population is dispersed across a wide area, and the closest large city, Prince George, is over 200 kilometers away. McBride is also on a major regional highway corridor, Highway 16, so a lot of traffic – and its associated emissions – goes through the area[6]. Changing McBride's transportation system is essential to reduce its emissions and uphold its climate change commitments. As discussed previously, the municipality has initiated a project to put in more sidewalks. This will aesthetically enhance walking areas in town while increasing its accessibility, so less people drive small distances around town. The municipal government is also looking to put anti-idling policy in place. Nevertheless, these projects

[6] The CEEI transportation emissions are calculated by accounting for fuel sales, resident-based vehicle registration, and modeling (using traffic counts and software), therefore vehicles travelling through the area (like trucks) will be partially accounted for in McBride's total transportation emissions calculation (according to whether they purchase fuel in McBride and whether they are accounted for in the projections) (Ministry of Environment 2010).

are not large-scale. Anti-idling policy only addresses a small amount of emissions, and the sidewalks are only being built within municipal boundaries, which are quite small.

Public transit in the valley is one option that would drastically decrease transportation emissions. Citizens have talked about getting transit for years but, unfortunately, it is not currently feasible as there are not enough people to make it economically productive (Ken Starchuck, p/c, June 17th 2011; Lelani Arris, p/c, June 17th 2011). Greyhound bus services have decreased in the area because of this lack of demand: these bus services previously ran more frequently from McBride to the closest large cities, like Prince George. Many citizens want to develop a small-scale transit system that would run between communities in the valley, but there is no one to spearhead this initiative:

> I think the transit thing could [work] if there was somebody: somebody has to spearhead it, and where that energy to do it comes from, and who's responsible for it, and how you fund it and all of that is a big question. If there was an organization or even a government mandate that came in and said, "look here, we'll set you up and fund so much of this if somebody will take it on." Again, it could happen relatively quickly if you had the impetus to do it, but I don't know where that impetus would necessarily come from. (Lelani Arris, p/c, June 17th 2011)

One interviewee, Nancy Taylor, thinks the local school buses should open up to the public. These buses drive between towns every day with only a few children aboard, so making them accessible to local citizens might reduce the public transit problem. Currently, though, there is no one to organize a program like this. The fact that there is no one to organize this program is a product not just of a lack of people or funds specifically, but of a lack of clarity about scale (institutional, political and territorial) at which the problem is to be addressed. How can McBride begin to develop a project like this? No one knows, because those local residents who want to establish transit may not have the resources, and those who have the resources (like BC Transit) are not doing it. This question then becomes scalar: how do these different scales – from local residents to the provincial government – work together to establish a public transit system, when the connections between these scales are so artificially separated? Each group thinks the other group will initiate the project, and no one is thinking about how they can work together to establish public transit in small rural communities throughout BC.

Aside from personal transportation, trucking goods in and out of the community is a significant emissions source. Some interviewees think increased rail accessibility would partially address the problem (Nancy Taylor, p/c, June 25th 2011; Phil Marsh, p/c, June 25th 2011; Gordon Simmons, p/c, June 23rd 2011; Roy Howard, p/c, June 20th 2011). Rail transport emits GHGs but is ten times more energy-efficient than trucks (Phil Marsh, p/c, June 25th 2011). Historically, McBride relied exclusively on rail for goods and transportation, but after the completion of Highway 16, a large portion of personal and commercial railway use stopped, and, in time, it became economically unproductive for CN to stop in smaller rural towns:

> This is the big thing with CN that basically their market, the stuff that goes through here, is going from Prince Rupert to New York. And the faster it gets there, the better, and they don't want to be fiddling around…dropping a car or two here. It's too expensive. (Bill Arnold, p/c, June 24th 2011)

Residents want CN to offer more local access. This would benefit the whole community, especially the forest and agricultural industries, who could more easily and inexpensively ship goods in and out of the community. It would also allow other goods like food to be shipped into McBride by rail, while allowing people more access to ride the train for personal travel. Simmons thinks the provincial and federal government should be pushing for this change to support small communities and reduce Canada-wide emissions:

> I don't see a reason why they couldn't [stop here], except that, of course, CN is perhaps a bit overbearing and says, "Well, we'll stop if you pay the piper." And that would be too expensive. And that's where the government can come in…start to set up the contacts to try and make affordable shipping.... They're not going to get the same as they would bringing a container all the way from Rupert, but maybe it would help their people that live here in McBride. (p/c, June 23rd 2011)

For both personal and industrial transportation, there are more efficient transportation vehicles available– with more efficient gas mileage –to help decrease emissions. For private cars, there are electric or hybrid alternatives, or biofuels; for trucks, there is biodiesel. Biodiesel is a renewable and non-toxic fuel made from vegetable oil or animal fat, which reduces overall carbon emissions while offering the same performance levels as conventional diesel (Bozbas 2008). A mix of biodiesel and

regular diesel has shown success in large vehicles: for example, some US states have effectively run buses and large trucks off a mix of biodiesel and diesel (Bozbas 2008). Dunster local and tree-planter Seth Macdonald runs his truck on biodiesel, which he makes from leftover restaurant oil. He also offers local community workshops on how to produce biodiesel (Derek Shaw, p/c, June 22nd 2011). CEO of ecoTECH, Colin Hall, spoke about possibly producing biodiesel in their plant in order to fuel the forestry trucks delivering wood waste, a technology they have used previously (p/c, July 18th 2011). For personal transportation, many local residents are purchasing smaller and more fuel-efficient cars:

> You still see the loggers that when they come home at night and they park their truck and jump in their Pontiac Wave and they come to town to have a cup of coffee…They know the machines that they got are gas guzzlers and expensive as hell: they also know they're puking out a bunch of blue smoke in the atmosphere, so they'd rather drive something that gets 50 or 60 miles a gallon, because it just makes dollar sense. (Mike Frasier, p/c, June 23rd 2011)

That being said, electric vehicles are not a viable option in McBride, as there are no electric stations to recharge on the highway. The drive to Prince George is over 200 kilometers, and presently, there is not even a gas station along the way. No available electric car can drive that far without recharging. This infrastructure would need to be built before McBride residents could choose to purchase an electric car. Also, biodiesel is only suitable for McBride's cars or trucks seasonally, as biodiesel freezes under cold temperatures (Bozbas 2008). As McBride's climate is very cold in the winter, this could be a big risk. Biodiesel also costs more than standard diesel (Bozbas 2008), and hybrid and electric vehicles are more expensive cars. As McBride suffers from a lagging economy and limited financial capital, the switch to these particular options may not be financially appropriate at this time.

Principal Shaw believes modern communications technology can help decrease local transportation emissions. Video-conferencing enables people to communicate across large distances without having to travel, and Shaw sees this as a way to enhance his students' educational experience while reducing emissions:

> Because we have the video-conferencing capabilities…we don't have to be constrained by the location that we're in anymore. There's lots of

> opportunity that way, in terms of education. Because we're in McBride doesn't mean that we can't have a conference with NASA. We meet regularly with people from New York, Missouri, and stuff like, with enhancing classes: we're using it more and more all the time. And as a result, we don't need classes to go anywhere as much. (p/c, June 22nd 2011)

Shaw thinks this technology could be applied to more things, like business meetings in Prince George or doctor-patient video consultations (p/c, June 22nd 2011). This would help reduce emissions and save people time and money. It would also allow for more outside connections by breaking down the isolation experienced by those living in small rural towns. Being able to communicate across distances allows people to connect across scales.

So far, I have only described actions that will directly reduce local transportation emissions. Indirectly, the local bioenergy complex and agricultural movement will reduce transportation emissions in various ways. First, having more food available locally will decrease the need to drive further to get food. At the same time, the growth of these industries might bring more jobs and people into the community, creating more demand for goods and services in the area. This demand might also make public transit viable, as well as attract other businesses that will increase the valley's self-sufficiency.

Local Agriculture

Agriculture has always been a consistent and small industry in the Robson Valley, hampered mostly by its isolation from markets. Nevertheless, Gordon Simmons, among others, considers this industry perfectly suited to the topography of the area and has helped keep the community of McBride alive:

> I think McBride is really lucky with its economy. It weathers downturns, as a small village, better than lots of them, and the reason is agriculture. I believe that the agriculture is a consistent industry here: it's not a big one, but it's consistent…You look at towns that don't have the agricultural impact or experience around, and they suffer. (Simmons, p/c, June 23rd 2011)

The valley has 100 to 125 growing days annually, and the main geographical constraints to agriculture are cold winters and daylight shortages. Greenhouses help alleviate these

constraints, but these need to be supplemented with heat and lighting in the winter months (Pete Amyoony, p/c, December 1st 2011).

The Robson Valley Growers Initiative, part of the Three-Valley (Robson, Canoe, Thompson) Community Development Co-operative, is a regional agricultural movement aspiring to produce more food locally. This cooperative is dedicated to developing rural communities by creating more local industry. The Robson Valley Growers Initiative formed in 2008 and has recently expanded because of the enthusiasm of local farmers. Derek Shaw highlights the local environmental and economic advantages of this movement:

> There's a cooperative that has been formed…and they're actually growing fruits and vegetables to produce and sell locally. I think that if there's more of that being done, then that's going to take a big step toward becoming carbon neutral, because if we're providing ourselves with our own food instead of relying on that great big truck that's trucking up and down the road and burns oil, it's going to help. (p/c, June 22nd 2011)

Jasper (a two-hour drive east of McBride) relies solely on the Robson Valley Growers for local seasonal food, as it has no agricultural industry. Jasper has a huge market for locally grown food because of the local tourism and hotel industry, and has been very encouraging and receptive of all the food coming from the Robson Valley Growers Initiative:

> Jasper is not a good climate for growing food, and they bring everything in from down south through the commercial wholesalers. And so, they're really appreciative: anything you take there, they just go crazy over it, and they'll buy anything. If you can take lettuce or onions or whatever, it's gone. So the local growers were really happy. (Pete Amyoony, p/c, June 25th 2011)

This relationship could be more fruitful, though, if transportation from rail was more accessible, because the farmers have to drive to Jasper themselves to sell their produce. Overall, local farmers markets throughout the valley have been growing, especially in the summer months, and this movement will keep expanding with increasing local support.

The Robson Valley Grower's Initiative is looking to circulate locally grown food on a larger scale through the Beyond the Market Program. Beyond the Market is a non-profit BC organization aiming to diversify and build the agricultural industry from Valemount to Terrace by linking regional producers, purchasers and consumers (Beyond the Market n.d.). More specifically, this program encourages restaurants, hospitals, and businesses in the Robson Valley to buy local food. It also researches and tries to break down the barriers to buying local produce. One of these barriers is proper processing. To address this, Beyond the Market is trying to establish a centralized processing station where local farmers can take their produce. This station will process the produce according to the hospitals, institutions and businesses standards: for example, pre-cut carrots for hospitals (Pete Amyoony, p/c, December 1st 2011). Along with a processing station, McBride residents are working to construct a registered slaughterhouse. Cattle ranching is widespread in the valley, but presently, all meat is shipped to Edmonton or Prince George to be slaughtered, and then shipped back to McBride to be sold, as there is no government certified slaughterhouse in the valley. In order to reduce these unnecessary emissions and costs, McBride resident and business owner Mike Monroe - of Monroe Meats – is aiming to develop a BC inspection certified slaughterhouse in McBride (Pete Amyoony, p/c, December 1st 2011). In total, creating a stronger local agricultural industry will increase Robson Valley's self-sufficiency, reduce overall emissions associated with the transportation of goods, and create a more vibrant and sustainable local economy.

