PROSPERITY OR CRISIS? EXAMINING THE EFFICACY OF BRITISH COLUMBIA’S FOREST POLICY CHOICES TO SUPPORT THE FOREST INDUSTRY

by

Tammy L. Baerg

B.Sc. Hons, University of Northern British Columbia, 2005

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Abstract

The *Forest (Revitalization) Amendment Act 2003* significantly altered the conditions for holding major forest tenure agreements in British Columbia. The goal of this forest policy was to allow the forest industry to become globally competitive. This thesis asks whether or not this goal was successful and what trade-offs were incurred as a result. Using the Prince George Timber Supply Area as a case study, mixed methods of inquiry were employed. This study examines changes throughout the forest industry over a fifteen-year period. In this case, the forest industry became globally competitive. But, significant consolidation within the forest industry occurred. Moreover, while the timber harvest increased and processing became centralized, the forest industry’s overall contribution to the provincial economy declined significantly. This thesis demonstrates that the government remains committed to supporting the current forest industry. However, the aforementioned revitalization legislation may have lasting negative repercussions for the provincial forest economy.
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Dedication and Acknowledgements

I dedicate this thesis to my mentor, Rainer Muenter, and my father, William Robert Baerg. Both men have profoundly influenced my life and have helped shape the person I am today. Thank you.

I began my study of forestry at Selkirk College in 1993. It was there that I was exposed to the concept that forest management is both a science and an art as it involves the interaction between forest ecosystems and human systems. Both the internal and interconnected dynamics of forest ecosystems and human systems are extremely complex, and navigating these systems requires knowledge that is both deep and broad. This has been my journey, and after 20 years of practicing various aspects of forest management and broadening my educational foundation I have come to realize that if we are to understand the complex interactions among natural and human constructed systems, then we need to cooperate in the production and dissemination of knowledge, beyond the constructs of academic disciplines.

I have so many people to thank for not only making this journey possible, but so rewarding. First, to all of the interview participants, thank you for your contribution to this research, it was invaluable and meant a lot to me. I would also like to express my deepest gratitude to my committee; to my supervisor, Dr. Tracy Summerville, for giving me the freedom to discover my research topic and the guidance I needed at every stage to complete it and to Dr. Greg Halseth and Dr. Gary Wilson for their guidance, instruction, and timely advice. I would also like to thank my external examiner, Dr. Kenneth Coates, for offering your perspective and insight.

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Finally, I want to thank the British Columbia Public Service for their financial support through the Pacific Leaders Scholarship, and recognize all my supervisors and managers over the past five years at the Prince George Natural Resource District, thank you for giving me the flexibility to manage my work load to accommodate doing my Master’s degree.

In closing I want to acknowledge and thank my friends, family and colleagues for all of your support, patience and encouragement, there are not enough words to express my love and gratitude. The best is yet to come!
Chapter 1: Introduction

1.1. Introduction

I have been interested in British Columbia forest policy since 1994, when the province was on the cusp of introducing legislation that promised to revolutionize forest practices in British Columbia. This legislation was the *Forest Practices Code Act 1995*. It was an exciting time. Other experts, like biologists, hydrologists, ecologists, and geotechnical engineers, were making significant contributions to the development of best management practices for the complex forest ecosystems that make up British Columbia. Less than ten years later, this revolutionary, but costly forest practices code was scrapped for a results-based regime brought to life by the *Forest and Range Practices Act 2004*. Prior to the *Forest and Range Practices Act*, the government repealed numerous policies in the *Forest Act 1996* through the *Forest (Revitalization) Amendment Act 200*, to support and revitalize a struggling forest industry. With these most recent legislative shifts in forest policy, beginning in 2003, it has been my observation that there is a pervasive silence surrounding the direction that forest policy has taken and continues to take, which I find fascinating.

Although the current economic forecast for the British Columbia forest sector is for stability (Bennett, 2016), there is a timber supply crisis unfolding in areas that were hardest hit by the mountain pine beetle. This crisis, in turn, is prompting a new round of legislative changes (FLNRO, 2012a). As well, spruce bark beetle populations are on the rise in the Prince George Timber Supply Area and other parts of the province (Westfall & Ebata, 2014). It has been estimated that 108,472 hectares of spruce have already been attacked by the spruce bark beetle in the northern half of the Prince George District and lower third of the
Fort. St. James District. Given the location of the outbreak, it is likely that it falls within the timber harvesting land base\(^1\) (THLB) (Westfall & Ebata, 2014). This latest bark beetle outbreak comes in the wake of the mountain pine beetle epidemic. Spruce and species other than lodgepole pine are expected to be the major contributors to the mid-term timber supply (Snetsinger, 2011). Yet, the Ministry of Forests, Lands and Natural Resource Operations, in its most recent service plan, declared its support for the forest industry and revealed its strategy to provide jobs and economic growth, where the stated goal of government is to: “[…] maximize the short and mid-term timber supply to support forest sector employment and industry sustainability […]” (FLNRO, 2016a, p. 5).

1.2. Purpose of the Research

In 2003, the Liberal government made legislative changes in order to accommodate the provincial government’s economic strategy for revitalizing the forest sector, and building prosperity for British Columbia (MOF, 2003a). Although these policies were intended to provide the forest industry with greater flexibility, which in turn was to benefit the citizens of British Columbia (MOF, 2003a), these benefits have yet to be realized. The changes to forest policies made in 2003 could not guard against the externally driven perturbations that influence the boom and bust cycles of the lumber markets (Hoberg, 2010; Zhang, 2007). Furthermore, these policies protected and benefited large corporations, which account for the bulk of the forest industry, more than they did forest-dependent communities.

The aforementioned legislative changes were made to the *Forest Act 1996* via the *Forest (Revitalization) Amendment Act 2003*. Among other things, Bill 29 repealed Section 14 (f) of the *Forest Act 1996*, which required holders of forest licences to maintain a timber

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\(^1\) “The timber harvesting land base (THLB) is the area of productive forest land available for timber harvesting” (Snetsinger, 2011, p. 10).
processing facility in the region where timber was harvested (Bill 29, 2003). Presently, there is concern about a rapidly declining timber supply in areas that have been hard hit by the mountain pine beetle and what that will mean to both the forest sector and the economies that depend upon it (ABCFP, 2011). The removal of the appurtenancy clause has generated fear in forest-dependent communities that forest corporations, via their job-producing processing facilities, will no longer be tied to the regions from which they extract timber (Hoberg, 2010).

The removal of appurtenancy was only one in a suite of legislative changes designed to revitalize a struggling forest industry (Hoberg, 2010). Other changes permitted forest corporations to consolidate and subdivide forest licences, and gave them the ability to transfer agreements (Bill 29, 2003). These changes further strengthened the property rights of forest corporations on British Columbia’s public lands and makes compensation for breach of these rights less likely on the part of the provincial government (Luckert, Haley & Hoberg, 2011). However, they did not trigger the mass dumping of assets, in the form of sawmills, as some observers worried. Rather, the new rules facilitated further restructuring within the sawmilling sector, allowing it to remain viable.

Though change is a constant factor in the resource sector, the pace and scale with which it is occurring in north-central British Columbia is increasing. The alarming reality is that resource extraction and export is happening at an unprecedented pace (Burda & Gale, 1998) in the midst of externally driven, market related perturbations that are also increasing in both frequency and severity (Halseth, Markey, Reimer & Manson, 2010). In the Northern Interior forest region of British Columbia, the timber resource is becoming depleted (FLNRO, 2012a). It also appears that there has been a lack of diversification within forest dependent communities (Horne, 2009). Innis (1933) argued that Canada was locked into a staples
economy and that its pathway was determined by its absolute dependence upon its natural resources, which is still true for British Columbia (Bowles, Lytle & Paterson, 2002; Hayter, 2000; Markey, Halseth & Manson, 2008). Freudenburg (1992) explains that commodity driven economies are extremely vulnerable in a globalized economy. Nonetheless, the government of British Columbia continues to look to other resources to exploit and replace timber as the province’s primary commodity and revenue generator (EMNG, 2013).

1.3. Research Questions

The Northern Interior forest region of British Columbia is facing a timber supply crisis. Though this crisis was inevitable, its arrival was accelerated by the devastation caused by the mountain pine beetle epidemic (Snetsinger, 2011). Proper mitigation of this timber supply crisis is vital given that the area hardest hit exists in some of the most forest dependent regions in British Columbia’s interior. This crisis provides an opportunity and context to demonstrate how forest corporations have adapted their business, in terms of where they process the timber they cut, as a result of the relaxed regulations brought in by the Forest (Revitalization) Amendment Act 2003 and to critically evaluate long standing harvesting, revenue generation, and timber allocation decisions that continue to dominate British Columbia forest policy.

This thesis will argue that while the government’s relaxation of restrictive legislation and promotion of a good business environment has assisted forest corporations and facilitated the temporary survival of the forest industry, the adoption of neoliberal economic theory into the context of the British Columbia forest industry has not strengthened British Columbia and brought prosperity. Rather, the application of this theory has weakened the forest economy as a whole by perpetuating the status quo of the timber supply being
controlled by forest corporations. Further, though the assistance to strengthen the forest industry has resulted in a more stable forest economy, this forest economy contributes a much smaller share than it once did in the provincial economy. At the same time, the people of British Columbia have not received fair compensation for the publically owned timber that drives this forest economy. Finally, this thesis will argue that the long term viability of a forest industry in British Columbia will likely require a more radical shift in forest policy, which could include a different arrangement of forest tenures.

My research examines the policy changes of the Forest (Revitalization) Amendment Act 2003, invoked by the Liberal government, that were aimed at revitalizing the forest industry. Although little has changed over time with regards to British Columbia’s core forest policies (Haley & Nelson, 2007; Pearse, 2001; Rayner, Howlett, Wilson, Cashore & Hoberg, 2001), I suspect that the context and driving forces which shape forest policies have changed. It is the complexity of forest policy that warranted a holistic approach to this research. Such an approach not only examines the internal and external forces that drive government policy, but uncovers the interconnection between policy choices made and the impacts of those policies on both the intended and unintended targets. For these policy changes in question, the intended target is the forest industry and the unintended targets are the environment and human communities. My data collection was guided by my research questions, which are as follows:

1) What was the context that motivated government to make the 2003 forest policy changes?
   - Were these forest policies already in place in other jurisdictions, or were they unique to British Columbia?
   - What was occurring globally at the time that may have influenced this specific direction?
• Were potential negative outcomes for the environment and/or human communities considered? If so, what were the mitigation strategies?
• Were these changes related to the recent change in government, from the NDP (political left) to the Liberals (political right)?

2) How have forest corporations responded to the 2003 policy changes over time?
• Has the number and distributions of sawmills and fibre flow changed over time?
• Did these changes in forest policy help industry? If so, in what ways?
• Did the forest industry participate in the formulation of the policies?