Provincial and Federal Government

In this section, I will move away from local carbon-reducing initiatives and on to various provincial and federal government programs aiding McBride and other rural communities in making these changes. This section, then, will address the question of how higher levels of governance are tackling climate change at a larger scale, and how they are connecting with the local scale in order to reduce emissions. According to many McBride residents, the province of BC is far more progressive than other provinces with its climate change policy. In general, the federal government was not discussed as much, because it offers less direct support than the provincial government, and its climate change policy is not as "progressive". However, Provincial3, employee of Green

Communities (a Livesmart BC Committee), partially credits the federal government for aiding rural communities in reducing their emissions:

> There are huge dollars coming from the Feds to communities and a lot of it is framed around how these investments lead to GHG emission reductions…The federal government really empowers the Federation of Canadian Municipalities. A lot of the dollars run through what's called the Green Municipal Fund, which is like a revolving fund that local governments can borrow from year round: receiving those funds is based on green initiatives, green infrastructure projects. (p/c, July 8th 2011)

Nevertheless, the provincial government offers more *direct* support than the federal government. As discussed previously, BC Hydro has come into McBride to conduct workshops on reducing consumption, as well as offering help in the way of grants, education and support. The provincial government awarded many grants to McBride, which has helped develop the community's economy, infrastructure, and emissions reductions projects. Towns For Tomorrow, a provincial program, gave the regional recreation Center $400,000 for an energy retrofit, one of the biggest grants the area has ever received. Margaret Graine, McBride's EDO, is responsible for successfully capturing a lot of this provincial money through her grant writing. McBride has collected so much money from grants that Ken Starchuck refers to McBride's economy as "a bit of a false economy, in the sense that a lot of money that flows through here is grants" (p/c, June 17th 2011).

The provincial government also offers financial aid in the form of various efficiency rebates. Roy Howard praised the provincial eco-energy program's past tax incentives, and more specifically, Solar BC, which previously gave grants of one to two thousand dollars per solar hot water system installed (p/c, June 20th 2011). These projects not only help rural communities reduce emissions, but diversify their economies in a green direction:

> By getting them to look at alternative energy technologies providing jobs, so for example with the work that's being done around solar in BC, partially to do with energy conservation and also partially supporting the carbon neutral and climate action agenda, you're seeing a big growth in people who understand and can install solar. (Provincial2, p/c, July 8th 2011)

Many other interviewees praise BC Hydro's rebates to replace old appliances with newer energy-efficient appliances, and its tax incentives for insulating personal homes. The provincial government also provides a carbon tax rebate to every municipal government signed on to the Climate Action Charter.

Along with financial assistance, the provincial government provides a diversity of information and educational tools. Four provincial government employees informed me of the varied educational help BC offers. Provincial2 talked about "Apps 4 Climate Action" which provides general information to the public on climate change and reducing emissions (p/c, July 8th 2011). Provincial3 discussed the Green Communities Committee (GCC), a joint provincial and Union of British Columbia Municipalities (UBCM) initiative established under the Climate Action Charter, with the distinct goal of supporting communities making the transition to carbon neutrality (p/c, July 8th 2011; Toolkit BC n.d.). An important way the GCC supports communities is through the Toolkit BC website, a tool significantly helpful to BC's communities. As the website describes:

> The Toolkit provides BC communities with the latest news, best practices and practical advice to help them reduce greenhouse gas emissions and implement their Climate Action Charter commitments. The Toolkit also provides guidance and resources to support local governments to take a more integrated approach to planning that will lead to more resilient, complete, compact and liveable communities. (Toolkit BC n.d.)

The Toolkit is organized in five sections: planning and implementation, guides, programs, training, and funding (Toolkit BC n.d.). The website also details success stories from other communities: projects that worked really well and guides on how to implement them. Furthermore, the Toolkit website provides access to Community Energy and Emissions Inventories. In these inventories, the provincial government breaks down and categorizes the total emissions of every BC community. This "gives communities a sense of where their opportunities are as far as reducing their emissions and helps them with all kinds of things like urban planning" (Provincial2, p/c, July 8th 2011).

When discussing provincial government aid, McBride residents focused several of their comments on the region's MLA, Shirley Bond. Many citizens esteem and respect Shirley Bond for the efforts she makes in support of the Robson Valley, something more

tangible to community members than grants or websites. Duke Peterson, a local run-of-the-river IPP, states, “Shirley Bond is our MLA… She’s extremely powerful in politics; she’s been in the cabinet for years now. She’s very popular here because she promotes McBride area and Valemount area big time” (p/c, June 16th 2011). Gene Runtz, former president of McBride Forest Industries, also shows admiration for the local MLA, saying, “One thing that has helped us get through things, of course, has been our MLA Shirley Bond. Shirley Bond has been, in my opinion, fantastic” (p/c, June 24th 2011). As evidenced by these quotes, many McBride citizens appreciate the direct support given by their MLA more than the indirect and generalized aid offered by the provincial government. On the whole, the provincial government offers a variety of indirect and direct support to communities making the transition to low-carbon economies. Whether this aid is easing this transition is up for debate, as there are still numerous challenges in moving forward with emissions reductions.

Chapter 5.

Challenges

Insofar as these local and provincial climate change initiatives represent McBride's efforts to meet its policy-mandated commitments, all are cause for some hope. There are, however, significant challenges facing each of these initiatives, and, thus, to the transition to a low-carbon society. In this chapter, I divide these challenges into economic and socio-political challenges, but in reality, these are artificial divisions, as McBride's challenges are all linked. None of these challenges are confined to the economic or socio-political realm. McBride faces many of the same obstacles to emissions reductions as many other resource-dependent towns, making McBride a good case study to generalize from. At the same time, these constraints – which many other communities face – take particular form in McBride given the local context. These generalized challenges (economic, socio-political) are made real by McBride's geography.

Indeed, while I frame these challenges as 'economic' and socio-'political', these constraints are in fact produced by McBride's geography at both the local and larger scales. Consequently, scalar issues play a large role. This chapter will return to some of the questions posed in my research questions and theoretical framework, such as: what role does the 'local' play in reducing emissions, and how is it invoked? Is there anything particular to the rural local scale that distinguishes it from the urban, or are they interchangeable? How are these various scales of governance constructed and intertwined in BC?

In BC, carbon-neutral policy and provincial initiatives have been structured so as to 'empower' communities to meet policy standards in their own way. But as this chapter will show, this emphasis on the 'local' has limitations. There are many obstacles common to rural communities, such as limited financial capital, volatile resource

industries, isolation, and smaller, less diverse populations, which make it more difficult for rural communities to address climate change. The invocation of the 'local' as a solution to many problems does not recognize the diversity of socio-economic environments in many communities. The fact is, rural communities face different geographic challenges than cities. The federal and provincial government are not offering enough aid to these communities and are not adapting policy to meet diverse communities' needs. Different scales – from the local to the national – need to be further linked in order to create a relationship that will work to reduce emissions in existing rural communities.

Economic Challenges

From the most basic economic perspective, McBride does not have the resources to implement many potential carbon-reducing initiatives. The local government cannot wholly fulfill its climate action commitments as it has an extremely small tax base, and many of these changes require a lot of money. As Mayor Mike Frasier points out:

> Right now, in order to move towards carbon neutrality and have everything perfect would be such a huge cost. We couldn't afford it, and this town runs mostly, like last year with all of the major projects we had, is 85% funded from other sources than taxation. So we need the grant money, we need those outside sources, and right now they're drying up. So, we can't rely on our taxpayers to keep moving these initiatives forward. (p/c, June 23rd 2011)

Although the local government would like to reduce its emissions and become carbon neutral, it cannot afford to. For example, it would like to undertake a costly building retrofit, which would greatly reduce emissions, but that would cost upwards of $600,000 (Anonymous1, p/c, June 7th 2011). Provincial1 spoke to many BC communities regarding the challenges of becoming carbon neutral, and found that small rural municipalities all experience severe financial constraints. This is one of the main limitations for the rural scale. In contrast, Provincial2, employee from the carbon neutral operations and climate outreach for BC's Ministry of Environment, believes these changes may be initially expensive but will inevitably save municipal governments money: "I think carbon neutrality, and I say this all the time, it's about conservation and

it's really to help lower people's costs, so as they start to take advantage of those actions…you're going to really see costs come down for organizations" (p/c, July 8th 2011). True or not, the initial costs of these projects are sometimes out of reach for municipalities.

The Village of McBride wants not only to reduce its emissions – as per its carbon neutral commitments – but also to educate the public in reducing their own personal emissions. Nevertheless, the community-at-large faces the same challenge as the municipal government: limited capital. Retrofitting homes and businesses, and buying new appliances and cars is expensive, and many people cannot afford to make these changes. There is definitely a community will to reduce personal emissions, but this is not enough: people need resources. "People would implement a lot of things, but I'm sure you are aware that every time you want to do something that is eco-friendly or any type of environmental product it is more expensive than any regular product that we are used to having" (Anonymous3, p/c, June 9th 2011). Many McBride residents are struggling as it is, because of revenue and employment losses in the local forest industry:

> A lot of this stuff isn't small potatoes when you look at it, everything from pollution, the whole gambit. A lot of it has a pretty big price tag to it. I think with the economic situation we've had in the last five years, we've really taken a nose dive economically…I think a lot of this stuff gets pushed to the back because there is no money to run those types of programs to support those sort of things. (Ken Starchuck, p/c, June 17th 2011)

Moreover, alternative sources of jobs and funds are presently constrained. Most notably, prospective bioenergy and run-of-the-river projects depend entirely on a massive and costly transmission upgrade, entailing huge investment from BC Hydro and the BC Transmission Corporation (BCTC), that is not presently forthcoming. McBride is not currently on a transmission line, but served by a distribution line at the end of an 80 km cul-de-sac. In 2007, the Village sent a petition to BCTC outlining their concerns and requesting an extension of the 138-kilovolt (kV) line from the Kinder-Morgan compressor

station at Rearguard Falls to McBride. BCTC identified three potential transmission solutions ranging in cost from 33 million to 135 million dollars[7]. In March 2010, the Commission responded to the petition:

> Based on BC Hydro's current load forecast and new designated generation resources, BCTC estimates that the existing transmission lines have the capacity to meet the load for the next nine to ten years. Therefore BC Hydro and BCTC do not believe that, at this time, area load and reliability would be adequate justification for transmission expansion. (Joanna Sofield, CRO, letter communication, March 2010)

It is a catch-22; BCTC cannot justify the upgrade because the valley's small population and declining industry presently demand so little energy, and McBride cannot attract more industry and people to the valley because of unreliable energy (Anonymous2, p/c, June 7th 2011). This is frustrating for the local government and businesses because unpredictable energy is a significant barrier to moving forward with transitional goals on both emissions-reduction and economic development fronts. McBride cannot build this transmission line on its own: it needs support from higher levels of governance to undertake large infrastructural projects.

Since the transmission upgrade cannot be justified by BCTC and BC Hydro as an "area load and reliability" project, the local government and Robson Valley Hydro Task Force have looked to renewable energy generation as the best argument for transmission extension, as it offers BC Hydro the potential for increased returns[8]:

> The economic study, it was done by BC Hydro and they found that if they spend that, that within a very short period of time, with all the jobs and the income that's going to be produced from the total economic study, that there'll be a payback in a short period of time to the province. (Duke Peterson, p/c, June 16th 2011)

[7] BCTC's three potential solutions are: extending the 138 kV line from Valemount to McBride, building a new the 138 kV line from Prince George to McBride, and building a new 138 kV line from Prince George to Valemount.

[8] The Robson Valley Hydro Task Force consists of members of the local government, chamber of commerce, and IPPs. Its goal is to improve local energy reliability via a transmission upgrade.

Whether or not this is indeed the case, BC Hydro and BCTC are presently unwilling to invest, although they are still in discussion with the local task force. Both Duke Peterson and Colin Hall, local IPPs, spoke of partially funding the transmission extension themselves, as they want to start moving their projects forward. Fortunately for the ecoTECH bioenergy plant, it can move forward without the transmission line because of its food and fish production:

> Originally when we started it was the hydro part, the power project, that drove the project…When BC Hydro got into a mode where it was taking forever to get the processing done and the economics of what they were trying to do, we had to change tack. So we got ourselves a client who would buy the food from wherever, where it was a stand-alone: if you like, an off-grid stand-alone, which is all the same parameters that we had before, just generates less electricity. (Colin Hall, p/c, July 18th 2011)

This is not the case with the other IPPs in the area, especially the run-of-the-river outfits, who need the transmission line to start exporting energy. This transmission upgrade would stabilize local energy and improve quality of life in the valley. It might also attract new industry to the area and connect the numerous renewable energy outfits - currently in the beginning stages of being set up – to the grid so they can start providing cleaner energy.

McBride faces other unavoidable challenges in reducing its emissions due to its location, climate, and political boundaries, many of which manifest themselves in the "economic" realm. Like many rural communities, McBride is isolated. This isolation increases local energy use and thus emissions. Many citizens use propane, diesel and heating oil because of inconsistent energy supply, which increases community emissions: heating oil and propane make up 82% of all CO2e emissions from residential buildings (BC 2010). These carbon sources are presently a "necessary evil" in the valley, not only because of isolation but also because of the winter climate:

> So, in the north we have winter conditions, so we need to use more energy to heat our homes and to provide electricity. Just, we need more power in order to live in the northern climates where you have long winters and you have to run heating fans and furnaces and whatever systems you need to run. (Anonymous1, p/c, June 7th 2011)

Stabilizing electricity provision in the valley is key to emissions reductions, so people do not have to burn more fossil fuels for heat. Unfortunately, because of McBride's isolation and size, there is not enough demand to justify these upgrades in the eyes of the provincial government.

Isolation obviously directly increases transportation emissions in the valley. As discussed in chapters 1 and 4, 82.4% of McBride's emissions result from transportation (BC 2010). This is the hardest problem to solve. Driving is unavoidable. Rural communities throughout Canada share this challenge, as Provincial1 emphasizes:

> Transportation is always a big one in the North, right, because the distances: it's so far between towns, so that's an interesting one…People getting back and forth between communities is a big thing and I've heard that all the way across to Prince Rupert and in the Cariboo as well. (p/c, June 23rd 2011)

This is one challenge that distinguishes the rural from the urban. Cities are so densely populated that public transit is a viable option for emissions reductions. Although many interviewees could envision transportation emissions reductions (see Chapter 4), they nevertheless remarked upon the immense difficulty of putting these projects in place. As the President of the Chamber of Commerce puts it:

> What you have to remember is that everything that goes in or out of this Valley, and it's all transported by carbon emitting equipment, whether it's rail or road or however it travels, and it's long distances. So that's a big factor, there's an awful lot of that type of thing that has to be counted somewhere, somehow. In more thickly populated areas you can limit the transportation system to public transit or whatever, and reduce that. But you can't do it here. (Bill Arnold, p/c, June 24th 2011)

There are countless obstacles to decreasing transportation emissions in McBride. At market prices, people cannot afford more efficient driving technologies, and the infrastructure necessary to support these vehicles (like electric vehicle plug-ins along the highway) is expensive. The drive to Prince George, the closest city, is over 200 kilometers, with zero extant fuelling stops. McBride's geographic isolation remains the key obstacle to reducing transportation emissions. Its location is fixed, as is, at least in the short to medium term, its low population density. Transportation emissions will always be an issue unless technology and infrastructure change. People need to drive to

bigger cities for goods and services, and currently, carbon-emitting personal vehicles are the only option, as the Greyhound and train are no longer accessible on a regular basis. Alternatively, one can indirectly reduce emissions by supporting agricultural self-sufficiency and economic growth in the community, which would increase the supply and demand for locally available goods. This might also bring about demographic growth, making public transit a more realistic option in the future.

On another note, local transportation emissions come from more than just *geographic* isolation. Nancy Taylor talked about additional emissions produced from *cultural*, *educational*, and *social* isolation in the valley. According to Taylor:

> I know, for me, one of the challenges here is the isolation. Like, I really like to have a bigger picture, I like to get out of here, so then I have to burn carbon fuels to get out of here: I often fly…If there were more smart young people moving into the Valley that could keep me stimulated, I'd probably hang around more. (p/c, June 25th 2011)

People are not only travelling long distances to obtain "necessary" goods and services, but to access culture and education in larger metropoles. As Taylor notes, more access to institutional diversity is needed in the valley to help stimulate people's interest, and this can only happen by increasing and diversifying economic opportunities in the area in order to attract new populations. This links back to the larger question regarding scale and the artificial boundaries established by emphasizing the 'local'; Connections between different scales is necessary in order to, as Taylor puts it, get the 'bigger picture', and the more these connections are built up, the easier communication becomes between diverse communities.

At the same time, Colin Hall, CEO of ecoTECH, saw McBride's small size and isolation as beneficial in certain ways:

> It's so remote: if you want to do anything in Vancouver you've got to go through 27 committees. You want to do something in McBride, you involve the council, tell them what's going on, tell them what you're trying to do…If I needed a letter of support, or if I needed something, we've had it. I don't know anywhere I can think of in British Columbia where I can get that kind of support at this time. (p/c, July 18th 2011)

For Hall, McBride's remoteness and size eases the process of developing more alternative projects locally, as there is less red tape. This may be advantageous for McBride in transitioning toward a low-carbon future as it can more easily experiment with green initiatives.

McBride's geographic challenges to reducing emissions extend past the area's physical to its geo-political characteristics. The community's municipal boundaries are extremely small, encompassing only 4.43 square kilometers (Graine 2010). Most of its "population" actually resides outside its official boundaries, in the regional district's jurisdiction. The municipal government has no political authority to address a large proportion of emissions, and lacks the tax base necessary to fund significant carbon-reductions. Moreover, this divides the community since many people cannot participate in local politics because they do not officially live within McBride's boundaries (Phil Marsh, p/c, June 25th 2011). This complicates economic growth in the area as well, because most of the renewable energy projects are outside the local government's jurisdiction even though they have a great stake in the matter. These complexities can easily manifest themselves in the political realm, especially if the regional and municipal governments disagree:

> You have to remember that we're not talking just about McBride, because McBride's a very small community actually, but the population is outside of McBride, and that spreads things out considerably more. The local government has no jurisdiction; they own the boundaries of the Village. (Bill Arnold, p/c, June 24th 2011)

The province cannot extend these boundaries due to BC's Agricultural Land Reserve: farmland and rivers surround McBride on all sides (Ken Starchuck, p/c, June 17th 2011).

On the other hand, these small political boundaries may help reduce emissions in some ways. According to Ken Starchuck, having small political boundaries limits the space for carbon-producing industry in the community (p/c, June 17th 2011). At the same time, even if industry were technically outside *municipal* boundaries, it would still exist locally, defeating a larger vision for the entire valley's environmental future. Provincial government employees Provincial1 and Provincial4 highlight the potential benefits of small political boundaries. For Provincial1, these small boundaries mean the town itself is easily navigable. Less energy is required to travel around the town, reducing local

transportation emissions (p/c, June 23rd 2011). Provincial1 failed to recognize, though, that most of the population lives outside these boundaries. Travelling *into* as opposed to *around* town is the emissions issue. Provincial4 thinks rural governments with smaller boundaries often have fewer emissions to address, as they provide fewer services to smaller populations, so it is easier to achieve carbon neutrality (p/c, July 8th 2011) – but this is equally open to the same critique. McBride's geography is exacerbating the economic barriers to reducing emissions locally as its isolation, climate, and political boundaries are obstacles to the community transitioning to a low-carbon future.

Socio-political Challenges

McBride will inevitably encounter various socio-political challenges in becoming a low-carbon community due to demographic change, internal community division, and inadequate provincial and federal support. The decline of McBride's forest industry, along with the lack of new industry, has changed the demographics of the Robson Valley. McBride has a diminishing and aging population. The community is experiencing an out-migration of youth, with no compensating in-migration of an economically active population, as there are limited employment opportunities in the area. Retirees are moving in, while younger families are moving out. School enrolments have decreased and local businesses have fewer customers. Almost all interviewees express a deep concern with these changes:

> There is no economic growth in McBride: there hasn't been for years. It is quite the opposite. We're going downhill so fast that the younger generations and populations are leaving, and you can tell by the hospitals, by the schools, by the everything, and that's lack of jobs. (Tom Ryan, p/c, June 27th 2011)
>
> We're at a critical point in McBride where our schools, their enrolment is getting to a point where its really tough to provide a quality education. If we lose our hospital and our school gets any smaller, we're going to have a tough go hanging on. (Marc von der Gonna, p/c, June 15th 2011)

McBride shares this demographic decline with rural communities across BC and Canada, further highlighting the distinct obstacles rural communities face in transitioning to low-carbon societies. Furthermore, the composition of McBride's population is

changing. Locally, there is a pattern of non-residents purchasing large agricultural plots and using them for cottage-type hunting retreats, where they only infrequently spend vacation time (Gordon Simmons, p/c, June 23rd 2011). Small lots are not commonly available in the valley because most of the land is agricultural land reserve. This has negative consequences for younger residents looking to buy farmland, as they often cannot afford larger plots. Consequently, non-residents, who do not contribute substantially to the local economy or community life, are purchasing this fertile farming land for leisure, and younger or less affluent residents are forced to look outside the area for property (Gordon Simmons, p/c, June 23rd 2011).

McBride's shrinking and changing population obviously drains the human capital available to help the community transition to a low-carbon future: there are less people in the community to work on new projects. Clearly, human capital is not only defined by population size, but is also determined by investment in education and training, which increases productivity. This investment creates human capital - knowledge and skills - distinct from financial or physical capital, but equally important an investment in terms of improving efficiency (Putnam 1995; Becker 1992; Becker 1946). It is important to note that I am defining and using the term 'human capital' (and 'social capital', later in the chapter) in the most general way. I am not suggesting there is one best way to produce them, as this depends on the context of the area in question. Only by understanding the geographic specificities of McBride can we understand how to develop the area's human (and social) capital.

McBride's population is small and, overall, has a low level of educational and skills diversity. Most of the local residents are involved strictly in the forest industry (Graine 2010), and education-wise, 62% of the population older than fifteen has no postsecondary certificate, diploma or degree, compared to the provincial average of 47%. Only 9% of the population has a university certificate, diploma or degree, compared to 19% of BC's population (Statistics Canada 2006a). Education in environmental sustainability is particularly lacking. As Lelani Arris notes:

> There's a lot of people that still don't believe that [climate change] is happening and that we don't need to do anything about it. So it's an education thing, it's a lifestyle thing, and it's just getting people to understand how important it is. (p/c, June 17th 2011)

The general population's lack of knowledge and experience in these matters is also common in the municipal government. The local government does not have enough knowledge or manpower to realize its environmental goals, and this makes it difficult to get momentum on new projects, let alone find the expertise and personnel necessary to maintain them. Almost every municipal government employee echoes this sentiment:

> You don't have the same pool of knowledge and resources as a larger community would have to pursue these things, so very often, someone like myself ends up dabbling in stuff off the corner of my desk, whereas if…you hired somebody and their full-time job was to do carbon neutral projects or pursue of carbon credits or do whatever, well then you got a leg up, because that person can just focus on that totally and has a better chance of making something happen. (Marc von der Gonna, p/c, June 15th 2011)

Both Provincial4 and Provincial1 find this pattern across BC. Small communities have limited capacity to deal with new policy, as they already have so much on their plates (p/c, July 8th 2011; p/c, June 23rd 2011).