To answer these questions regarding the forest industry, I collected and analysed data regarding timber harvesting, sawmill distribution, lumber markets, as well as employment and economic trends. The data that I collected was restricted in both time and space. The time frame in which data was collected was limited to the period between 1997 and 2011. The focal point on the British Columbia landscape was the Prince George Timber Supply Area. Next, I conducted semi-structured interviews with key informants who were involved in the forest industry within the Prince George Timber Supply Area between 1997 and 2011, and who had specific knowledge regarding the various stages of the forestry policy formation that came into being under the Forest (Revitalization) Amendment Act 2003. The purpose of the interviews was to solicit their explanations as to the findings of my secondary research of official records and documents.

The remaining structure of this thesis begins with Chapter 2, where I lay a foundation of historical background of forest policy and provide context by discussing how forest dependent communities in northern British Columbia and neoliberal ideology are related to forest policy. This discussion will be followed by a review of the literature in Chapter 3 where I situate my research by discussing the changing dynamics of forest policy and the forest industry in British Columbia. Next, in Chapter 4, I present the methodology
and methods I used to answer my research questions and discuss the ethical considerations I had in undertaking this research, my choice of using a case study as my research design, my use of a mixed methods approach to collect data, and my methods of data analysis.

In Chapter 5, I present the results of my research which provide evidence as to how the rationalization of the forest industry unfolded and its impact on employment, where timber was harvested and processed, how much revenue the Crown received for the timber, and what people connected to the forest industry had to say about these topics and the events surrounding the legislative changes to forest policy in 2003. In Chapter 6, I discuss the findings of my research and how they answer the research questions. Finally, I conclude the thesis in Chapter 7 by suggesting possible forest policy pathways for British Columbia, discussing the limitations of my research, and making recommendations for future research.
Chapter 2: Background and Context

2.1. Introduction

To understand the present state of the forest industry in the Northern Interior forest region of British Columbia it is important to discuss aspects of British Columbia forest policy, forest dependence in relationship to the communities situated there (Bowles et al., 2002; Markey et al., 2008; Power, 2006; Waggener, 1977), and the relatively recent shift to a neoliberal political ideology in British Columbia (Summerville, 2010; Young, 2008). All of these topics underpin both the historical and lived realities of communities located within the Northern Interior forest region and are useful for understanding the significance of the shifts that have occurred within this forest industry. Moreover, to understand the changes made to legislation in 2003 by the Forest (Revitalization) Amendment Act 2003 (Bill 29) it is helpful to provide the context in which the forest industry was working in British Columbia prior to 2003 and the conditions which may have led the government to make these policy choices. It is also useful to discuss the events that followed the changes brought in by Bill 29 because they provide the context for this research.

2.2. Background

British Columbia has been described as a unique forest jurisdiction in that 95% of its land base is public land (Luckert et al., 2011). Thus, because the majority of the land base is public land, when the expansion of the forest industry and the conservation of the resource are juxtaposed, the governments of British Columbia have historically, with a few exceptions, ensured that ownership of land remained with the Crown (Clark 1985; Marchak, 1983). Given that the majority of timber harvested in the province is from public land, and that rights to Crown timber are allocated through a variety of timber tenures, discussion of forest
policy regarding how timber has been allocated historically is warranted. While it is evident that the evolutions of several key forest policies surrounding Crown timber, its disposition, its regulation, and its price, have strongly influenced the development of British Columbia’s forest economy (Hayter, 2000; Marchak, 1983), changes made to forest policy have emerged from the midst of conflict as private firms benefit from utilizing a public resource (Hayter, 2000; Hoberg, 2001; Howlett, 2001; Marchak, 1983). For better or worse, changes made to forest policy have served the purpose of the time (Clark, 1985).

The formation of a timber tenure system in British Columbia was undertaken as a means of timber allocation, but the underlying goal was to create favourable economic conditions that would promote and support a forest industry (Howlett, 2001). The forest industry was supported by making the timber supply available to investors (Howlett, 2001). Though the number and types of timber tenures have expanded over time, the initial goal remains unchanged (Howlett, 2001). British Columbia was successful in attracting many multinational forestry corporations, with large amounts of external capital (Drushka, 1999); these players obtained the largest forms of timber tenures available (Drushka, 1999; Hoberg, 2000), the forest licence and the tree farm licence (Howlett, 2001). In 1996, 82% of the provincial allowable annual cut (AAC) came from tree farm licences and forest licences (Hoberg, 2000). The control over the provincial timber supply is not a recent development; rather, its roots go back to the beginning, when the alliance between government and private sector firms in the forest industry was forged (Howlett, 2001; Marchak, 1983).

From a forest management standpoint, the history in British Columbia can be divided broadly into the unregulated (1858-1945) and regulated (1945 to present) periods. That is not to say that there were no regulations pertaining to forest management in during
the unregulated period, rather, that regulations were sparse and, more importantly, that timber rights were less secure. Between 1858 and 1865, the only way to access timber in British Columbia was to purchase the land on which it grew (Clark, 1985). In 1865, the government made changes in policy which enabled it to lease the rights to Crown timber (Clark, 1985). Leasing rights allowed the government to retain ownership of the land while simultaneously encouraging a timber manufacturing sector (Clark, 1985). Interestingly, in order to obtain these rights the lessee had, “to own and operate a sawmill” (Clark, 1985, p. 5).

By 1905, under the leadership of Premier Richard McBride, British Columbia was desperate for revenue and began to sell off timber rights for a pittance (Clark, 1985). Coincidently, the broad relaxation/removal of regulation occurred at the same time that the conservation movement was gaining significant momentum in the United States (Howlett, 2001). An unprecedented wave of timber speculation followed and subsequent concentration of amassed holdings (Howlett, 2001) because these special licences were renewable and transferable (Clark, 1985). The era of timber speculation ended in December of 1907 and sparked the first Royal Commission, led by F.J. Fulton (Clark, 1985). Though this policy had generated substantial revenue for the province, Clark (1985) contends that it also set the tone for the management of the forest resource.

Forest policy in British Columbia further developed through the recommendations and findings of several Royal Commissions, which were used by government as a means of both engaging and educating the public (Clark, 1985). The first Royal Commission was headed up by F.J. Fulton in 1910 and can be credited for the formation of the Forest Act of 1912 (Howlett, 2001). The templates for volume and area based timber tenures stem from the Royal Commission on Forestry led by Chief Justice Sloan in 1945 (Howlett, 2001). One of
the outcomes of the Sloan Royal Commission of 1945 was the creation of the Private and Public Working Circles (Hayter, 2000). The Private and Public Working Circles, essentially management units, were the foundational structures for timber administration that were intended to bring both public and privately held timber rights under sustained yield forest management (Pearse, 1976).

In order to bring privately owned rights to timber into the sustained yield model, compensation had to be given by the provincial government to the holders of these rights. Membership into the Private Working Circle was offered to those who held Crown land grants and timber leases (Pearse, 1976). In exchange for agreeing to regulate the harvest over the privately held area, the government offered additional Crown land which would be amalgamated with the existing private holdings into one area based licence (Clark, 1985). So, the Private Working Circle consisted of these area based licences, which are now known as tree farm licences (TFL) (Clark, 1985). The Public Working Circle consisted of the remaining Crown timber land base and was administered by government (Pearse, 1976). From the Public Working Circle management unit, timber was allocated through volume based licences (Clark, 1985), the largest of which is known today a forest licence (FL). The Public Working Circle was later divided up into Public Sustained Yield Units (PSYU), which then became the Timber Supply Areas (TSA) (Clark, 1985).

The Private Working Circle licenses afforded their holders tremendous property rights, which they could leverage as assets (Howlett, 2001). The government then gave preferential treatment in awarding the volume based licences in the Public Working Circles to those who had mills or secondary manufacturing, which enabled many of the players in the Private Working Circles to gain a foothold in the Public Working Circles (Clark, 1985). Thus,
those who controlled the Private Working Circles quickly gained control of the Public Working Circles (Clark, 1985).

The management regime of sustained yield, introduced by the Sloan Royal Commission, was seen as a means of managing the timber supply (Marchak, 1983; Prudham, 2007). Sustained yield was also instituted to provide government with revenue, industry with timber, and communities with jobs (Prudham, 2007; Rayner, 2001). The normal forest is the underlying concept of sustained yield, which is the systematic conversion of primary forests, which are uneven-aged old growth, to even-aged ones (Zhang & Pearse, 2011). The strategy is to divide up the known timber supply, either by volume or area, over a projected time span of growth (at least 80 years in British Columbia) and harvest at a rate that liquidates the virgin forests over the allotted time (Zhang & Pearse, 2011). In the case of British Columbia, the timber supply is given out by volume and tracked on an annual basis, and the annual allotment of it is known as the allowable annual cut (AAC) (Rayner, 2001).

One of the downsides of the strategy of sustained yield is that the total volume available in the harvest of virgin forests is far greater than what will be available in the subsequent harvests from regenerated forests (Zhang & Pearse, 2011). The volume difference between the initial and subsequent harvest is so large, it has been given the term ‘fall down’ (Zhang & Pearse, 2011). Another problem is that by employing a sustained rate of harvest there will also be a gap in available timber supply between the period when the old growth supply is exhausted, and the subsequent growth becomes available (Zhang & Pearse, 2011). The mid-term timber supply refers to the time period that follows once the old growth (natural and original timber) has been liquidated, but before plantations (second growth) are mature. Subsequently, the amount of timber available during this period is scarce. In British
Columbia, we have been approaching the fall down since the mid-1990s (Rayner, 2001). Although the recent mountain pine beetle epidemic has pushed the central interior of the province to this point (MOF, 2003b), the magnitude of the drop is much larger than anyone anticipated and there is not much chance of mitigating the impacts to the timber supply given almost all of the mature lodgepole pine, a significant contributor to the timber supply, is now dead (Westfall & Ebata, 2010).

The development and expansion of British Columbia in the post war period was in large part due to the social-economic beliefs of the government led by W. A. C. Bennett (Bowels, Lytle & Paterson, 2002; Markey et al., 2008; Summerville, 2010; Wedley, 1990). The focus then was on creating an inviting investment environment for industries, which in turn would both establish and bring stability to communities (Bowles et al., 2002). W. A. C. Bennett was able to draw investment to the province by creating infrastructure, generating hydro-power, and establishing appurtenancy as part of the Forest Act (Markey et al., 2008; Summerville, 2010). The appurtenancy clause was a formal agreement between the Provincial government and forest companies where, in exchange for timber rights, forest companies holding major volume based forest tenures were to maintain timber processing facilities near to the origin of timber harvesting; further, it is considered by many as a social contract, designed to bring stability and growth to forest resource dependent communities in British Columbia (Haley & Nelson, 2007; Luckert et al., 2011; Jackson & Curry, 2002).

In northern British Columbia the majority of communities are small, and many of them are largely dependent upon, what Harold Innis (1933) described as staples economies. Sustained yield and the appurtenancy clause were established during the era of province building (Wedley, 1990) and understood then as a critical factor in promoting community
stability, and subsequently increased dependence on the forest resource (Power, 2006; Waggener, 1977). That these economies are becoming increasingly threatened in the context of the global economy makes the stability issue extremely important for people who live and work in northern British Columbia (Markey et al., 2008). The economic dependence of northern British Columbia communities upon natural resources is a well described and established phenomenon and is seen as a barrier to economic diversification (Bowles et al., 2002). Additional barriers include lack of finances, lack of infrastructure, conflict within the community, capacity within the community, lack of human capital, social cohesion and inclusion (Ryser & Halseth, 2010).