The municipal government faces other challenges in connection to limited human capital. In particular, the community suffers from long-standing internal division. Many citizens take issue with the management of the local government and community forest, and there is significant animosity between many important stakeholders in the community. This conflict decreases the amount of *social* capital in the community (once again, social capital is defined in the most general sense). Social capital "refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1995: 66). Social capital is an intangible form of capital because it is defined by interpersonal connections. Although McBride may be rich in certain aspects of social capital, as the community is intimately interconnected due to its isolation and population size, internal division is breaking down this social capital and there is extreme distrust between many residents. This becomes an issue because social capital increases a community's efficiency in working out problems and making changes. For example, a community in which there is extensive trust can accomplish much more than a similar community without trust (Coleman 1988: S101). According to Putnam (1995), social connectedness improves schools, fosters economic development, and enables government to be more effective. Social capital also enables efficient coordination and communication, allowing conflicts to be more

easily resolved (Putnam 1995). Simply put, "life is easier in a community blessed with a substantial stock of social capital" (Putnam 1995: 66). Therefore, the interpersonal conflicts and mistrust between McBride's most important stakeholders is a huge challenge in transitioning into a low carbon future and solving socio-economic problems. For both Putnam and Coleman, human and social capital are inextricably linked (Putnam 1995; Coleman 1988). As evident in the title of Coleman's work, *Social Capital in the Creation of Human Capital*, social capital helps foster human capital in future generations by increasing peoples' access to individual knowledge investments: it does this by increasing communication and collaboration between people (Coleman 1988). As I emphasized previously, though, there is no one indiscriminate and universal way to foster human or social capital in a population, as it depends on the features of the area in question.

Many interviewees criticized the economic, environmental, and political leadership of the local government and the community forest, while others strongly endorse their work. For example, two green energy producers – coming from similar renewable energy backgrounds – spoke about the local government in direct contradiction to one another. Roy Howard, owner of Rocky Mountain Solar Company, is deeply critical of the municipal government's management and practices:

> I don't have much confidence in the governments in the Robson Valley…I don't think they're making any steps to becoming carbon neutral. I don't see anything happening at all. (p/c, June 20th 2011)

While Duke Peterson, owner of ROR project Holmes Hydro Inc., is happy with the local government:

> I think the McBride Village council, the regional district, our MLA's, and the Chamber of Commerce, have been more supportive than I could possibly have imagined. They've been wonderful. I couldn't rave enough about them; they've just been great. (p/c, June 16th 2011)

These two assessments could not be more different. Throughout my research, I heard similarly conflicting views. Many are especially critical of the community forest, certainly the most controversial institution in the community. The MCFC ships most of its logged wood to mills in Prince George or further afield. It gives priority to local mills because of their proximity and associated lower transportation costs, but, ultimately, it

sells to the highest bidder, usually the bigger centralized mills. Some community members strongly oppose this export-orientation. They believe the wood should be kept in the community in local mills:

> Again, we're shipping everything out, which has got to be frustrating on all of those levels. If you could keep those resources and those jobs here, the community would get much more benefit from it. (Linda Fry, p/c, June 24th 2011)

TRC, the only medium-sized mill left in McBride, suffers from a lack of wood supply. It sold its forest license, so the community forest is now its only source of cedar. Cedar, however, is not as economically valuable to the community forest, so it is not often harvested. Personal conflicts also trouble the relations between TRC and the local government and MCFC. Gene Runtz, the former owner of MFI mill, notes:

> [The MCFC] should have been, at the same time, making sure that more of the really poor quality wood was taken. Instead, they were pretty much in open warfare with TRC… At the same time, it's made it really really difficult for TRC to continue to operate on a continuous basis… It's one of these things where it's not completely their fault; ___ [is] a tough man to deal with. (p/c, June 24th 2011)

Personal conflicts between the local government and some community residents are frequent because the community is so small and close. Marc von der Gonna has firsthand experience: "It's quite personal and there's a lot of exposure, and people will find you and give you their opinion whether it's in the grocery store or even at home" (p/c, June 25th 2011).

In contrast, some local residents strongly support the work of the MCFC and the way in which it helps fund the local government's community projects while at the same time employing local loggers and contractors. Community forest manager Marc von der Gonna does not believe the community forest should support unsustainable local mills, but act as a business, making profit for the local government (which has an extremely small tax base), and supporting local logging contractors. If a local business wants wood, it needs to compete for it like in any other business, and have a viable business plan: the MCFC is not there to subsidize unsuccessful local mills (p/c, June 15th 2011). Regional district director Ken Starchuck agrees, and he believes the community forest is

doing a good job of supporting local contractors. Community forests should not be helping companies profit, but rather the community as a whole:

> The biggest challenge that they've had recently is just the perception of what the community forest actually is and what it's meant to do in the community. It's basically meant to be a vehicle for this Village to make some dividends, some dollars, to make a profit, which they can take and use that profit for things within the community. People, the mindset of many people here, feel that they should be, a lot of stuff should be free. We should be getting wood at next to nothing, you know, this kind of stuff. (p/c, June 17th 2011)

von der Gonna also highlights the environmental benefits of having a community-run forest, as it has a long-term stake in the enduring health of the forest: they want to sustain the local economy and community indefinitely (p/c, June 15th 2011). McBride's Community Forest Concept Report (2007) emphasizes various environmental goals, such as preserving water quality, biodiversity, old-growth forest and caribou habitat, while simultaneously supporting educational, environmental and recreational activities within the community forest: "The management strategies used to generate these products will emphasize this broad scope as well as the long term sustainability of the forest and the community attached to it" (MCFC 2007: 2).

Some citizens, however, feel the community forest is not living up to its environmental commitments. The MCFC often leaves the economically useless wood – especially cedar – out in the landings to rot or burn, and only take out the best wood:

> We're doing a very poor job of looking after the forest here, in my opinion, very very poor. We have an old growth forest here for a lot of it has huge amounts of waste when they go in and log, and they just put it in piles and burn it, or they just leave it there. None of it is brought out. (Phil Marsh, p/c, June 25th 2011)

This problem, called "high-grading", is common in communal forestry. Because all the high-quality wood is harvested, the forest does not regenerate in the same way, and the seed quality worsens in time:

> If you take all the nice wood out and leave a whole bunch of junk, what I mean by junk is stuff that's not saleable and diminishes the landscape upon which you can reproduce a forest that's going to have those values in the future… It means that eventually you're not going to be able to replace that because that ground is covered and you're

> not going to get the same regeneration underneath that canopy as you would under a healthy canopy. (Ray Thiessen, p/c, June 22nd 2011)

The MCFC plans to sell waste wood to the ecoTECH bioenergy plant, which would help alleviate some of these environmental concerns.

The Corporation of the Village of McBride owns the MCFC. Some McBride citizens are critical of this corporate structure and the MCFC's political operations in general. Thiessen believes community forests should function as public institutions, not private corporations, in order to increase transparency and democracy (p/c, June 22nd 2011). Thiessen sat on the MCFC's board of directors for three years, until it was apparently disbanded because the members of the board refused to sign non-disclosure agreements. This was news to me: going into McBride, I believed there was a democratically elected board of directors. Thiessen explains that the board was disbanded because many of the board members wanted complete transparency in the MCFC, but the community forest is organized as a private corporation, therefore these conflicting values - public transparency versus private protectionism - could not be enmeshed, leading to the board's dismissal. Thiessen is deeply critical of these corporate politics, stating that, "The community forest of McBride is not a community forest….Legally, it is a wholly owned corporation of the Village of McBride and, as such, is operated as a private corporation by a public entity, who does not consider that it is an open transparent public institution" (p/c, June 22nd 2011). Others agree, including Tom Ryan, Phil Marsh, and Roy Howard. They all reiterate his concerns regarding democracy and transparency in the community forest and oppose its corporation-like structure:

> I think because you can have local directorship of the forest, the people that live there are actually, in theory at least, actually should have the welfare of the community foremost in their mind…I don't see that in McBride, and not only that, I don't even see local control: I see it controlled by a corporation that is controlled by the Village Council and everything is sort of secretive and behind closed doors, and I think that that's the worst possible way that you can manage a community asset. (Roy Howard, p/c, June 20th 2011)

This dispute speaks directly to issues real communities face trying to deal with local politics. On the ground, local governments have diverse and conflicting opinions, making it harder for them to meet the expectations created by the provincial government and

other higher scales of governance. Balancing local and provincial demands is an enormous obstacle for many communities, and this demonstrates just how important the politics of scale become when trying to understand BC's climate change policy.

Not everyone in McBride opposes the corporate structure of the MCFC. Many residents strongly support the MCFC, crediting it with helping the community survive a major downturn in its forest industry. Mayor Mike Frasier thinks these criticisms are prevalent only because people want to control and profit from the community forest for their own personal gain:

> But there's a political side that's a pain in the ass. We have people from outside that feel that they don't have any input into how the community forest is run and they feel they're disenfranchised and they feel that somehow they're getting screwed over the thing. Usually, those are the people that come out of the woodwork as soon as something starts making money or if it's successful. It's about control: who's controlling it, and they want to control it because it's successful. (p/c, June 23rd 2011)

When I first encountered these differences, I wondered if one 'side' was more accurate than the other. Is the local government really trying to reduce its emissions? Are the community forest's practices unsustainable and/or undemocratic? Were these arguments about power and control? McBride residents had polarized views on many subjects, such as the private versus public ownership of renewable energy. Was one 'side' right and one 'side' wrong on every issue? I then realized the community is divided, and neither side is right or wrong. This division is a barrier to moving forward in McBride, as much time and effort is spent fighting instead of trying to solve socio-economic and environmental problems. People are forced to take sides instead of debating the MCFC's practices openly and fairly. According to Tom Ryan, "one of the problems that I've seen more in the last 4 years in this community is: it's either this side or that side, and they expect everybody to take a side" (p/c, June 27th 2011).

Debate on community issues is good: it helps government employees take into account diverse opinions and reflect on what to do in a holistic manner. Debate, however, is different than conflict and community separation. Not everyone will – or needs to – agree on every issue. What is more important is that there is adequate leadership to make informed decisions in order to move projects forward efficiently.

Duke Peterson believes unquestionably that McBride *can* come together and transition to a green and economically stable community:

> McBride is really unique… It's because the community can focus, can do stuff like that, and the attitude here is wonderful on that regard. People can be focused. So if they did decide to coordinate to do something, we probably could do it. (p/c, June 16th 2011)

Small town politics will always be prevalent in the valley because of its size and the intimacy of the residents, but this does not mean that McBride cannot move forward with it's environment and socio-economic goals.

Perhaps just as importantly, McBride's political challenges to reducing emissions go beyond the local scale, to the provincial and federal governments. According to many interviewees, higher levels of government are not doing enough to help rural communities address emissions. More specifically, McBride citizens feel both the provincial and national government are not offering appropriate financial and educational assistance, and are not adapting policy to meet diverse communities' needs. People rarely spoke about federal government assistance, believing that when it comes to climate change, the federal government is doing close to nothing. A couple of interviewees think this absence in federal climate change policy is strongly connected to its support of the oil sands. As Roy Howard notes, "I don't think Canada has a policy on climate change [laughs], except we've got to get everything out of the oil sands we possible can. I'm disgusted with it. It's terrible; I'm embarrassed" (p/c, June 20th 2011).