A function of the sustained yield timber supply regime was that it was supposed to insulate forest dependent communities from the instability of the forest product market business cycle over the long run (Zhang & Pearse, 2011). However, attempting to control a market that is driven by demand by controlling supply does not work (Zhang & Pearse, 2011). For example, between 1997 and 2008, a number of events occurred that had a negative impact on British Columbia’s lumber market. They were: the Asian economic crisis (Hoberg, 2010); the rise in value of the Canadian dollar (Hoberg, 2010); the expiry of the Softwood Lumber Agreement with the United States (Zhang, 2007); the downturn, and subsequent crisis in the United States housing market (Hoberg, 2010); and, the general instability of national economies globally (Luckert et al., 2011). Further, volatile fluctuations in lumber markets have been shown to have negative impacts on forest sector employment, sometimes within as little time as two months (Byron, 1978). Add to these market issues the increasing global nature of the markets and the influencing sway of neoliberal ideology, and you have a seedbed for change in forest policy.
In British Columbia, the pressure of globalization and the dominant tenets of neoliberal ideology have been influencing the direction of government policies since the 1980s (Summerville, 2010). In its most basic definition, neoliberalism is an ideology that is based in free market economics (Summerville, 2010), which is a stark departure from the Keynesian economic model that dominated the post-war era in British Columbia (Hayter, 2000). One of the primary tenets of neoliberalism is that market freedom and greater prosperity are constrained needlessly by government subsidies, regulations, social policies, and general bureaucratic interference (Harvey, 2005; Summerville, 2010). The rise of neoliberal ideology is a phenomenon that can be seen globally (Harvey, 2005; Humphreys, 2009). Notable leaders who helped usher in neoliberal ideology are Margaret Thatcher in the United Kingdom in 1979, Ronald Reagan in the United States in 1980 (Harvey, 2005; Savoie, 1994), David Lange in New Zealand in 1984 (Roche, 1990), and Brian Mulroney in Canada in 1984 (Graefe, 2002; Savoie, 1994). While neoliberal ideology guided the dominant politics in the aforementioned jurisdictions, exactly how neoliberal agendas played out and to what extent varied dramatically in each country (Harvey, 2005) and even within Provincial jurisdictions of Canada (Graefe, 2002).

The advancement of neoliberalism in Canada can be described as gradual, through the neoliberal agenda of fiscalization (Graefe, 2002). The term fiscalization: “refers to periods when financial concerns, especially considerations of expenditure restraint and deficit reduction, dominate deliberations on setting public policy priorities and contemplating social reforms” (Rice & Prince in Graefe 2002, p. 20). The neoliberal agenda was advanced amidst the pressure of globalisation and an economic recession via the empowerment of the Department of Finance in Canada’s provinces (Graefe, 2002). He also notes that there is a
lack of distinction between political parties, as fiscalization was applied in different provinces under the leadership of differing political parties. For example, these fiscalization policies were applied in Saskatchewan by Grant Devine (Conservative 1982-1991), in Ontario by Bob Rae (NDP 1990-1995), in Quebec by Robert Bourassa (Liberal 1985-1994), and in New Brunswick by Frank McKenna (Liberal 1987-1997) (Graefe 2002). In his study of provincial jurisdictions in Canada, Graefe (2002) notes that neoliberalism has been applied unevenly because the form and the extent to which different governments have adopted the ideology has varied.

Harvey’s (2005) work on neoliberalism is based on the premise that neoliberalization is a “political project to re-establish the conditions for capital accumulation and to restore the power of economic elites” (p. 19). With respect to class, Harvey (2005) explains that, “[w]hile neoliberalization may have been about the restoration of class power, it has not necessarily meant the restoration of economic power to the same people” (p. 31). Harvey (2005) uncovers its origin to be with the Mont Pelerin Society, whose ideology had its roots within liberal ideals, such as personal freedom, but with “adherence to those free market principals of neoclassical economics” (p. 20). Members of the Mont Pelerin Society included some of the most renowned economists of the 20th century including, Ludwig von Mises, Friedrich Hayek, and Milton Friedman (Harvey, 2005). However, as Harvey (2005) points out, contradictions within the neoliberal position are many. In fact, neoclassical economics and liberal ideals are frequently diametrically opposed (Harvey, 2005). Therefore, he warns to take heed of, “the tension between the theory of neoliberalism and the actual pragmatics of neoliberalization” (Harvey, 2005, p. 21). Harvey (2005) says that while
neoliberalization has not been very effective in increasing global capital accumulation, it has been widely effective in either restoring or creating economic elite power.

2.3. Context

In 1997 the forest industry was struggling under the complex and expensive environmental regulatory regime of the *Forest Practices Code of British Columbia Act 1995*, a quota system that regulated the flow of softwood lumber exports into the United States, and the unprecedented high level of stumpage charged for timber, known as super-stumpage that was rendered to the Crown (Grafton, Lynch & Nelson, 1998; Hayter, 2000). Earlier, in 1987, a new means for calculating stumpage was adopted by the province to appease the authors of a memorandum of understanding with the United States. This new method was known as comparative value pricing (CVP), which was essentially an *ad valorem* tax\(^2\) which was calculated using the market selling price of lumber and did not account for logging expenses (Grafton *et al.*, 1998).

Later in 1994, under an NDP government, the system was revised to increase the *ad valorem* at a higher rate as the market selling price of lumber increased, which was known as super-stumpage (Grafton *et al.*, 1998). Meanwhile, the policies and regulatory regime created by the *Forest Practices Code of British Columbia Act 1995* significantly increased the cost to harvest timber and over time eroded the ability of companies to respond effectively to changes in market conditions (Hayter, 2000; Pearse, 2001). However, by 1997 the Asian economic crisis had negatively impacted companies like MacMillan Bloedel that primarily exported lumber to Japan. These companies suddenly found themselves without a market and insufficient quota to ship their product into the United States (Pearse, 2001; Zhang, 2007).

\(^2\) An *ad valorem* tax is a tax that is based on value. For example, municipal property taxes are based on real estate values (Klemperer, 1996, p.279).
There was recognition by the provincial government that the forest industry was in trouble and it began to institute changes to help streamline the costly regime created by the *Forest Practices Code of British Columbia Act 1995* (MOF, 1998). However, these changes were deemed insufficient by the Council of Forest Industries (COFI), which published its own ideas for improving the forest industry. The central theme of this document was that the forest industry needed to be globally competitive (COFI, 1999).

The NDP, who were in government at the time, took note of the suggestions made by the forest industry and in 1999/2000 began the shift towards a more results-based model of forest practices than the prescriptive regime of the *Forest Practices Code of British Columbia Act 1995*. The new model was to be tested using five pilot projects (MOF, 2000). Further, the government was also beginning to explore a market-based pricing system that would generate stumpage values, knowing that stumpage values would be a critical factor for negotiating a new softwood lumber agreement with the United States (MOF, 2000). Despite the government’s efforts to relieve forest companies of the excessive and costly regulatory requirements, it would not alter its course in the way it collected stumpage (Pearse, 2001). Hence, companies struggled to balance the high cost of production with their softwood lumber quotas amid declining lumber prices in the United States (Pearse, 2001). All the while, the British Columbia forest industry faced an overall increase in competition from other timber producing regions (MOF, 2000).

Market conditions for the forest sector continued to worsen through 2000 and into 2001, and to make matters worse, the Softwood Lumber Agreement expired on March 31, 2001 (MOF, 2001b). By April, the Coalition for Fair Lumber Imports in the United States had filed a petition with the Department of Commerce to investigate countervailing duties
and anti-dumping claiming that British Columbia lumber manufacturers received subsidies through stumpage collection and the prevention of log exports, and that lumber was dumped onto the market in the United States below cost (MOF, 2001b). The situation with the United States had become critical for the British Columbia forest industry, and while the provincial government tried to assist the federal government with negotiations, several forest corporations engaged in litigation with the United States (Zhang, 2007).

In May of 2001 the BC Liberal Party was elected with a resounding majority. British Columbia was poised to embark into a “New Era,” in which the road to prosperity was guided by three pillars: fiscal responsibility; free enterprise; and, equality of opportunity and responsibility (BC Liberal Party, 2001). Meanwhile, in the lodgepole pine forests of British Columbia the largest mountain pine beetle (Dendroctonus ponderosae) epidemic in history (Westfall, 2001) began to seriously threaten the timber supply and the economies dependent upon it (MOF, 2003b). As the beetle infestation began to expand across much of the Northern Interior Plateau, government, the forest industry, and communities worked together to form strategies for managing the spread and damage caused by the epidemic (FLNRO, 2012b). As the epidemic progressed, these strategies shifted from mitigation of damage and spread to capturing losses (FLNRO, 2012b).

The new government set to work on its mandate to assist the forest industry by giving it the flexibility to transform itself and become more competitive (MOF, 2002b). The government focused on changing the regulatory environment, such as moving to a market-based pricing system for calculating stumpage and changing forest practices to a results-based, rather than a prescriptive-based regime (MOF, 2002b). However, these changes took time so the forest industry and the government had to endure the market restrictions and
retaliations imposed by the United States (Hamilton, 2001). Still, the focus of the government remained steadfast: to reduce government influence over the business decisions made by the forest industry. Reducing government influence over the business decisions of the forest industry was the driving ideological force behind the impetus for legislative change (Hayter & Barnes, 2012; Hoberg, 2010).

Amidst the first strategies for managing the epidemic were concerns about the regulatory and operational constraints that would prevent effective containment of the beetle spread (MOF, 2001a). Government paid considerable attention to policies that would enable the forest industry to maximize the harvest of beetle infested lodgepole pine by temporarily increasing the allowable annual cuts (AACs), repealing constrictive regulations, and subsequently directing the harvest to timber supply blocks considered to be the most heavily infested (MOF, 2003b). Increasing the availability of timber for harvest was one challenge, having the incentive to harvest was quite another. There were perceived limitations for processing, which included the milling capacity of industry (FLNRO, 2012b), adverse market conditions, and the constraints of the Softwood Lumber Agreement with the United States (FLNRO, 2012b; Zhang, 2007). One response by government was to change forest policy so that the industry could be more flexible in its response to market signals (MOF, 2003a).

The most recent wave of changes to forest policy began in 2003 with the enactment of the *Forest (Revitalization) Amendment Act*, where major changes to the *Forest Act 1996* were made in order to accommodate the provincial government’s economic strategy for revitalization of the forest sector (MOF, 2003a). These changes were part of the Liberal government’s quest for prosperity; for example, Bill 29 – 2003, the *Forest (Revitalization) Amendment Act 2003* repealed Section 14 (f) of the *Forest Act 1982*, which required holders
of forest licences to maintain a timber processing facility in the region where timber was harvested. Legislative changes continued in 2004 with the *Forests and Range Practices Act* (FRPA). Considered by industry as overly regulated and unduly prescriptive, the *Forest Practices Code of British Columbia Act 1995* was slowly phased out in favour of the new results-based forest and range practices regime (MOF, 2002a).