Most believe the provincial government is more interested in addressing climate change. Chapter 4 details how provincial government initiatives are currently aiding BC communities in reducing their emissions. According the many McBride citizens, though, there are evident gaps in this aid, and BC's climate change policy was not designed with rural communities in mind. McBride's municipal government frequently echoes this when speaking to its mandated commitments to become carbon neutral. What is "carbon neutral"? How can the municipality measure its emissions reductions? How can it efficiently reduce its emissions? Many government employees are confused as to how to become "carbon neutral", and feel the provincial government is not offering appropriate information and resources. Mayor Frasier and Councillor Thompson put it thus:

> I want a place to start from. I want a measuring stick and a place to start from to figure out whether or not what I'm doing or the life I lead, or the life this community leads, is going to help or are we just using it up. I need to know that, and nobody so far has been able to tell us which way we're going. (Mike Frasier, p/c, June 23rd 2011)
>
> I don't think the policies are really well understood right now. I don't think we, as small communities, really know how carbon neutrality is going to get achieved and what it really means and how we're going to count it. The information isn't out there for us. (Rick Thompson, p/c, June 20th 2011)

The provincial government needs to provide more resources to municipal governments and the general populace. It also needs to offer more financial resources not only in the form of grants - which McBride has been successful in getting – but at the very least, in the form of province-wide incentives. Roy Howard disapproves of the province's decreasing support for solar energy projects, with fewer incentives for solar electric or solar hot water installations. According to Howard, the provincial government should increase support for green energy projects, and tax carbon-emitting sources more heavily (p/c, June 20th 2011). Derek Shaw shares this frustration with the provincial government because the Ministry of Education rejected his proposed solar hot water system upgrade for the high school. This seems hypocritical to Shaw: the government is telling them to become carbon neutral yet rejecting their emissions reductions plans (p/c, June 22nd 2011). BC Hydro and BCTC also rejected the proposed transmission upgrade in the Robson Valley, though both are still in talks with the Robson Valley Hydro Task Force. This hampers McBride's ability to reduce its emissions and build up its economy in a green direction:

> Help us get through the red tape that gets in the way of us moving forward on goals that will help us meet our green energy needs. Because right now the big corporations, BC Hydro, the government, are standing the way rather than saying, "here's an opportunity, let's make it happen." Because we've done everything we can to line the ducks up for run of the river, bioenergy, jobs, economic growth, and it's all coming down to that one wall. (Rick Thompson, p/c, June 20th 2011)

As discussed, an upgraded transmission line would stabilize local electricity, decrease building emissions from heating oil and propane, bring in new business, and provide greener energy to the whole province. Overall, BC's climate action policy is designed to 'empower' local communities to reduce emissions in their own way, yet this focus on the

local has limitations, as seen, and the Province needs to offer further support to smaller scales of governance in meeting these challenges.

McBride residents find fault with both provincial aid and provincial policy design: in particular, climate change policy design. These policies are often one-size-fits-all and focus on core urban centers. Consequently, the policy is frequently inappropriate for smaller rural communities, who face very different conditions than urban environments, as this thesis has shown. Rural communities do not have a strong voice in policy design, though, because they are a provincial minority. Subsequently, rural communities are not being heard or represented in policy:

> If you're talking about the policies and stuff they put down, I honestly don't think they take into consideration a lot of the small communities, I think they're looking at the bigger picture. Personally, I think this provincial government is all about big centers and centralization. They've forgotten about the small communities, they try to make it up by making little grant opportunities available. (Anonymous1, p/c, June 7th 2011)
>
> The provincial legislation, I don't believe has much interest in rural BC. When I did the amendment to the community plan here meeting the terms of the new legislation, it was pretty ridiculous. There was no thought given, really, to the type of small towns. (Gordon Simmons, p/c, June 23rd 2011)

The Climate Action Charter and Climate Action Plan were not designed with smaller rural communities in mind. By signing the Climate Action Charter, McBride and most BC communities committed themselves to carbon neutrality by 2012. The Climate Action Plan also requires the entire provincial public sector to become 100% carbon neutral, including all public operations like schools, hospitals, universities, etc. (BC 2008a). Carbon neutrality is a three-step process in which an organization measures its emissions, reduces what it can, and buys carbon offsets for the emissions it cannot reduce (BC 2008a). There are numerous shortcomings in this policy design, though, specifically for smaller rural communities. The idea of "carbon neutrality" is flawed to begin with, as a bigger community or institute – with more financial capital – will have more economic resources to plan and implement emissions reductions, as well as buy more carbon offsets. Basically, the more money you have, the more offsets you can buy, therefore not as much real emissions-reducing change takes place. Smaller rural towns

will then struggle to become “carbon neutral” because they do not have the capital to buy carbon offsets, and have more challenges reducing their emissions to begin with.

BC communities’ commitment to carbon neutrality requires them to measure, plan, implement, and monitor emissions reductions plans (MCSCD 2010; BC 2007a). According to the provincial government:

> Some local governments may have the ability to create a position dedicated to sustainability/climate action/energy and emissions reduction planning…Others will not. Either way, if local governments are to make effective movement toward achieving GHG reduction goals, they will need to develop a modest level of internal knowledge and capacity (e.g. at least one staff person dedicating some time to this task). (MCSCD 2010: 2)

Rural communities have less human and financial capital, and thus less capacity to measure, plan, implement and monitor emissions. The provincial government recognizes this, but at the same time, completely ignores it: municipal governments *must* do this. This is basically to say, “We know it’s harder for you, but figure it out anyway.” Developing “internal knowledge and capacity” is not clear-cut for communities like McBride, especially with so little time, employees, and money.

The Climate Action Charter makes no mention of the specific challenges rural communities face, and actually groups them together with cities in one general category. For example, the charter states its goals for BC’s communities:

> …creating complete, compact, more energy efficient rural and urban communities (e.g. foster a built environment that supports a reduction in car dependency and energy use, establish policies and processes that support fast tracking of green development projects, adopt zoning practices that encourage land use patterns that increase density and reduce sprawl). (BC 2010: 2)

Grouping all BC communities in one category ignores all the intricacies. This obliviousness is exemplified by the blanket demand for reducing car dependency, energy use, and sprawl. Making rural communities more “compact” ignores the fact that rural communities are smaller and less dense to begin with: that is partially what makes them rural communities!

Rural communities cannot easily reduce car dependence and energy use – or at least not in the same ways as urban communities – and the provincial government is not making it easier on them: witness the rejected transmission upgrade and public transit system in the Robson Valley. This dependency increases both emissions and the impact of the carbon tax. The Climate Action Plan states, “The main impacts of the carbon tax for individuals are related to transportation and heating costs” (BC 2008a: 16). Citizens of communities like McBride need more building energy because of its cold climate, and drive more because of its isolation. Policies like this are taken to be targeting rural communities who cannot make these changes as easily as they cannot access public transit, need propane and diesel generators because of unreliable energy, and have limited capacity to upgrade transportation and energy systems. The Province is giving $14 billion dollars to a Provincial Transit Plan to build up public transit “across the province”. But, $10.3 billion dollars of this is going to improve Metro Vancouver’s transit system, and $1.2 billion to other urban centers (Kelowna and Victoria) (BC 2008a). It is true that most of the population lives in these centers, but rural communities are just as committed to climate action as these hubs. Nevertheless, they are not getting the same support as cities because of their small spread-out populations, and provincial policy is not addressing these vast differences.

Higher scales of governance are disconnected from the local rural scale in a way that distinguishes it from the urban. Based on my research and analysis, I believe this is one of the main problems plaguing rural communities across BC: interscalar connections are much less strong between higher scales of governance and the rural 'local' versus the urban 'local'. In fact, I would say this might be the defining feature of the rural local scale in general, maybe even more than isolation. The politics of scale is differentiated in the rural zone by the fact that there is much less politics to it. The rural scale is treated more as a technical or administrative problem, which the provincial government addresses through policy and resource transfer. On the other hand, when the province works with the local in Victoria or Vancouver, it does so in a more politicized and democratic manner, i.e. through negotiation, struggle, compromise, etc. In rural areas, the local is defined as a ‘policy problem’, and this ‘problem’ is not solved through democratic negotiations, but through institutional design or straightforward managerialism, which ignores many rural communities needs and challenges.

There have been other provincial policy changes in the last decade that overlook rural communities' needs, especially the change in forest appurtenancy in the early 2000s (as discussed in chapter 1). The termination of appurtenancy enabled large forestry companies to operate mills without concern for their distance from, or contribution to, the communities from which they draw resources. This is at least partly why McBride lost most of its corporate mills in 2006. The question then becomes: with the end of any social contract between communities and resource industry, how can the provincial government incorporate rural communities into policy design? This question does not have an easy answer, but Ray Thiessen, a local woodlot owner, proposes a solution to existing failures:

> The government has to be close enough to actually function. I'm not talking about changing their policies or giving handouts, I'm talking about being in the area to where they can go out and look at something on an ongoing basis and fulfill their mandate as the regulators and managers of crown land. (p/c, June 22nd 2011)

According to Thiessen, it is impossible for the government to design appropriate policy for rural communities without being on the ground and seeing the problems themselves. The provincial and federal government need to make more of an effort to be *present* and take into consideration the intricacies of rural communities.

This is clearly caught up in the politics of scale. Indeed, these problems define the terrain of those politics at present. Although the provincial government often invokes the 'local', there are obvious limitations to this solution, especially in rural communities who face distinct obstacles to dealing with these issues. The 'rural scale' needs to be recognized in climate change politics, as there are distinct barriers to rural communities moving forward with climate change mitigation and adaptation. Moreover, further connections need to be made between scales, i.e. between local, provincial, and federal governments, as the artificial boundaries currently in place are hindering communication and connections. Higher scales of governance should change their perspective away from technical solutions managed at the macro-scale, to a broader focus on connections across scales and across society as a whole:

> We tend to see things like this and, "okay, let's find a solution, there's got to be an economic solution, or there's got to be a technical solution." And I go, "No, no: open the picture up and see the broad

> perspective of society and communities and families and so on." And when you start seeing that, you see it from a totally different light. (Pete Amyoony, p/c, June 25th 2011)

Leadership must come from higher scales – from the provincial to the global level – as these scales often have more capacity to deal with large-scale issues like climate change, which is a global problem. At the same time, these higher scales need to move away from all-inclusive macro-solutions, and work more closely with communities, building stronger connections across scales.

Scalar connections may be important in climate change debates, but so is the recognition of geographic specificities of place: in fact, these are inseparable. McBride's economic and socio-political obstacles to reducing emissions and becoming a low-carbon community are all linked to McBride's geographical history and context. Rural communities and the 'rural scale' may face similar challenges, but each community is different and needs to look at its existing geography in order to move forward with emissions reductions. This leads me to ask the question: How can McBride escape its existing geographies in order to transition to a low-carbon economy? Can this community manage its geographical challenges into a sustainable future? The answer is unclear but for one thing: it cannot manage on its own.

Chapter 6.

Future Visions

Up to this point, my main focus has been on the opportunities for and challenges to reducing emissions in the Village of McBride. When looking at how to move toward a carbon conscious society, though, we cannot only look at lowering emissions, especially in rural communities. We need to look at the bigger picture: a community's socio-economic context. There is a connection between lowering emissions and transitioning rural communities away from a dependence on resource industry, to a focus on economic diversification, value-added production, and green industry. By making these changes, McBride may simultaneously get more local value from its resources while lowering its emissions. This chapter expands on this potential transition in McBride, detailing local residents' visions for a greener future in the Robson Valley. This will help answer the questions posed in chapter 5: how can McBride confront its existing geographies? How can it overcome or rework its geographical challenges for a sustainable future?