Despite the changes made to forest policy, by 2008 a severe downturn in the forest economy was experienced throughout British Columbia (BC). During the fervor of an accelerated harvest of beetle killed pine in the northern and central interior, the BC lumber manufacturing industry suffered severe blows to its lumber markets via the ongoing Softwood Lumber dispute with the United States, from 2001 to 2004 (Zhang, 2007), a drastic drop in housing starts in the United States in 2005, the rise in value of the Canadian dollar in 2007, and the housing market crisis in the United States in 2008 (Hoberg, 2010). By 2008, sawmills throughout British Columbia began to close, some temporarily and some permanently (Hamilton, 2008), which threatened the very existence of many communities (Martin, 2013). The temporary loss of BC’s largest lumber importer prompted the provincial government to pursue Chinese lumber markets more aggressively (MFR, 2008a). These inroads made by government into China assisted the forest industry by providing markets so that mills remained viable (Bowles & MacPhail, 2016; FLNRO, 2012b).

In February of 2012 a report was released by the Auditor General of British Columbia criticizing the lack of timber stewardship by the Ministry of Forests, Lands and Natural Resource Operations (AGBC, 2012). In May, a Special Committee on Timber Supply was formed and they toured the communities in the Northern Interior forest region of the province seeking input from citizens and stakeholders alike. This committee released its
report in August, in which it made numerous recommendations in relation to the mid-term timber supply crisis (SCTS, 2012). This report was followed in October by a response from the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) that addressed a number of the Special Committee’s recommendations to the Legislative Assembly. The FLNRO responded by saying:

- that they will conduct a review of sensitive areas in terms of potentially expanding the timber harvesting land base;
- that they will investigate the use of intensive silviculture practices as a means of growing more fibre;
- and, that they will create legislation that would enable the conversion of volume based forest licences into area based tree farm licences (FLNRO, 2012a).

Provincially, it is estimated that approximately 800,000 hectares of timber was damaged by the mountain pine beetle in 2001; the current cumulative estimate, observed in 2011, is a staggering 18.1 million hectares of timber damaged by the mountain pine beetle, which is still expanding north (FLNRO, 2012b). In the wake of the devastation caused by the mountain pine beetle, and the large scale salvage harvesting that has followed, is a landscape that has changed. The patchwork of clearcut areas, plantations, and mature timber has been replaced by extensive clearcut areas and remnant stands of rapidly decaying lodgepole pine (FLNRO, 2012a). Throughout this landscape are numerous communities, that are a part of this geography and which have been, and will continue to be, impacted by these agents of change (FLNRO, 2012a; Parkins & MacKendrick, 2007; Patriquin, Wellstead & White, 2007). Unlike older communities located in the southern reaches of British Columbia, these communities were established during the province building era and, as such, were purposefully linked to the forest economy (Bowles et al., 2002; Markey et al., 2008). Consequently, the majority of communities in the northern interior of British Columbia
remain highly dependent upon the forest economy (Halseth *et al.*, 2010; Horne, 2009). The forested landscape has changed and all of the things that depend on it, from people and communities to flora and fauna, have been forced to adapt.
Chapter 3: Literature Review

3.1. Introduction

The forest industry has long been an economically important sector for British Columbia (Hayter, 2000; Marchak, 1993). Not only is the industrialized forest sector important, but so are the forest policies that govern it, as they have the capacity to impact aspects of the province’s natural environment and its human communities (Burda & Gale, 1998; Markey et al., 2008). It is understandable then why major forest policy developments of recent decades, such as the Forest Practices Code of British Columbia Act 1995, the Forest and Range Practices Act 2004, and to some degree the Forest (Revitalization) Amendment Act 2003, have drawn research interest from a diverse group of scholars, from disciplines ranging from biology to sociology.

While the Forest Practices Code of British Columbia Act 1995, and the Forest and Range Practices Act 2004 were/are about the regulation of forest operational and management practices, the Forest (Revitalization) Amendment Act 2003 brought about changes to the conditions by which private firms must abide in order to acquire and/or maintain long term rights to harvest public timber. The focus of my research concerns how the forest industry responded to the specific forest policy changes brought about by the Forest (Revitalization) Amendment Act 2003. I approached my research from the understanding that forest management involves complex interactions between natural ecosystems and human systems and as such requires insight from the disciplines of both the natural and social sciences.
In my broad survey of the literature regarding forest policy and the forest industry in British Columbia, I focused specifically on the literature that spoke to change dynamics in forest policy and the forest industry. This literature draws primarily from four disciplines: political science; economics; sociology; and geography. Scholars from these disciplines have sought to understand the dynamics of forest policy change as well as change dynamics within the forest industry using a variety of theories, which are rooted in their specific disciplinary ontologies. Despite the disciplinary focus, at least two separate but related paradoxical observations continued to surface in this literature, in one form or another. The first ambiguity described in the literature is that despite various changes in forest policy, business carries on as usual. The second is that certain forest policies persist though they have been shown not to be achieving their intended goals. It is the pursuit to understand these contradictions surrounding British Columbia forest policy that makes this literature important to my research.

The literature of change dynamics in forest policy and the forest industry lends itself to understanding the unique nature of the British Columbia forest sector as well as identifying potential factors that have influenced the dynamics of change within it over the past several decades. I will begin by discussing what scholars have looked at in terms of forest policy change. This discussion will be followed by a review of the various responses of the forest industry to changes in forest policies in. Finally, I will discuss what scholars have identified as enduring forest policy legacies.

3.2. Forest Policy Change in British Columbia

Forest policy in British Columbia has traditionally been studied by scholars within the social science disciplines of political science and economics (Lindquist & Wellstead,
Policy as it is used in this research is defined as, “the regulation of how, when, and where” (Hessing, Howlett & Summerville, 2014, p. 3). Broadly speaking, policies can be developed by any organization or group, however, for this inquiry the regulations are developed by the provincial government (Hessing et al., 2014). Lindquist and Wellstead (2001) contend that prior to the late 1980s, scholars studying forest policy change in the province assumed a rather simplistic state of policy making between the provincial government and the forest industry, and as such, little attention was paid to the actual development of forest policy in British Columbia. Rather, the efforts of political scientists were focused on how a policy was implemented and economists evaluated the effectiveness of the outcomes (Lindquist & Wellstead, 2001). This section will show how the approach to analyzing forest policy has changed over the past few decades.

Until the 1990s, the drivers of forest policy change in British Columbia remained relatively consistent due to the strong relationship between the forest industry, government, and labour (Hagerman, Dowlatabadi & Satterfield, 2010; Prudham, 2007). The era of implied simplicity came to a close in the latter part of the 1980s in British Columbia when the policy arena became more contested (Lindquist & Wellstead, 2001), triggered by the coordinated effort of environmental non-governmental organizations and First Nations towards a common interest in the environment (Lertzman, Rayner & Wilson, 1996). As the complexity in forest policy dynamics increased in British Columbia, traditional approaches to policy analysis became problematic so political scientists began to apply more robust theoretical frameworks such as policy networks/communities and agenda setting theories to better understand the forest policy dynamics occurring in British Columbia (Lindquist & Wellstead, 2001).
Early investigations of theoretical frameworks to explain forest policy change in British Columbia began to emerge in the mid-1990s. What began as a controversy between the roles of ideas versus interests in policy dynamics (Howlett & Rayner, 1995; Lertzman et al., 1996; Hoberg, 1996) was later understood as an integration of ideas and interests (Howlett & Ramesh, 1998). Similarly, Hoberg and Morawski (1997) discovered that using policy network/sector theories to explain the dynamics occurring between the government and First Nations regarding forest policy in Clayoquot Sound were inadequate. Moreover, in his investigation of various agenda setting theories used to explain particular forest policies in British Columbia, Kamieniecki (2000) found that these theories could not account for the complexity of forest policy dynamics occurring in British Columbia.

To overcome these deficiencies in understanding the complexity of forest policy dynamics, political scientists began to broaden their lens of inquiry, reaching beyond the specificity of their own discipline. This research informed the broader context in which British Columbia forest policy was taking place. In their comparative study of forest jurisdictions, Cashore and Vertinsky (2000) found that a firm’s response to an external pressure depends on the type of regulatory structure it is under as well as the type of relationship it has with the government, demonstrating the important role of institutions. Similarly, Bernstein and Cashore (2000) show how the globalization of economies and communication and the internationalization of trade have provided international actors and institutions with direct influence over domestic forest policies, citing the ability of the United States to directly influence forest policy through the Softwood Lumber Agreement.

In the field of economics, forest economists draw from rationale choice theory and the policy instrument framework to guide their analyses of specific forest policies to
determine their economic efficiency (Lindquist & Wellstead, 2001). For example, in their assessment of British Columbia’s policy shift that resulted in British Columbia Timber Sales (BCTS) replacing the Small Business Forest Enterprise Program (SBFEP), Niquidet, Nelson and Vertinsky (2007) modeled characteristics of the sales that were thought to impact bid prices. They found that the new program of timber tenure delivery through BCTS to be more efficient than its predecessor, the SBFEP, though they suspected that resource rents may have been transferred from rural communities to the provincial government (Niquidet et al., 2007).

Rational choice theory assumes that: “people’s preferences are static, society is a mathematical aggregation of homogeneous rational agents, public inputs are through market signals, and there is no role for any institution other than the market” (Kant, 2003, p. 40). As such, reasoning that is based on rational choice theory can be problematic as it involves minimal input parameters that results in an explanation that is over simplified (Kant, 2003). Oversimplification in the analysis of forest policy instruments is starting to be recognized and evidence demonstrating its limits can be found. For example, a long standing assumption by forest economists was that by strengthening timber tenure rights in British Columbia firms would make longer term investments in growing trees (Luckert, 2007; Zhang & Pearse, 1997). However, work by Arnot, Luckert and Boxall (2011) found that because there is no firm definition of tenure security, tenure security cannot be linked to economic behaviour. Further, Bogle and van Kooten (2013) have shown that government and firms have conflicting agendas when it comes to growing trees because firms view the task as a liability and constraint as opposed to an investment.

While the above noted scholars have all made valuable contributions to the discourse regarding British Columbia forest policy, perhaps the most significant contribution,
in terms of understanding the dynamics of forest policy change in British Columbia, was made by Rayner et al. (2001). They argue that while the forest sector is made up of many sub-sectors, not all of them can be given equal scrutiny as some sub-sectors can be determined to be critical in the sense that they exhibit substantial influence over the dynamics occurring within the entire sector (Rayner et al., 2001). In their analyses of British Columbia forest policy changes in the 1990s, they identified three factors that affect policy change in the forest sector. First, that subsectors are organized around a small number of issues which attract specific policy networks, as policy networks are interest based. Second, that subsectors can be strongly linked together to support a policy goal, such as the policy of sustained yield. Third, those critical subsectors occupy a position of privilege, in that they “constrain policy development” (Rayner, et al., 2001, p. 329). They identified the tenure and timber supply subsectors as critical because of their direct link to the wellbeing of the forest industry (Rayner et al., 2001). In their research, Thielmann and Tollefson (2009) also found that numerous attempts to change land use policy were thwarted by the commitment of successive governments to uphold the forest industry and forestry jobs.