Most residents want to see McBride shift away from a dependence on an undiversified and volatile forest industry. Diversifying the local economy will help, but opinions differ on what type of diversification is most suitable locally, ranging from an emphasis on local renewable energy, value-added forestry, agriculture, tourism and overall decentralization. Nonetheless, some form of diversification should buffer the Robson Valley's communities from the volatile booms and busts of BC's forest industry:

> There is a push to diversify. Diversification with tourism, bioenergy, just, I think, moving away from being an industrial region that's based on forestry. (Anonymous4, p/c, June 21st 2011)

Many residents want more local businesses to use local resources; smaller, more value-added industries that can help sustain small rural economies:

> That type of thing could be developed, and those are all small, they're not big industries. They are the type we need because if one goes down, it doesn't destroy the whole community. Whereas the big industry, it's either up or down, and if it decides that it's not profitable, it's gone, and the whole community suffers badly. (Bill Arnold, p/c, June 24th 2011)

The starting point for McBride's economic diversification is a transformation of the local forest industry. The MCFC can become the foundation for a new community-based power system – the ecoTech bioenergy plant – that will not only bring in many local jobs, but also help stabilize regional electricity through the associated upgrade of the transmission line. Furthermore, this upgrade will enable the construction of more run-of-the-river hydro projects in the area. McBride can become a net exporter of renewable energy in the bioenergy and run-of-the-river fields, and many residents think renewable energy is the economic path of McBride's future, not forestry:

> The future's not with these big mills. People say, "Well god, if we could just get a big mill in here." Well, it's not going to help you any. Start looking a little bit smaller and you get these companies that build these little power plants here: these are people that have vision…I don't see those people stopping at that point. I think that's the direction you'll see happening more here. (Gene Runtz, p/c, June 24th 2011)

> We're going to find our niche somewhere. I don't know what that's going to be at: it may be log home building, it may be this independent power production has a potential to be huge. And I'd like to see that thing really take off because I think the mountains in the corridor that we're in, with all the side streams: the renewable energy that we could produce is an economy unto itself. And I think that, if anything, I would prefer to see, because I think it's a way to go: it's good jobs, there's a lot of them, and it's clean. (Mike Frasier, p/c, June 23rd 2011)

The provincial government believes the renewable energy industry will aid in diversifying and stabilizing rural economies across BC, and the Province is currently supporting this in the work of Solar BC (Provincial2, p/c, July 8th 2011). Renewable energy can also bring additional opportunities to McBride, specifically the bioenergy plant, which can provide energy and heat to new businesses (Colin Hall, p/c, July 18th 2011). Clara Appleby, vice-president of the chamber of commerce, envisions the positive snowballing effects of the renewable energy industry in McBride:

> I would say in two years we should see growth and a lot of our initiatives going forward. And one thing rolls on another: if you put the biomass in, other companies that reflect on it or use it will come in as well. It's like the run of the river: when those electrical plants go in, we will have very high paying electricians here. (p/c, June 8th 2011)

Even with the large potential for a profitable renewable energy industry in McBride, many residents still foresee a vibrant local forest industry in the future due to the richness of this resource in the valley. This vision saw forestry moving toward value-added production, with less raw lumber – and value – getting shipped out of the valley. Currently, most raw lumber is shipped to Prince George, as discussed previously, leaving little lumber to be manufactured in the community. Many interviewees envision the creation of more small-scale value-added mills, which convert lumber into something of more value, like furniture. That way, the value of the lumber can stay in the community while simultaneously creating more local employment:

> They have a lot of wood here, and it's not just immature wood, they have a lot of mature wood. One of the good strongholds left is a lot of different types: they've got the fir, the spruce, the pine, cedar, all the different qualities. So there's a good product here, but with it leaving, that's the sad part. It helps part of the Valley, but it could help the Valley a lot more by being produced in the Valley. (Lyle Lewis, p/c, June 23rd 2011)

The MCFC may be profiting from the shipment of wood out of the valley, but they would also like to see more value-added (and economically sustainable) mills in the community, as community forest manager Marc von der Gonna notes:

> I'd like to see more specialty-type business, whether it's timber frame, house construction, or logging construction, just anything like that. I think we have huge opportunity here to do that. (p/c, June 15th 2011)

This quote signals the potential for collaboration between local mills and the MCFC. Value-added mills will help stabilize McBride's economy, as their smaller scale and localized management makes them less susceptible to the volatility of the forest industry. Historically, these are the kinds of mills that have endured forestry downturns in McBride. Bigger mills, on the other hand, have shut down during forestry busts, leaving the community to suffer huge losses in employment and people:

> I also believe that what we have found is that we are better off to have 50 businesses, each employing 2-4 people, than we are to have 1 industry that's employing 200 people. That's the kind of fit that is better suited to the values in our area. (Linda Fry, p/c, June 24th 2011)

Smaller forestry mills also have less environmental impact, something important to many McBride residents, like Ken Starchuck, the regional district director:

> I think the majority of these guys I've talked to here, you want those value-added low impact greenhouse gas type of business, that are not going to emit a bunch of pollutants and so on. I think those type of operations probably wouldn't be welcome here. We want something that's going to be good for the community and employ 10, 15 people, a sort of value-added business, and provide a decent wage, and have less an impact on the environment. (p/c, June 17th 2011)

Even if residents desire to see smaller value-added mills in the community, many were doubtful of any forestry comeback in the valley. One resident says, "It will never be what it used to be. I think living off the forest is gone, I really do" (Anonymous3, p/c, June 9th 2011). This opinion may be extreme, but it illuminates the widespread belief that McBride's forest industry will never return to its previous scale, with bigger mills employing most citizens:

> Without a shift back to some kinds of policies…I don't know if we'll ever see anything more in the forest industry than what we have now, which is basically employing the people that are out there falling, and the logging truck drivers, and the very few little mills that are doing specialty things. (Lelani Arris, p/c, June 17th 2011).

This is not necessarily a negative thing, though, as most interviewees do not desire the return of bigger mills. Residents are more supportive of locally owned, value-added businesses, as seen in all the above quotations. I spoke to two residents who established or are planning to establish a value-added forestry business in the valley, in order to learn more on the local occurrence of value-added manufacturing. Larry Stamm harvests spruce and cedar trees to make wood instruments, like violins and guitars, while also sending small pieces of tone wood to instrument manufacturers all over the world (p/c, June 25th 2011). Ray Thiessen is starting a wood products manufacturing company with a couple of local partners. This company will use douglas fir and birch to construct cabinet material, moulding, window, door-frames, and other similar products (p/c, June 22nd 2011). These projects demonstrate McBride's inclination toward a more

value-added economy. With the vast diversity and abundance of forest species and resources, there are few barriers to value-added diversification in the valley, other than the obvious limitations of capital in the area. The rising costs of oil and transportation might also aid in the reorganization of forestry back to smaller communities: this is, at least, the hope for McBride residents (Marc von der Gonna, p/c, June 15th 2011). Moving forward, it is important for the MCFC and new value-added businesses to work together, as this would be doubly beneficial to both groups. Provincial1 notes:

> They can develop niche markets; that's great too. I think that's a good role for community forests, just in general: you can't compete with the big companies. Then they're subject to the same market conditions that the big companies have always been challenged by, so maybe the community forest does niche markets for specialty products for furniture or musical instruments or made-special building supplies or something. (p/c, June 23rd 2011)

The transformation of McBride's forest industry is just one piece of McBride's future. Along with this, many interviewees see a revitalized agricultural sector, where more food is grown and consumed locally:

> I would encourage the farmer's growers group, more of that to grow larger. If we can be a major supplier for fruits and vegetables that are climate appropriate here for us, and for a larger area beyond the three valleys, then that would be amazing. (Derek Shaw, p/c, June 22nd 2011)

The local agricultural movement has certainly grown with the establishment of the Robson Valley Grower's Initiative and the bioenergy plant's prospective greenhouses, but faces the challenges of limited infrastructure and access to markets, especially with the inability to transport food by rail. More local agriculture may help stabilize and diversify McBride's economy, while also reducing overall emissions, as less food would need to be transported into the community. Local organic farmer Nelson Hicks believes McBride has a genuine opportunity to increase its agricultural output, but his vision does not include the construction of large-scale farms or giant agribusiness. He sees local potential only in small-scale farms:

> I'm 60, my wife is 55 and we are going to show people, hopefully, that you can make a living on 4-5 acres. You don't need a 1000-acre farm, you don't need 100,000's worth of tractors and combines and all that.

> If we can do what we think we can do on 4-5 acres there's a chance for an economy here. (p/c, June 27th 2011)

Another local farmer, Pete Amyoony, also believes agriculture is an essential part of McBride's future. According to Amyoony, everyone in the valley could be growing food on a small-scale, and this change could be revolutionary:

> People growing their own food is a real threat to the corporate food system, and I think that's what we need to do. That's the kind of revolution I want to see. We'll have courses on grafting and gardening and stuff like that here again in the next few years, where we're doing it all the time, And I think that's the way that we can fight the carbon thing because if we can get 90% of the people in the Robson Valley growing a lot of their own food, then that cuts back on carbon immensely. (p/c, June 25th 2011)

To a lesser extant, McBride's tourism industry added to the discussions of local economic diversification. Currently, snowmobile sledders contribute to McBride's economy in the winter months, supporting the restaurant and hotel industry in the valley (Ken Starchuck, p/c, June 17th 2011). Provincial1 thinks McBride's tourist industry can expand further because of McBride's proximity to Jasper and its accessibility from the highway (p/c, June 23rd 2011). Linda Fry, treasurer of the local chamber of commerce, agrees with Provincial1: she believes the Robson Valley has the potential to become a tourist destination outside of wintertime sledders:

> I think where we see McBride going is arts, culture, artisan-type industries: the cottage industries. The place that you would go to the little boutiques and the neat shops where you're going to get something that is quality and unique, that you can't go into Walmart and buy. (p/c, June 24th 2011)

This point is hotly debated, though, as many residents do not want to see McBride become a "tourist town". Ken Starchuck recognizes the value of sledders to the local restaurant and hotel industry, but these tourists do not contribute greatly to any other community businesses – like the local Home Hardware – and therefore do not represent a sustainable local industry in the long run (p/c, June 17th 2011). Lelani Arris questions the environmental benefits of tourism in the valley: are these tourists damaging the environment? Are they contributing to emissions? Arris has issue with sledders – and

tourists – harming McBride's environment (p/c, June 17th 2011). Derek Shaw also shows concern with McBride becoming a "tourist town":

> What I don't want it to be, I don't want it to be Jasper: commercialized and walking down Main Street in Jasper and having the tourism side of it. That's an option, for sure, but I don't want that to be McBride. (p/c, June 22nd 2011)

Tourism, then, remains a debated option for McBride's future. It may help diversify McBride's economy further, but according to some residents, there are numerous drawbacks to transitioning to a tourist mentality.

Value-added production, agriculture, and green energy will not only stabilize McBride's economy but also the community's population by bringing innovative and young people to the valley. This was one of the most prominent and critical visions for McBride's future: a growing and diverse population. With a growing population, McBride may be more motivated to make environmental changes:

> We want all kinds of disenfranchised, dis-discouraged, fertile young people to move here…That's what I see is the biggest opportunity. Really! I think that's the solution, is young people who are motivated. (Nancy Taylor, p/c, June 25th 2011)

As seen in this quote, residents care about *how* McBride's population is growing. Many want to see diversity in age, education, ethnicity, culture, and skills in the community. Overall, diversified demographic growth in the valley will increase the community's human capital, aiding in the ability to put green projects in place.

This vision of an educated, youthful, and growing population in McBride was sometimes accompanied by discussions of public education in BC. Some residents believe its time for the Province to update its education system and add more environmental curricula. Many interviewees spoke about the importance of education in their vision of the future, especially of the younger generations, so they can make sustainable decisions in the future (Derek Shaw, p/c, June 22nd 2011; Pete Amyoony, p/c, June 25th 2011):

> I think education is probably the key thing to change the generation currently in school so that when they become consumers on their own steam and they're out their making their own decisions, that they're

> making decisions that are based on green initiatives and are aware of the fact that what they do is going to have an impact for their own life and their kid's lives. So education is paramount. (Anonymous 3, p/c, June 9th 2011)

Demographic growth in McBride depends, of course, on a growing economy, as McBride's population will only grow if there are more economic opportunities in the area:

> I think from the community perspective that we have lost a lot of people, and the only way for us to gain some people back, in terms of reaching that critical mass where we're going to be able to internalize our economy and receive some of the benefits of the external economy, are by those factors that develop the economy living and being and engaging here. (Ray Thiessen, p/c, June 22nd 2011)

Demographic, social, economic, and environmental change are all connected in these future visions. Growth and change in one "category", effects every other "category", especially in small rural communities like McBride, where the population is so closely connected. Local demographic and economic growth goes hand in hand, and this affects local environmental standards as well, as growth would bring more financial and human capital to the community to help tackle emissions and sustainability projects. Demographic and economic growth can also improve McBride's social wellbeing because, for example, more children and community activities could develop out of this growth. We cannot try to tackle one problem – like carbon emissions – without tackling all the other problems prevalent in rural communities, as they are so deeply connected; this is one of the main conclusions of this research.