3.3. Responses by the Forest Industry to Policy Change in British Columbia

The historical relationship between the government of British Columbia and the forest industry has been well documented (Marchak, 1983), which had become firmly established following the Royal Commission on Forest Policy led by Sloan in 1945 (Prudham, 2007). But, this relationship began to be tested by the late 1980s when the environmental movement and First Nations began to effectively challenge the historic relationship between government and the forest industry (Cashore & Vertinsky, 2000). The following section will show how the forest industry in British Columbia has adapted to forest policy change in order
to survive. This section will also describe the internal and external contexts of these adaptations as the forest industry was not only responding to British Columbia forest policy, but to the forest industry’s place within the global economy.

In their model to predict how firms will respond to external pressures, Cashore and Vertinsky (2000) employ both policy network and regulatory typologies; they classify British Columbia’s regulatory style as non-legal/discretionary and its forest policy network structure as a clientele-pluralist network. In this model, the regulatory style refers to the role of the courts, where the clientele-pluralist network is described as a network in which:

- business interests are policy participants within the sub-government; state agencies rely on business interests for advice; business interests essentially have a veto over policy change; and, other organized interests are relegated to roles as policy advocates (Cashore & Vertinsky, 2000, p. 5).

To demonstrate the progressive responses of firms to environmental pressure they use the example of Canfor, a British Columbia forest company. At the beginning, in the mid-1980s, Canfor used tactics of defiance, avoidance, and manipulation to thwart the pressure from environmental groups who were targeting old growth logging and pulp mill pollution (Cashore & Vertinsky, 2000). Here, Canfor outright dismissed the claims of the environmental groups while leveraging their connections to government agencies to avoid compliance with regulations (Cashore & Vertinsky, 2000).

It was not until environmental groups became more organized, threatening to bring their fight to the market place, that Canfor responded in an accommodating and proactive manner, voluntarily pledging to abate the pollution levels by building a modern pulping facility (Cashore & Vertinsky, 2000). In this case, Cashore and Vertinsky (2000) argue that by taking a proactive stance Canfor was able: “to maintain the clientele-pluralist network and
discretionary legal setting under which they operated” (p. 15). Citing Canfor’s proactive approach in advocating for better forest practices and in obtaining sustainable forestry certification, Cashore and Vertinsky (2000) speculate that Canfor may not have prevailed within the market place or under a new government, formed by the NDP, had it not learned to adapt its responses. Thus, they contend that Canfor was able to effectively portray an environmentally friendly company to their customers while demonstrating to government that companies can self-regulate (Cashore & Vertinsky, 2000).

Prior to the recession of the early 1980s, Edenhoffer and Hayter (2013a) describe Canfor as a dominant integrated forest company operating primarily in the coastal region of British Columbia. However, in response to the recession, Canfor moved the majority of its operations from the coast to the interior of the province, and in 1983 became a publically traded company (Edenhoffer & Hayter, 2013a). Using the investment dollars it received, Canfor embarked on its corporate restructuring plan, which involved consolidation through the acquisition of other firms, and rationalization through a number of cost saving measures (Edenhoffer & Hayter, 2013a). Canfor survived the 1980s recession, and as such, Edenhoffer and Hayter (2013a) postulate that at least parts of Canfor’s survival strategy were prevalent throughout the industry.

A key aspect to this strategy of survival was the choice to pursue the mass production of low cost commodities rather than value-added commodities (Edenhoffer & Hayter, 2013a). They argue that not only did the pursuit of mass production lock in the industry’s evolutionary trajectory, but it reinforced the business cycle of booms and busts, which became increasingly more extreme and created greater instability (Edenhoffer & Hayter, 2013a). Further, they contend that the uncertainty surrounding timber supply,
markets, and land use in British Columbia have in some ways forced forest corporations towards making these kinds of choices (Edenhoffer & Hayter, 2013a). They note that another key to Canfor’s survival was moving to the interior when it did. At the time, the timber supply in the interior was more robust and there was less contention with First Nations than there was on the coast (Edenhoffer & Hayter, 2013a). Between 1980 and 2010 Canfor tripled in size in British Columbia while reducing its employment by half, and although Canfor made substantial capital investments in the interior of British Columbia in response to the mountain pine beetle, it has since made investments in the southern United States, using the money refunded from the illegal duties collected between 2001 and 2005 as part of the Softwood Lumber Agreement with the United States in 2006 (Edenhoffer & Hayter, 2013a).

In the broader context, Edenhoffer and Hayter (2013b) explain the evolutionary trajectory of the British Columbia forest industry by combining the industry life cycle model with the resource cycles model, as both models have similar phases, into what they call the resource industry life cycle. This life cycle consists of four phases. The first phase of the industry life cycle/resource cycle is that of pioneering/discovery, where the industry is dominated by competitive entrepreneurs and resource exploitation is focused on that which is in closest proximity and commands the highest value in the market. The second phase is the growth/rapid expansion, where entrepreneurs are replaced by larger vertically and horizontally integrated companies and extraction costs increase as the distance to the resource increases. The third phase is maturity/plateau, where the innovation and technology drive firms to gain competitive advantage and exploitation mentality depletes and degrades the resource. The final phase is decline revival/decline and abandonment, where the decline can be gradual until, in the case of industrialized forestry, the supply of timber collapses, but
Until such time efficiencies continue to be sought and investments continue to be made (Edenhoffer & Hayter, 2013b).

Using the tenets of the resource industry life cycle model, Edenhoffer and Hayter (2013b) sketch out the development and evolution of the forest industry in British Columbia, noting that its prolonged boom period not only produced large integrated firms, but also helped to create what Freudenburg (1992) calls addictive resource economies. Although the plateau stage cannot be precisely pinpointed in time, Edenhoffer and Hayter (2013b) claim that the forest industry in British Columbia arrived on the plateau just as the recession of the 1980s began. They describe the plateau stage in British Columbia as one in which the industry is dominated by large vertically and horizontally integrated firms, stating that as resource exploitation expands and moves farther away from distribution hubs companies must leverage economies of scale in order to keep costs down, which is accomplished through mass production (Edenhoffer & Hayter, 2013b). The pursuit of mass production is still predominant in forest industry as Nelson, Cohen, and Nikolakis (2009) found that mills in British Columbia favour maximizing production over maximizing value.

Just like the plateau phase, the decline phase is not a precise point in time, rather, it can be tumultuous and drawn out, filled with short lived revivals (Edenhoffer & Hayter, 2013b). Edenhoffer and Hayter (2013b) suggest that since the 1980s, restructuring in the British Columbia forest industry has been a matter of survival, stating that: “resource exploitation contains an internal dynamic of self-destruction and, as growth levels out in the plateau stage, decline and closure become possibilities” (p. 141). Despite the mountain pine beetle epidemic, Edenhoffer and Hayter (2013b) say that production in the forest industry peaked around 1987, which is indicative of the industry leveling out. They argue that the
recession of the 1980s was the catalyst of change for the British Columbia forest industry, as it was the crisis that triggered the softwood lumber trade dispute with the United States, the rise of societal protest against industrial forestry, and the subsequent re-regulation of the industry (Edenhoffer & Hayter, 2013b).

In terms of the re-regulation of the industry, Binkley and Zhang (1998) measured the response of stock holders when the NDP government in British Columbia raised stumpage rates in 1994 in an effort to appease the Americans over the claim that the government of British Columbia was subsidizing industry. Using an event study of stock prices, they found that the stock prices of publically traded companies fell on the day that the government announced the changes to stumpage rates. Binkley and Zhang (1998) interpreted as a negative reaction by stock holders to the news of increasing stumpage rates. A similar study was done by Niquidet (2008) to measure the reaction in the stock market to the announcement of the Forest Revitalization Plan and the intended expropriation of 20% of the volume from major licensees. In his measure of thirteen forestry firms in British Columbia, only a few showed a significant negative response (Niquidet, 2008). Further inquiry prompted Niquidet (2008) to ascertain that the negative reaction had to do with a perceived loss of property rights.

These findings are interesting, because the re-regulation of 1994 was quite different from the re-regulation of 2003. The 1994 stumpage rates were increased by $12/m³ on average, which does not seem like a substantial amount, but based on lumber prices at the time the increase came into effect on May 1, 1994, it represented an 81.1% increase for the Interior and 64.4% increase on the coast (Binkley & Zhang, 1998). The study by Binkley and Zhang (1998) shows the reaction of shareholders to the arbitrary increase made by
government to the price of timber. There is evidence to support that the increased stumpage in 1994 was viewed negatively by shareholders as it significantly increased the cost of supply, whereas in 2003, the timber expropriated was compensated for. Niquidet (2008) suggests that shareholders perceived a loss of rights and hypothesizes that the 20% take back of timber volume represented not only a loss of security, in the form of property rights, but would result in less control of the timber supply for major licensees. Niquidet’s (2008) hypothesis lacks supportive evidence given that expected compensation paid by the government to the licensees was to be $200 million, equating to approximately $24/m³. Further, Pinkerton, Heaslip, Silver, and Furman (2008) assert that the changes that accompanied the expropriation, specifically those changes brought in by Bill 29, allowed the major licensees to consolidate their control of the allowable annual cut (AAC) which further solidified their oligopsony.

In their comparison of three forest jurisdictions, British Columbia, New Zealand, and Tasmania, Hayter and Barnes (2012) explore how neoliberal ideology has been expressed in these three different geographies. Although, neoliberal ideology began to influence the government regulation of the forest industry in British Columbia beginning in the 1980s and 1990s, Hayter and Barnes (2012) contend that neoliberalism was not directly applied to British Columbia forest policy until the 2000s. Lindquist, Langford and Vakil (2010) agree as they consider British Columbia behind the times in terms of neoliberal influence. Young and Matthews (2007) state that the BC Liberals, elected in 2001, directly ushered neoliberalism into the forest economy in three ways, by liberalizing licensee rights through Bill 29, by liberalizing the market through Bill 29, and by liberalizing space through various amendments to the *Forest Act 1996* and through the *Forest and Range Practices Act*.  


Similarly, Humphreys (2009) states that neoliberal mechanisms of marketization, public/private partnerships, and deregulation are found throughout international forest management. The BC Liberal Party may have ushered in neoliberal ideology in British Columbia, but according to Humphreys (2009): “[n]eoliberalism is very much the hegemonic ideology of our age” (p. 320).

3.4. British Columbia Forest Policy Legacies

The British Columbia forest policies that have been identified as legacies in the literature are policies regarding timber tenures, timber supply, and timber pricing. All of these policies support the larger underlying forest policy of regulating the forest harvest using the sustained yield model (Rayner et al., 2001). Despite mounting evidence that the policy does not work (Prudham, 2007), and that public expectation for sustainable forestry is rising (Rayner et al., 2001), the sustained yield forest regulation policy remains steadfastly in place, with the current provincial allowable annual cut (AAC) set at 75.8 million cubic metres per year (FLNRO, 2016b). The questions being raised in the literature are asking why these forest policies persist (Burda & Gale, 1998; Fréchette & Lewis, 2011; Prudham, 2007; Rayner et al., 2001).