Generally, increased economic diversification, value-added production, green energy, and local agriculture will help stabilize McBride's economy, population, and community-life, while helping reduce emissions. Innis' staples theory re-enters the discussion at this point because Innis highlights the ongoing economic problems associated with resource dependence. This theory takes real shape in McBride, where ongoing forestry booms and busts have left the community with a volatile and declining economy. It is unsurprising, then, that discussions of future visions for McBride point to the promise of economic diversification, just as Innis' staples theory points out the extensive damage an undiversified primary resource economy can inflict upon a

community. By diversifying, McBride may be able to get out of the boom and bust cycles that have plagued it for decades, and seem unable to address future challenges.

Economic diversification will also increase McBride's self-sufficiency, decreasing its dependence on the export of primary resources, and the unequal relationship this creates between urban and rural communities. Larry Stamm believes self-sufficiency is the key to both emissions reductions and the overall survival of small rural communities:

> But, getting back to sort of reducing carbon, the more self-sufficient we can be, not only do we reduce carbon gases going into the atmosphere, the more resilient we are against all of the banksters out there trying to decimate local communities. (p/c, June 25th 2011)

As transportation is the area's biggest emitter, increasing rural self-sufficiency through diversification is essential, as fewer goods would need to be transported in and out of the community, and people would not have to travel far distances to get necessary goods and services.

When discussing rural self-sufficiency, many residents brought up the importance of decentralization. Decentralization was a common discussion topic in interviews, and is central in the overall dialogue of rural communities' sustainability. Ray Thiessen thinks the decentralization of both industry and population needs to occur on a global scale. This will decrease transportation's unsustainable emissions and stabilize rural populations and economies in the long-term. According to Thiessen, Canada has centralized almost all of its people and outputs (manufacturing, production, energy etc.), and this is an environmental and economic oversight:

> We don't have any manufacturing here, in these small environments, because everything is centralized … I don't care how "green" they call a city: it's a completely unsustainable environment. It requires the input of all of these values. That's why I think decentralization is absolutely essential: the decentralization of manufacturing, product development, populations, all of these kinds of things. (p/c, June 22nd 2011).

Thiessen believes decentralization is the solution to many of my questions: How can rural communities reduce their emissions? How can the provincial and federal governments aid rural communities in this transition? Decentralization was almost

always the answer, as Thiessen believes it will fix many of the problems endemic to rural communities, such as decreasing populations, dying industries, and unsustainable transportation emissions. Gene Runtz echoes Thiessen's concerns about centralization in Canada and how this has directly harmed McBride. Runtz disagrees with the centralization of forestry companies in BC, and thinks the Province should prohibit the conglomeration of forestry companies into massive corporations that "own the majority of everything that takes place in the province" (p/c, June 24th 2011). Runtz formally owned MFI, a large local mill that shut down in 2006 for many reasons, including the loss of their major client. MFI sold most of its veneer to a company called Weldwood. West Fraser, a large forestry company, bought Weldwood and completely shut out MFI in six weeks, as they already had veneer mills in production (Runtz, p/c, June 24th 2011). The centralization and conglomeration of forestry companies in BC, then, has directly impacted McBride - among other rural communities - by centralizing most mills in larger urban centers, thereby shutting down many rural mills.

Centralization has also impacted McBride's population and community-life. Not only are young people moving to bigger cities with more economic opportunities, but the school system in the valley and across BC has also become centralized. This is of great concern to Pete Amyoony, who has seen many smaller schools in the valley - including the local Dunster school - shut down. Children are being shipped out of communities for school, and according to Amyoony, this impacts community life because the daily presence of children, and the happiness they bring a community, is missing (p/c, June 25th 2011).

Overall, most discussions of McBride's future directly or indirectly make reference to decentralization in BC. Strengthening rural communities across the province requires some production be placed in rural environments. That way, both rural economies and populations can sustainably grow and, eventually, stabilize:

> If we're going to make BC a balanced province, we have to decentralize. The things that can go to other places - Prince George is now a transportation hub, Prince Rupert, and the main line down to Chicago – we've got to get to a point where towns the size of Prince George are encouraged to fulfill their natural size, but then devolve some of the activities to communities like McBride, and not be dependent on one industry (Colin Hall, p/c, July 18th 2011)

The topic of decentralization relates back to the discussion of scale and policy's urban bias. BC – and arguably the world – has been emphasizing the 'local' scale as key to reducing global emissions. Yet, this focus has not distinguished between the 'rural' and 'urban' local scales, which is an error. The 'rural' and 'urban' scales cannot be interchanged, as rural environments face very distinct geographic contexts than urban areas. Centralizing all production in urban or semi-urban centers destroys many rural communities' livelihoods, and top-down policy imposition has partially created this centralization pattern across Canada. Many rural communities cannot even survive, let alone tackle climate change, without the decentralization of people and industry. Decentralization requires efforts from all scales, then, especially the higher scales of governance that can - through policy - directly effect how corporations and communities move into the future.

In total, there may be many different visions of McBride's future, but all these visions are connected. Many residents do not just hope for one change, whether it be renewable energy, local agriculture or demographic growth; they hope for a combination, as these changes are all linked. For example, a bioenergy plant will increase local agricultural capacity and demographic growth by increasing the availability of jobs. Rick Thompson truly captures this holistic vision in his interview:

> In ten years, I expect to see us with a viable community forest; I hope to see us with a bioenergy plant which is selling energy to BC Hydro; I hope to see us with a number of run-of-the-river hydro projects that employ people down the road. With the bioenergy project, I hope to see greenhouses and other facilities set up in an industrial park. And a hundred more jobs in the valley: a hundred more families happily living here. That's my vision of the future. (p/c, June 20th 2011)

Often, provincial policy does not appropriately apply to different communities because people do not live in the artificial divisions policy creates. BC's climate change policy specifically addresses emissions reductions in different categories, from the public sector, to various industries, to private homes. What it does not do, though, is address this issue holistically, which is the reality for rural communities moving forward with emissions reductions. What is needed is a complete vision of climate change that connects different regions' geographic challenges to environmental change.

Conversely, one important question raised in the interviews was whether there is a conflict between economic growth and emissions reductions. If McBride experiences economic (and demographic) growth – which many would like to see – would this then increase their overall emissions? Or can McBride's economy grow and simultaneously become 'greener'? Would decentralization and economic growth actually increase BC's emissions? Some interviewees think the concept of economic growth is synonymous with emissions growth:

> To reduce the global warming gases, you have to get rid of the idea of economic growth… (Larry Stamm, p/c, June 25th 2011)
>
> Growth means that there's going to be more greenhouse gases, pretty well any growth… Because growth means using more resources, as far as I'm concerned. (Pete Amyoony, p/c, June 25th 2011)

This makes sense: more growth, more resource use, more emissions. Nonetheless, some residents believe there can be greener economic growth in the valley, growth that does not increase emissions, but makes both the province and community greener: "I think they work together well because the economic opportunities are here with the green initiatives, especially looking at the run of the river projects and so forth" (Anonymous1, p/c, June 7th 2011). Economic and demographic growth must happen to keep the communities of the Robson Valley alive, and McBride residents are strongly supportive of local green industry, so there may not be an obvious conflict between economic growth and emissions reductions:

> I think that, number one, you've got to have economic development. If you don't have economic development, your communities are just going to die, especially small rural communities. So you have to find something that will grow your economy, because your economy has to be there and it has to be there in rural British Columbia… And I think it's possible to use economic growth in the right way to make carbon neutrality work. (Rick Thompson, p/c, June 20th 2011)

One prominent and all-inclusive vision for McBride's future is McBride becoming a "sustainable community". Many see sustainability as a holistic category, though, one that inclusively combines demographic, economic, and environmental sustainability. McBride is a beautiful place, and this seems to affect the residents living there: they truly want it to stay that way. Even though McBride needs economic and demographic growth

to endure as a community, this growth would ideally take the form of green and small-scale businesses in the valley:

> I think one of the things that we need to think about for McBride is that whatever we do here, we have to be aware of emissions and we want this to remain a nice place to live, and also a nice place to visit, but, first of all, it's the people who live here, who spend their time here, that have to be number one in thinking. How is this development going to affect the community? How does it affect the people who live here? How does it affect the people who visit here? (Linda Fry, p/c, June 24th 2011)
>
> You're going to see people that come here that continue to be, I mean, a lot of the people here are very environmental, knowledgeable, and want to keep the area as nice as you can. I think that anything that happens here has to be in terms of that. (Gene Runtz, p/c, June 24th 2011)

In chapter 3, I asked: what can a sustainable boom look like in rural communities, one that does not depend on primary resource extraction? To McBride residents, this would entail local economic diversification: more renewable energy projects, value-added manufacturing, growing local agriculture, and decentralization. This may increase some local emissions, as more people and industry would be present in the valley, but on a larger scale, this would decrease transportation and energy emissions province-wide. With more renewable energy sources and less need for the long-distance transportation of goods and people, rural communities may become sustainable microcosms in themselves.

In BC, climate change policy has been structured so as to 'empower' communities to meet policy standards in their own way. Many hope an answer lies in the localization of decision-making power in the face of an overwhelmingly complicated problem like climate change. Yet, among other things, my experience in McBride leads me to ask if our obsession with the local leads us to overlook its limitations. There are relatively obvious problems endemic to small rural communities, as discussed throughout: few resources, isolation, and problems with interpersonal relationships within and between members of government and the local populace. The provincial government's unwillingness to address the specifics is crucial.

Scale matters in the policy problem of climate change in an almost painfully obvious way. Certainly, many people in McBride believe leadership and resources needs to come from higher levels of governance. Lelani Arris says:

> I don't think that the local level has the funding capabilities to do what needs to be done. I know things have already happened at sort of the regional level, for example the regional district's recycling and composting …but they're sort of smaller scale: they don't necessarily address the critical points…The policies almost have to come from a provincial level, at a minimum, for the most part. (p/c, June 20th 2011)

Nevertheless, even if we did provide resources and leadership, there is no guarantee that McBride will overcome all its geographic challenges, and that the devolutionary climate policy model will come into its own.

Ultimately, the question for any one community – and for the province as whole – is: can we design a relationship between different scales of governance that can work to reduce emissions and support the adaptation of new climate-influenced conditions? This is only possible if we both give up the top-down policy imposition model, and if we get over a tendency to champion the local as the solution to socio-environmental problems. Effective policy cannot be one-size-fits-all. In rural communities, the transition to low-carbon societies must be addressed differently than in urban communities. What is crucial is a way to connect different scales; not treat them like separate entities, but as networks that recognize the specifics of the communities in question. We cannot just push one scale, nor can we imagine that one group will have the answer. Therefore, when addressing the question of whether the "local" is the most important scale in climate change debates, the answer becomes more complicated. Focusing on the local is not the answer, but at the same time, ignoring the local is clearly a mistake. When looking for climate change solutions, all scales and their interconnections matter.

However, moving away both from the local and from top-down provincial policy model creates problems. These two modes of policy are designed to overcome the problems associated with the other: top-down policy is supposed to address the limitations of the local, and localized policy is supposed to address the specificities of place in a democratic or, at least, more appropriate way. How can we reject both? Further, how do we reject both and still make policy attentive to geographic specificities?

Policy's current local obsession is at least partly an attempt to make things 'democratic', but if the local cannot do it all, then what can? The solution, I believe, lies in taking a regional approach. A regional approach requires communities in the same region to work together. This will increase the financial and human capital available, enabling the region as a whole (as opposed to each separate community) to transition together. Taking a regional approach would focus on how the communities of the Robson Valley (and further away) could work alongside each other. Each community has different geographic opportunities and challenges for reducing emissions, but because they are in the same region, the challenges they face are often similar. Combining forces may help remove some of these challenges (such as isolation from people and goods), build up regional networks, and increase financial, human, and social capital as well. This will also change our scalar perspective away from the vertical binary of the local to the national scale, to a focus on the horizontal connections between scales. We need to remember that scale is not only vertical – spanning from the local to the global – but also *horizontal*, i.e. between different communities and regions. These horizontal connections are often ignored in research and policy, and this is an oversight. While a drive toward greater rural self-sufficiency could have ecological and economic benefits, there is a strong likelihood that true self-sufficiency for most rural communities may be unattainable. However, rural *regional* self-sufficiency may be attainable, as more capital and resources would be available. A regional approach would help eliminate the limitations of the local scale - especially challenges endemic to rural communities - while also allowing more communities and regions to connect and build off of these positive relations. As briefly discussed in chapter 3, my invocation of regionalism is not intended to describe a distinct and new middle-level scale – the 'regional' scale – different in quality and size from the local scale. This would imply that the regional district, for example, should be granted more political power and/or jurisdictional reach, and would ignore the interconnections and artificial boundaries between scales. In other words, at best it would reproduce the problem at this 'new' scale, and at worst, it would exacerbate existing inter-scalar disconnection. My focus on regionalism deals only with building horizontal connections across communities through collaboration, and is intended more to break down the false boundaries between scales, than create a new one.

This conception of a 'regional' and 'interscalar' approach connects back to an important debate brought up in Chapter 4: the public versus private ownership of renewable energy production. This problem is not, in my view, one of principle: neither side is necessarily right or wrong, as the issue is not black and white (as Chapters 4 and 5 discussed). McBride citizens – and the province as a whole – will always have diverse and conflicting views on the subject. What is needed is a workable solution suited to the geographic context of the Robson Valley, which will almost certainly involve public, private and in-between mixes that we have yet to envision. Sticking hard to one side or the other is clearly not what McBride needs, as the interviews make clear, and my analysis suggests that it is precisely the specificities and the interscalar connections that matter. It is these that will have to determine the public/private/in-between mixes, not the other way around. By taking a regional approach, we can recognize what works best specifically in an area, instead of enforcing unsuitable policy province-wide.

The potential revitalization of the Robson Valley could be a centerpiece in the wider transformation of rural regions across BC to more connected, localized and green economies. This revitalization is based in taking a regional approach. At the same time, vertical scalar connections are still important. Provincial and national governments need to aid regions in this transition. How? Ray Thiessen originally put forward a solution for this question: higher scales of governance can only design appropriate policy if they understand the area they are designing it for, and according to Thiessen, this can only happen if they are actually physically *present* in that region (p/c, June 22nd 2011). This would require a decentralization of government employees, so more people can design suitable policy for diverse provincial regions. Designing climate change policy in Victoria that affects communities hundreds of kilometers away is not a viable answer. So, how can we reject both top-down and localized policy models and still make policy attentive to geographic specifics? By decentralizing higher scales of governance, enabling government employees to design policy specific to the geography of each region. In total, a regionalized approach to climate change in BC recognizes both the importance of horizontal and vertical scalar connections, while simultaneously addressing the geographic specificity of each region in question.

The decentralization and presence of higher scales of governance in rural communities will help solve a problem brought up in Chapter 5: interscalar connections

are weaker between higher scales of governance and the rural 'local' versus the urban 'local'. As discussed, the rural scale is treated more as a technical or administrative problem, which the provincial government addresses through policy and resource transfer. Part of the problem with these interscalar relations is they are couched by both sides as problems of assistance or help, as evidenced by this research. Many McBride residents spoke of needing for more aid from the provincial government to decrease their emissions, while provincial employees spoke of what kind of aid they are currently offering to rural communities. However, higher scales of governance do not just need to change or increase the amount of aid to rural communities, as this maintains the viewpoint that rural communities are in need of ‘technical’ solutions to their ‘technical’ challenges. I would propose reconceptualizing this relationship between higher scales of governance and rural communities to a *collaborative* relationship, as opposed to an *assistive* one. This changes one overarching question in this thesis: how can higher scales of governance *aid* rural communities in transitioning to carbon-conscious communities? Aid is not what is needed. The question should be how can higher scales of governance *collaborate* with rural communities to makes this transition. Collaboration puts rural regions on the same political playing field as urban ones, which highlights and distinguishes the importance of rural regions throughout the province. Decentralizing government employees and taking a regionalized approach will aid in this collaboration between rural communities and the Province by increasing government participation and awareness of the rural context, and, therefore, increase their willingness to democratically work toward a political – not technical – solution. Working collaboratively with rural communities will involve more democratic processes, similar to ones the Province already has with urban centers, like negotiation, discussion, compromise, etc. This collaboration will help recognize the geographic challenges of diverse rural regions while building up interscalar connections across the province.

The case study of McBride offers an example of the geographically specific opportunities and challenges rural communities often face in reducing their emissions. For McBride, there are numerous opportunities to transition to a low-carbon community in the renewable energy industry, value-added forestry and a growing local agriculture movement, with the local government and residents making numerous changes to reduce emissions in local buildings and transportation. The provincial and federal

government need to collaborate with rural governments, not just through appropriate policy and aid, but also through collaboration: negotiations, discussion, and more democratic processes that do not look at the rural as a technical problem. This collaboration is necessary for emissions reduction, as communities like McBride face many economic and socio-political challenges in moving forward with these initiatives, including little financial and human capital, limited access to electricity, a dying resource industry, isolation, small political boundaries and internal social division. These generalized challenges are all made real by the area's historical, physical, political, and cultural *geography*: McBride's geography shapes all the challenges it faces. McBride shares many of these geographic characteristics with rural communities across Canada, making it a good case study to generalize from. It especially shares its geographic challenges with communities throughout the Robson Valley, therefore building up horizontal connections between these communities may aid in addressing these challenges. Throughout the thesis, I often referred to challenges and opportunities in the Robson Valley, not just McBride. I did this to demonstrate the close connections between the communities throughout the region. Nevertheless, these horizontal connections could be developed further by focusing on a more regional approach to climate change policy in BC, helping all the communities of the Robson Valley transition to a low-carbon region altogether, in collaboration with higher scales of governance.

In general, more research needs to be conducted on these issues, with a specific focus on the geographic specificity of rural environments. This research should address the scalar politics of climate change, and not artificially define them. Concentrating on one scale is an oversight, as all scales are interconnected. Researchers can break down these artificial boundaries by looking past one scale – whether it be local or national – and by also recognizing the horizontal nature of scale. Similarly, boundaries need to be broken down between categories like "social", "political", "economic", and "environmental". These categories are all deeply linked, and when addressing an issue like climate change, we cannot simply look at one. McBride is a strong case for this, as all their emissions reductions challenges are interwoven in the socio-political, economic, and geographic histories of the community. Interdisciplinarity would aid in breaking down these artificial categories. Often, researchers examine problems from the perspective of their separate disciplines, whether it be science, economics, political science, sociology,

etc. This separation between disciplines artificially creates categories like “political”, “economic”, “environmental” and “social”, weakening the holistic perspective required to address complex problems, like climate change. Climate change affects every one of these “categories”, therefore more interdisciplinary and collaborative research is needed to understand the full effects of climate change. Geography is one field that is considered interdisciplinary, as geographers come from varied disciplines, from the scientific to the social perspectives. At the same time, there are often divides between the different geographic disciplines. Geography, then, needs more collaborative projects as well, especially when tackling an issue as multifaceted as climate change.

A community’s socio-economic and environmental sustainability requires attention to its specific geography and its relations to other communities, regions and scales of governance. Then, the community will have more power to make the changes it needs to move in the less-carbon intensive direction required to help address and mitigate climate change. The provincial government needs to recognize the holistic nature of climate change through the decentralization of industry, people, and government itself. This requires the Province to act collaboratively with rural communities and not just address rural problems through aid and generalized policy. Horizontal and regional connections should be developed across BC, so various communities can build up their capital and help resolve these issues together. Whether it is the rural, urban, provincial, or national scale, we need to recognize both the specificities of place and the horizontal and vertical connections between scales when addressing an issue as complex and daunting as global climate change.

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Appendices

Appendix A.

List of Interviewees

Local government:

- Anonymous1
- Anonymous2
- Anonymous3
- Anonymous4
- Councilor Rick Thompson
- Councilor Mike Moseley
- Ken Starchuck: Regional district director (sat on the community forest board for 4 years)
- Lyle Lewis: Recreation facilities manager for McBride (overseeing energy retrofit of McBride arena)
- Gord Simmons: worked for local and regional government for 25 years
- Mayor Mike Frasier

Provincial government:

- Provincial1: employee from Smart Planning for Communities
- Provincial2: employee from the Carbon Neutral Operations and Climate Outreach, Climate Action Secretariat, BC's Ministry of Environment
- Provincial3: employee from Green Communities
- Provincial 4: employee from the Intergovernmental Relations and Planning, BC's Ministry of Community, Sport and Cultural Development

Community forest and forestry industry:

- Community Forest Manager Marc von der Gonna
- Ray Thiessen: woodlot owner, former MCFC council member
- Gene Runtz: former President and CEO of McBride Forest Industries, and forestry consultant
- Larry Stamm: small-scale forester and builds instruments from local wood
- Tom Ryan: Owner of TRC Cedar mill

Chamber of Commerce:

- President Bill Arnold
- Vice-President Clara Appleby
- Treasurer Linda Fry

Bioenergy:

- Peter Hollist: Owner of the Scarecrow Bed and Breakfast and local bioenergy expert
- Phil Marsh: Chief Technology Officer of BC Biocarbon, a biochar company, and biomass generator expert
- Colin Hall: CEO of Ecophaser Corp. and ecoTech bioenergy plant to be set up in McBride

Run-of-the-river projects

- Duke Peterson: run-of-the-river IPP (Holmes Hydro Inc.)

Solar/wind renewable energy:

- Roy Howard: owner of Rocky Mountain Solar Company which installs solar and wind energy in the local area

Informed citizens:

- Lelani Arris: Dunster store owner, and editor of papers on climate change. Well educated and informed on local area and climate change science
- Derek Shaw: High School Principle

Robson Valley Growers (part of the 3-valley Co-op) and local agriculture:

- Nancy Taylor: Main organizer of RVG
- Pete Amyoony: Main organizer of RVG
- Nelson Hicks: runs Main Street Grill and is local organic farmer

Appendix B.

Sample Interview Questions

- How would you describe your role in the community?
- How does your role or work relate to climate change/sustainable economic development?
- What is your view on climate change and climate change policy in BC and globally? How do you think that'll impact McBride?
- Do you think there is a conflict in McBride (and globally) between economic growth/increasing employment opportunities versus reducing carbon emissions?
- What impact will reducing carbon emissions have on labour in McBride?
- What are the major sources of carbon emissions in McBride?
- What is McBride currently doing to reduce greenhouse gas emissions/promote sustainable economic development?
- How is McBride measuring reductions in their carbon footprint?
- What are the challenges McBride faces in reducing greenhouse gas emissions?
- What opportunities do you think McBride has in reducing greenhouse gas emissions? For example: within energy, forest industry (reforestation, offsets), transportation, building retrofits?
- How does McBride's energy system work?
- Are there any plans in McBride to try and build renewable power facilities in town – solar/solar hot water/wind/bioenergy/or hydro?
- What solutions do you think are most applicable and plausible for your community?
- What's a reasonable timeline? What's the feasibility of this happening in the near future?
- How are higher levels of government assisting McBride in reducing emissions?
- What do you think higher levels of government *should* do to help McBride reducing emissions?
- Do you think McBride's local government should be handling the carbon-neutral transformation of the forest sector and community, or do you think a larger body of government, i.e. the provincial or federal government, should tackle this issue?
- What is your opinion on the changing demographic and population structure of McBride, and how are various patterns affecting McBride's local economy?
- Where do you see your community and its economy in ten years?
- Where do you see McBride's forest industry in ten years?
- How has the forest industry in McBride changed in recent years?
- How does McBride organize its forest industry within the community forest framework? What are some the strengths and challenges in having a community run forest?
- What are some of the biggest challenges McBride's community forest currently faces?
- I have gone through all of my questions. Is there anything else that you feel is important that you would like to add or clarify?
- Ask to re-contact