Following the Royal Commission on Forestry led by Sloan in 1945, changes were made to the Forest Act in 1947 which enshrined sustained yield forest regulation as the doctrine to liquidate old growth and create in its place an even-aged predicable flow of timber, revenue, and stability (Prudham, 2007). Rayner et al. (2001) agree, noting that in theory, sustained yield forest regulation would uphold the forest industry which in turn would provide revenue to the Crown and employment stability for communities. Indeed, it could be argued that the policy of sustained yield enabled the forest industry to expand into the
Interior of the province during W. A. C. Bennett’s province building era (Marchak, 1983). However, although the sustained yield forest regulation model was institutionalized in British Columbia in 1947, it does not mean that this model has been effective (Prudham, 2007).

Prudham (2007) argues that the ideology underpinning sustained yield forest policy: “allow[s] forests to circulate as financial capital” (p. 259). During the post-World War II era, the time period at which sustained yield forest policy was introduced, Prudham (2007) notes that: “ideas of nature and work were very much linked in BC” (p. 259); meaning that the forest policy fit easily with the context of the time and place. He notes that some of the unique aspects of this forest regulation model to British Columbia were that it granted private capital exclusive rights to harvest timber, was managed by scientific forestry and linked community economic well-being directly to the exploitation of the forest resources (Prudham, 2007). Thus, he contends that support for sustained yield forest regulation was garnered because the forest industry, the state, and organized labour all stood to benefit from this model (Prudham, 2007).

Challenging the policy goal that sustained yield forest regulation to provide stability to communities, Byron (1978) examined unemployment in Quesnel and Prince George from the period of 1967 to 1975. In this research, he compared the degree of instability of employment in occupational groups for both cities. In the study, to allow reasonable comparison, Byron (1978) looked at the relative instability and absolute variability for each group. The data support the postulation that the volatility of lumber markets causes fluctuations in forest sector employment, in which there is a lag of one to two months between the cause and effect (Byron, 1978). Byron (1978) further argues that employment instability in small forest-dependent economies is a social issue which cannot be
solved using sustained yield forest policy concluding, “the permanence or survival of forest industry centres is neither assured by nor solely dependent upon the perpetual maintenance of nearby forests at or near sustained yield levels” (p. 61).

Despite these findings by Byron (1978), sustained yield forest regulation has prevailed and as a result, the province’s allowable annual cut (AAC) has tripled since the 1950s (Burda & Gale, 1998). Burda and Gale (1998) argue that the mass volume production of commodity products that dominates the British Columbia forest industry benefits private firms and does not maximize jobs, provincial revenue, or community stability. They identify that decreasing timber supply, increasing costs to extract timber, and increasing barriers to the market in the United States all pose significant threats to this timber manufacturing choice (Burda & Gale, 1998). Taking the aforementioned threats to the industry into consideration, Burda and Gale (1998) contend that a commitment to high volume depletion via sustained yield forest regulation has the potential to have crippling long term economic consequences for the province in the future.

This policy of sustained yield has also survived the legislative changes of recent decades which govern the operational practices of the forest industry. While examining the various policy changes brought about by the NDP government in British Columbia in the 1990s, Rayner et al. (2001) were interested to find that while the Forest Practices Code Act substantially changed the operational practices of industrial forestry to be conducted at a higher environmental standard, other policies, such as the allocation of timber through the forest tenure system and the allowable annual cut (AAC) remained virtually unchanged (Rayner et al., 2001). Although conflict between the environmental movement and the industrial forestry sector in British Columbia had been on the rise since the 1980s, Rayner et
al. (2001) note that by the 1990s, the environmental movement had gained considerable support and subsequent political influence. However, they also recognize that supporting the forest industry had itself become a policy, and a key mandate of the ministry responsible for forests (Rayner et al., 2001). Hence, because the forest industry remained an important economic feature in British Columbia, they argue that it continued to have substantial influence over forest policy stating that: “[…] authority over policy formulation and implementation remained in the hands of the same community of experts who, by and large, remained quite supportive of the status quo” (p. 325).

In the 2000s, the Liberal government replaced the Forest Practices Code Act 1995 with a results-based version, the Forest and Range Practices Act 2004, which is essentially a performance-based framework (Hoberg & Malkinson, 2013). However, unlike other forest jurisdictions, it is the licensee that sets the result or strategy to achieve the eleven values established in the Forest and Range Practices Act by government (Hoberg & Malkinson, 2013). Peterson and Stuart (2014) contend that the traditional reliance by successive British Columbia governments upon the forest industry to provide jobs and stability via the extraction of timber has ultimately led to the erosion of the government’s regulatory power. Citing the mountain pine beetle epidemic, they claim that because of the Forest and Range Practices Act the government could not direct the licensees to harvest the mountain pine beetle infested stands (Peterson & Stuart, 2014). As a result, licensees harvested in the green timber longer than they should have, sacrificing long term viability for short term gain (Peterson & Stuart, 2014). While Peterson and Stuart (2014) argue that the forest industry continues to act in its own best interest and that the government has little ability to change the situation, they also note that the government appears to be committed to business as usual.
Nelson (2007) agrees that the forest industry focused on maximizing its own interests by harvesting as much profitable timber as possible. But, he also says that the forest industry only changed its focus to harvesting as much green timber as possible because it was unsuccessful in lobbying the government to address the growing mountain pine beetle epidemic (Nelson, 2007).

There are several elements noted earlier in this section that merit further discussion as they provide greater insight into why sustained yield forest regulation persists in British Columbia. The first is that the underlying goal of sustained yield forest regulation, the accelerated liquidation of old growth timber, which is founded on an ideology that views the forest as a commodity to be exploited (Prudham, 2007). The second is that the relationship between the forest industry and government and, to a lesser extent, labour is founded on agreement to support sustained yield forest regulation (Prudham, 2007). The third is that the relationship between the forest industry and government is not exclusively between the elected officials and the forest industry, but between the forest industry and the bureaucracy, namely the ministry responsible for forests (Rayner et al., 2001). What the first two things tell us is that not only is the commitment to this model strong, but that the model of sustained yield has an ideological foundation. What the third thing tells us is that this ideology of sustained yield also has an institutional context.

To consider change dynamics in the governance of forests one must consider underlying ideologies (Humphreys, 2007) and institutions (Fréchette & Lewis, 2011). Humphreys (2009) states that an ideology is very different from knowledge, in that the former offers both a critique on how things are perceived and an alternative to that which is being critiqued, whereas the latter is defined as fact that is both verifiable and believed.
Given that an ideology is based on morals, any individual or group may subscribe to the ideology, however, this is not to say that acceptance of a given ideology is universal, rather, that it is relative (Humphreys, 2009). Fréchette and Lewis (2011) regard institutions as enduring fixtures in human society that are resistant to change.

It is helpful at this point to define what institutions are. For the purpose of this investigation, institutions are defined as: “the formal rules, compliance procedures and standard operating procedures that structure the relationship between people in various units of the polity and economy” (Hall, 1986, p. 7). As such, Fréchette and Lewis (2011) argue that: “[o]nce produced, rules may become entrenched for a number of reasons” (p. 583). They elaborate by saying that the rules can become entrenched for the following reasons: that rules exist in complex inter-dependent arrangements both vertically within the hierarchy of rules and horizontally with other rules; that changing the rules would often be considered too costly; and, they have a tendency to be captured by the interests that stand to benefit the most (Fréchette & Lewis, 2011). Moreover, Fréchette and Lewis (2011) argue that because institutions tend to provide greater certainty for vested interests, any change that would threaten that certainty would be opposed. Finally, they stress the importance of identifying what the rules to change the rules are, and who has the power to change them. In Canada, the authority to manage provincial forests resides with the respective governments of each province (Fréchette & Lewis, 2011).

In terms of the institutional context of sustained yield forest regulation, Prudham (2007) describes the British Columbia forest sector as a command and control system that is only accessible by those with elite knowledge, and that the professional forest management system is dominated by forest professionals, who occupy positions within the forest industry
and the bureaucracy. Sustained yield forest regulation was part of the scientific forestry model endorsed by Sloan as part of the recommendations in the 1945-1947 Royal Commission on Forestry in British Columbia (Prudham, 2007). That sustained yield is considered a component of scientific forestry means that it is part of the curriculum that is taught to aspiring forest professionals (Prudham, 2007). So, just as sustained yield forest regulation became entrenched within the ministry responsible for forests, becoming part of the institutional fabric, it also became a conduit for perpetuating the ideology through time because of its connection to the forestry profession (Prudham, 2007).

In his discussion, Humphreys (2009) defines discourse as: “a set of linked understandings and ideas that structure how people think about, interpret and understand the world” (p. 319). He further argues that: “different discourses may achieve different degrees of political influence in social life […] and may gain considerable political influence while lacking a clear epistemic basis” (p. 320). What Humphreys (2009) is saying is that the power behind an ideological discourse is not in its ability to prove itself viable, but that it is morally accepted by those who adhere to it. Given that sustained yield forest regulation remains in place, despite its failure as a policy instrument to secure employment and stabilize the industry of the forest sector, indicates that the ideology supporting it is predicated on moral rather than epistemic relativism (Humphreys, 2009). In summary, it could be argued that the persistence of sustained yield forest regulation in British Columbia can be explained by its institutional framework that is informed by ideology. Institutional frameworks are important because they: “define the ends and shape the means by which interests are determined and pursued” (Scott, 1987, p. 508).
Chapter 4: Methodology and Methods

4.1. Introduction

My research focuses on forest policy change in British Columbia, a subject matter that can be laden with contention and polarizing viewpoints (Howlett, Rayner & Tollefson, 2009). Knowing this, I wanted to undertake my research in a more holistic manner with the goal to gain a balanced understanding of the data. I also considered what the constraints and barriers to this research might be and how I would be situated in this research (Guba & Lincoln, 2004). Methodology involves more than the way in which we collect and measure data, it is the framework from which we approach research, how we decide what to investigate, and how we will go about studying it (Guba & Lincoln, 2004). The framework of research comes from our own ontology, or how we see reality, and our personal epistemology, or how we go about understanding reality (Guba & Lincoln, 2004; Jones & Gomez 2010).

I used a mixed methods approach, which leveraged both qualitative and quantitative methods to conduct my research. The mixed methods approach can add breadth and depth to the research, expanding the possibilities of discovery while allowing for triangulation (Greene, Caracelli & Graham, 1989; Moran-Ellis, Alexander, Cronin, Dickinson, Fielding, Slney & Thomas, 2006). The concept of triangulation comes from the navigational technique of using two known points to calculate the location of a third point, in the same way, data gathered from different sources and analysed in different ways converges in support of the findings (Jick, 1979; Tashakkori & Teddlie, 1998). My intention in using mixed methods was also to allow for the expansion of discovery, where the findings from
one source of data informed the collection of subsequent data (Greene et al., 1989), which also enforced the rigour of my research (Baxter & Elyes, 1997).

As a result of working for twenty years in different capacities within the forest industry in British Columbia I have a good understanding of the operational aspects therein. Therefore, I had to be all the more diligent to ensure that I applied rigour throughout my research process so that the research findings could be assessed as being trustworthy (Baxter & Elyes, 1997). As a means of enforcing the rigour in my research, checking my subjectivity (Bailey, White & Pain, 1999; Madge, Raghuram, Skelton, Willis & Williams, 1997), and monitoring for power relationships (Bailey et al., 1994; Katz, 1994), I adopted the practice of critical self-reflexivity when I first began formulating my research topic. I have used the practice of critical self-reflexivity throughout this research project not only to evaluate my goals and approaches, but to think about the ethical aspects of my research (Dowling, 2010). Therefore, disclosing my position as a member of the forestry profession when I introduced myself as a researcher became an important aspect of my research because it has undoubtedly influenced the questions that I have asked, the way that I perceived the data, and the way that I present the findings (Behar, 1996; Clifford, 1986; England, 1994).

My position within this research is that I am both an insider and an outsider (England, 1994; Kobayashi, 1994). I am an insider in that I live and work within the case study area and my career is in the forest sector. I am a Registered Professional Forester, and I am a public servant with the province of British Columbia, working at the Ministry of Forests, Lands and Natural Resource Operations. I am an outsider in that my inside position has not afforded me a privileged or complete understanding. Rather, I am, “situated as dweller and sojourner within my own fields of knowledge” (Clifford, 1997, p. 218). The duality of my
position as the researcher, being both an insider and an outsider, has been challenging to manage. While my experience working within the forest sector for many years and in many roles has given me insight to aspects of forest policy and management, it has not given me a total comprehension. As Clifford (1986) contends: “[c]ulture, and our views of “it”, [are] produced historically, and are actively contested. There is no whole picture that can be ‘filled in’, since the perception and filling of a gap leads to the awareness of other gaps” (p. 18). I agree with Clifford (1986); during my research journey I no sooner understood some aspect of the forest industry or answered a particular question, only to unearth more gaps in my understanding in the process. Challenging the assumptions upon which my knowledge is based has been a humbling experience.

4.2. Ethical Considerations

My intention was to interview people as a means of collecting data for my research. It is common for academic institutions to require some form of ethical review when human subjects are involved in research (Dowling, 2010). Therefore, I sought approval from the University of Northern British Columbia Research Ethics Board and was granted approval on May 16, 2014. See Appendix 1 for a copy of the approval letter. Prior to embarking on the interview phase of the research I considered what some of the ethical challenges might be and decided that they would likely be: effectively managing power relationships; and, potentially crossing boundaries between my professional ethics and my own moral and ethical framework.

Whether you are an insider or an outsider, as the researcher you must always consider the well-being of the participants that your research involves (England, 1994; Kobayashi, 1994). Honesty in the approach of a topic and critical evaluation of self in the
context of being the researcher are important practices that can help the researcher, protect the participants from harm, and safeguard from the potential of the researcher exploiting the participants (Dowling, 2010; England, 1994; Nast, 1994). As the researcher, it was important for me to remind myself that power, knowledge, and ethics are interwoven (Madge et al., 1997). Power relationships can be relatively equal in terms of what the researcher and participant stand to benefit or it can be unbalanced, either to the advantage, or disadvantage of the researcher (England, 1994). Power relationships can also be quite fluid, changing during the course of the research, or as a result of the research (Kobayashi 1994). There is no particular method that will eliminate the power relations inherent in qualitative research (Dowling, 2010; England, 1994; Gilbert, 1994, Katz, 1994; Kobayashi, 1994, Nast, 1994). The best way to keep them in check is through self-reflexivity (Bailey et al., 1999; England, 1994; Katz, 1994).

Although I did not identify any tangible risks for those wishing to participate, I did fully disclose my identity as a knowledgeable practitioner of twenty years working in the forest sector and currently employed as a Registered Professional Forester with the Ministry of Forests, Lands and Natural Resource Operations. I assured the participants that the research I was conducting was my own and not that of my employer. I gave disclosure of my position to potential participants during the solicitation process which helped to establish a baseline of honest communication between them and myself. To further ensure the protection and well-being of the participants, I have kept their identities confidential.

What I discovered, however, was that there was more to preserving anonymity of the participants than just assigning a unique alpha-numeric identifier. There were things that were revealed by participants during the interview process that I could not report in my thesis.
4.3. Research Design

I wanted to investigate how forest corporations have responded to the forest policy changes made by the government of British Columbia in 2003, which may have subsequently impacted the forest industry. My goal was to understand the context of these changes more comprehensively, and in so doing, perhaps uncover some linkages that may have eluded policy makers. Initially I was interested in grounded theory as a research technique. However, with a restricted time frame and resources this approach could not be employed and used properly. Instead, I decided to use a case study as a way of organizing my research strategically.

Case studies have been used extensively in social science research and for a variety of purposes (Tight, 2010; Yin, 1994). Historically, ambiguity surrounds the use of case studies concerning the question of whether a case study is a method, a methodology, or merely an example of some specific phenomenon (Baxter, 2010; Tight, 2010; Yin, 1994). As such, many social researchers regard it as an inferior qualitative method; yet, it can provide robust explanations from complex social phenomenon (Baxter, 2010; Yin, 1994). The structure of the case study lends itself to the use of mixed methods, allowing the researcher to fully explore a given phenomenon within the context it is occurring (Baxter & Jack, 2008). The case study also provides a format in which the convergence of data can occur, which in
turn gives the research credibility (Baxter & Jack, 2008). Moreover, the construct of a case study research design permits the researcher to investigate ‘why’ and ‘how’ a phenomenon is occurring, which gives the findings of the research a degree of generalizability in that concepts uncovered can be transferred to other cases (Baxter & Jack, 2008). In this research, the case study was used as a research strategy to purposefully focus data collection and analysis (Yin, 1994).

The topic of this research is complex, involving multiple variables whose relationships to the events in question are unclear. A case study is a research strategy that places boundaries around the topic in such a way that it focuses the data collection and analysis within the context of the real world (Yin, 1994). Though it appears very rigid because it places boundaries, it is in fact flexible and promotes the collection of evidence from multiple sources (Yin, 1994). To assist with the conceptualization of the case (Stake in Tight, 2010), I considered the following questions:

1) Has the number and distribution of sawmills changed over time? If so, what has driven this change?

2) Has the fibre flow changed? If so, how has it changed, and what does this change potentially mean for the forest industry?

Asking these questions led me to decide to restrict the case study both in space and in time. I chose the Prince George Timber Supply Area as the geographic boundary and a fifteen year time period from January 1, 1997 to December 31, 2011.

4.3.1. The Case Study

I chose the Prince George Timber Supply Area as the geographic region for this case study. It consists of three forest Districts: Prince George, Vanderhoof, and Fort St. James (see
Figure 1 for a map of the study area). I chose to make the case study within the geographic boundaries of a Timber Supply Area (TSA) for two reasons: 1) the TSA is the geographic unit in which the allowable annual cut (AAC) is determined; and, 2) TSAs contain administrative units known as Districts, which are geographic units in which harvesting and scaling data can traced. The Prince George Timber Supply Area (TSA) includes the municipalities of Prince George, Fort St. James, and Vanderhoof, as well as other smaller communities such as Hixon, Fraser Lake, Sinclair Mills, Bear Lake, and McLeod Lake (Snetsinger, 2011). In addition, 24 First Nations have asserted traditional territories within the TSA (Snetsinger, 2011). I chose the Prince George TSA because it is unique in the sense that it has varying timber types across the forest District landscapes (Snetsinger, 2011), and varying levels of forest dependence within the communities (Horne, 2009). As well, this TSA is the largest contributor of volume in the province, and accounts for more than 40% of the Northern Interior forest region’s TSA contribution (FLNRO “AACTSA”, n.d.). I chose the period of 1997 to 2011 primarily for two reasons. The first was that I wanted to have data that would reflect the period prior to the change in forest policy in 2003 and the period afterwards. The second was that I began extracting numerical data from a publicly accessible provincial database in 2012 and the public records only go back for a span of 15 years. For this case, 1997 was the oldest year of data I could collect using public access.
Figure 1. Map of the Prince George Timber Supply Area
Source: Map retrieved from http://www.for.gov.bc.ca/hts/tsa/tsa24/map.gif
Finally, for the purpose of my research, I defined forest corporations as being major primary timber manufacturing companies with production capacities large enough to be classified as medium to large by the ministry responsible for forests\(^3\) in the province of British Columbia. In British Columbia, lumber manufacturing accounts for the majority of total primary manufacture of timber (FLNRO, 2011a), thus, my research focuses on lumber manufacturing companies within the Prince George Timber Supply Area.

4.4. Data Collection and Analyses

I gathered data from both primary and secondary sources using a mixed methods approach, with the collection and analysis of the secondary data preceding and informing the collection of the primary data. The essence and complexity of the bigger picture within my research questions demanded that I investigate more than one source of data. In fact, I believe that the following sources of data I have used are interrelated in terms of the research questions and cannot be understood independently as such (Gaber & Gaber, 2007). A mixed method approach to the analysis of the data was used because the data were not collected in the same way and as such cannot be lumped together and analyzed as an aggregate (Brannen, 2005). All data collected, regardless of method, were within the scope of the case study parameters of both space and time. For clarity, I have chosen to present the methods of data collection and analysis by topic area the data were collected for.

4.4.1. Mill Closures

I used three sources to collect secondary qualitative data: media outlets; corporate annual reports; and official state documents (Bryman, 2008). These data were first collected between October 2011 and March 2012. I conducted a media scan of the Prince George

\(^3\) I am using the generic term ‘ministry responsible for forests’ to avoid confusion because the ministry has undergone several name changes throughout its time.
Citizen newspaper using an electronic database subscribed to by the University of Northern British Columbia. I searched for news surrounding closures, start-ups, shut downs, and upgrades involving lumber manufacturing companies located within the Prince George Timber Supply Area. From the data that I collected, I extracted specific information about lumber manufacturing companies, which I tracked in a table that I constructed in a Word document. To better understand the context of sawmill closures and openings within the Prince George Timber Supply Area, other events linked to the forest industry and occurring between 1997 and 2011 were mapped out alongside the sawmill closures and openings to see if there was any correlation between them (see Appendix II for details).

I used annual reports from forest corporations and the provincial government that were available to the public, as well as official documents published by the Government of British Columbia through the ministry responsible for forests to further inform my understanding of the events taking place within the Prince George Timber Supply Area. I analyzed these data using qualitative document analysis techniques because I was interested in themes and patterns of words to provide context rather than in the mere frequency of words (Altheide, Coyle, DeVriese & Schneider, 2008). I looked for themes that would help explain the trends identified in the numerical data and this inquiry yielded several themes which I added to the table tracking the closings, openings, and upgrading of sawmills. These themes were also used to help generate interview questions.

During the examination of the results, I conducted a broader media scan regarding the closures of mills picked up in the initial media scan. The second media scan was used to uncover other details which might help to explain the particular circumstances surrounding each mill closure. In August of 2015 I looked for internet based media accounts of each mill
closure using the Google search engine as well as searching the Prince George Citizen and Vancouver Sun newspapers using an electronic database.

4.4.2. Employment

In February 2012, employment statistics were collected from BC Statistics using the electronic database for BC Statistics. The employment statistics were extracted by industry and development region, as well as employment/unemployment rates by industry for the Cariboo and North Coast/Nechako regions. There was no secondary inspection of this data set. The data were examined to see if there were any obvious trends. During this data collection from BC Statistics, I discovered a special set of analyses that had been done by Horne (2009) for the provincial government where data collected for BC Stats and Statistics Canada were reconfigured to align with Forest District boundaries. Unofficial job loss numbers associated with specific sawmill closures in the Prince George Timber Supply Area were collected in the broader media scan of sawmill closures that was conducted in August, 2015.

4.4.3. Timber Harvest and Valuation

In British Columbia, the scaling of timber calculates the volume and grade (quality) of logs, and the timber mark tracks all timber volume from its origin to its destination. (FLNRO, 2011b). The appraisal of timber is regulated by the provincial appraisal manuals and stumpage rates for timber are set by the timber mark of the cutting authority (FLNRO, 2011b). The Harvest Billing System (HBS), introduced in 2003, is the provincial electronic database that tracks and manages all of the timber that is harvested by managing the scaling data, which in turn in conjunction with stumpage rates are used to generate stumpage billing (FLNRO, 2011b). The Harvest Billing System (HBS) is an open database system containing
both current and historical scale and billing data. Historical data are limited depending on what is being queried. For this data collection, historical data were available up to 15 years prior to the year of inquiry. I used HBS to gather data on where timber in the Prince George Timber Supply Area was harvested and scaled, what species were scaled, and how much stumpage was collected for the timber scaled.

To help answer the question of how industry was responding to the changes made to legislation I wanted to look at where timber was being harvested by forest licence holders within the Prince George Timber Supply Area and where it was being scaled. I extracted data from HBS in March of 2012. Initially I ran reports for every year from 1997 to 2011 setting the filter parameters to restrict the harvest to the District and by forest licences, and the report configuration parameters to be grouped by District scaled and scale site. I also included volume, value, species and grades within the report configuration parameters. I discovered cruise based scaling in the 2010 and 2011 data so I had to run additional reports so that I could sort out the data. A cruise based scale means that the timber is scaled on the stump, in the District in which it is harvested in, rather than at the mill (MFR, 2010a). To extract the destination information I ran reports on each District cruise based scale site by timber mark so that timber marks belonging to forest licences could be extracted and the destinations of the timber could be adjusted accordingly.

I also ran reports on each District from 1997 to 2011 setting the filter parameters to restrict the harvest by District and by Crown Land, and the report configuration parameters to be grouped by management type. Management types are: community forest agreements (CFAs); woodlots; tree farm licences (TFLs); outside (not under management) and; Timber Supply Area (TSA). Using the data in these additional reports, I was able to do two things:
compare the total harvest within a District to that under TSA and also determine the proportion of the TSA harvest that was under forest licence; and cross check the data I gathered to ensure the accuracy of the queries I used for generating reports. In all, 32 reports were generated for each District of the three Districts for a total of 96 reports.

I conducted secondary analyses on the data collected in 2012. These analyses are considered secondary because the data were collected by another organization for a different purpose (Bryman, 2008). My purpose of doing these analyses was to answer questions regarding timber harvested by forest licences in the Prince George Timber Supply Area. Namely, where was timber harvested and what species were included in these harvests, where was the harvested timber processed, and what was the revenue generated through stumpage for the Crown. For these analyses I used Excel spreadsheets to manage and analyze the data. Though the data collection occurred in 2012, the analyses were conducted at various times as new information was acquired, or new gaps in knowledge were identified, with the exception of the fifth analysis, where data were extracted in 2015. The 2015 data extraction was done to simplify the extraction and amalgamation of data. Secondary analyses were also conducted with these data.

In the first analysis I sought to answer the question of how much timber harvested within a District was also processed there, and so, I compiled the data by year, location of harvest, and scale. Next, I summarized how much of the harvest within each District was scaled in that same District for each year from 1997 to 2011. In the second analysis, I looked at the total amount of timber harvested within the Prince George Timber Supply Area and how much revenue it generated for the province. I compiled the total harvest for all three Districts for each year from 1997 to 2011 and compared it to the total revenue that was
generated from each harvest year for the Crown. Next, to account for inflation I used an online inflation calculator found on the Bank of Canada website to calculate each year’s total value to 2011 dollars (Bank of Canada, n.d.).

Based on the results of the analyses noted above, as well concerns that were raised by a number of people I interviewed, I conducted a third analysis on lodgepole pine. In this case I looked at the data from 2000 to 2011 for each District. I chose the starting year of 2000 for three reasons: 1) in 2000, the mountain pine beetle was active in all three Districts; 2) in 2001, the first mountain Pine Beetle Action Plan was released, and; 3) in 2002, the first uplift in the allowable annual cut (AAC) was put into effect to address mountain pine beetle epidemic. For the third analysis, to determine the relative proportion of lodgepole pine harvested within each District by forest licences, I compiled the harvest data collected in 2012 in a spreadsheet by District for the years 2000 to 2011. I sorted the data for each year by species where I was able to sum the volumes of lodgepole pine and the volumes of all other species. Using the total volumes of lodgepole pine and all other species, I was able to determine the harvest of lodgepole pine relative to all other species by year and by District.

For the fourth analysis, I isolated the lodgepole pine data from all Districts and sorted it by year and then by log grade. Isolating the lodgepole pine gave me the ability to sum the log grades by year and see the distribution of log grades by volume proportion from 2000 to 2011. For this inquiry, because there were changes made to the Interior log grades in 2006 (FLNRO, 2011b), and that “Stand as a Whole Pricing” was introduced in 2010 (MFR, 2010c), I decided to amalgamate the log grades into two categories: off grade and sawlog grade. The off grade category included grades 3, 4, 5, 6, 7, and 8, whereas the sawlog category included grades (blank), 1, and 2. It is important to acknowledge that there is a
difference between a scaled grade and a cruise based billing in terms of the timber appraisal. The term “scale based” means the stumpage payable is based on the scale of the timber in accordance with Part 6 of the Forest Act (MFR, 2010c, p. 1-5). Conversely, “Stand as a Whole (SAAW) Pricing” (cruise based) means that one stumpage rate is determined for all of the net merchantable timber on the cutting authority area. Therefore, for a cruise based cutting authority, the single stumpage rate applies to all of the net merchantable volume identified in the cruise conducted in accordance with the Cruising Manual, (MFR, 2010c, p. 1-5). What I have termed grades, particularly grades 7 and 8, are actually billing codes in HBS (MFR, 2010a). So, for the purpose of this case, the term grade and billing code are considered to be the same.

To better understand the decline in stumpage revenue from 2006 to 2011, I extracted data from HBS in December of 2015. As I was not interested in isolating the harvest by District for each year, a new data extraction would simplify the review. I ran a series of 12 reports, one for each year starting in 2000 and ending in 2011. In each year I set the filter parameters to restrict the harvest by forest licences and organise the data by management type so that I could extract the data for the Prince George Timber Supply Area (Timber Supply Area 24). I also included in the reports volume, value, and species and grade. For the fifth and final analysis, I extracted the data from the reports into an Excel spreadsheet, with a tab for each year. With the data now assembled by year, I was able to sort by species and associated grades as well as sum volumes and associated dollar values.

In this probe, for each year I separated the lodgepole pine from all of the other species. I then tallied the volumes and associated values so as to calculate the average stumpage rate paid by forest licences for lodgepole pine and for all other species. For each
year I used mathematical formulas to calculate the average stumpage rates for the following categories: all lodgepole pine; lodgepole pine sawlog grade; lodgepole pine off grade; all other species combined; all other species sawlog grade; and all other species off grade. Also, for each year, I summed the sawlog grades and off grades of the non-pine species each year to determine percentages. Finally, to account for the cruise based scale that occurred in 2010 and 2011, I tallied volumes and associated values by sawlog grade (grade 1 and grade 2), off grade (grade 4 and grade 6) (MFR, 2010c), and cruise based grade (grade 7 and grade 8) (MFR, 2010a). I did these calculations for both 2010 and 2011 for all non-pine volume and then excluded the deciduous species and grades.

4.4.4. Semi-Structured Interviews

To provide further context and depth to my research, I conducted semi-structured interviews. I chose a semi-structured interview technique because it did not limit me to asking questions that reflected my research questions. Rather, it gave me the flexibility to explore other questions that arose from my background research, or to respond to information revealed by the participants (Dunn, 2010). I developed an interview guide (see Appendix III) to use during the interviews. This guide contained: the interview questions in sequential order; the context for the questions in the form of a preamble; and prompts, which served as reminders for me while I was conducting the interview (King & Horrocks, 2010). In developing my interview guide I consulted the seasoned researchers, who are part of my advisory committee, for input on the design of my questions and on the construction of the interview process. This consultation was very helpful, especially because I received sound advice for opening and closing the interview. As well, prior to finalizing my interview guide
I conducted two mock interviews with people who understand forestry in British Columbia to test both the clarity of my wording of the questions and to time the length of the interview.

I chose purposive sampling for this research because I wanted to gain specific information that is relevant to this case (Yin, 2016). I used two purposeful sampling strategies to identify potential participants: criterion and snowball sampling techniques (Bradshaw & Stratford, 2010). I chose this sampling strategy because I wanted to get informed opinions from people who are involved in the forest industry and who could bring a specific understanding of the issues surrounding forest policy. The criteria I used to qualify participants were the following:

- they had to have worked in forestry from at least between 1997 to 2011;
- they had to have lived within the case study area for at least ten years and at least partially during the period of 1997 to 2011;
- and, they had to be associated predominantly with industry, with government, or at arm’s length from one or both of these groups.

Initially I identified potential participants using my own knowledge (Berg, 1998). From there I expanded the sample by using the snowball sampling technique, in which I asked interviewees who they thought I should interview (Babbie, 2007). I used the same criteria, noted above, to select these potential participants with the added qualifier that they had to have been suggested by at least two interviewees, unless the potential participant had a unique perspective not yet sampled.

One of the advantages of using the criterion sampling technique is that it allows the researcher to investigate a topic by identifying potential recruits who have specific knowledge regarding the research topic (Van den Hoonoord, 2012). Potential recruits are then identified using set criteria (Van den Hoonoord, 2012). I used the snowball sampling
technique as a way of limiting my own bias while getting the most variation in the sample (Yin, 2016). Another consideration for using this technique is highlighted Van den Hoonaaard (2012), who says that it may serve as a means of accessing populations that are difficult to reach and/or identify. Berg (1998) agrees saying that by asking participants to refer other people that they may know who would fit the criteria and who may be interested in participating is a way to expand the target population. A strength of the snowball sampling technique is that it leverages the social networks of participants, but, it is also viewed by many as a weakness, in that the technique has a, “perceived potential for bias” (Stehlik, 2004, p. 39). The potential for bias is based on the perception that the researcher is limiting the pool from which the sample is taken by relying on informant referrals, which will not necessarily be representative (Atkinson & Flint, 2001).

For all of the aforementioned reasons, the purposive sample is not meant to be a representative sample (Yin, 2016). As I was not interested in representing a population, I was not concerned about my sample size as it relates to statistical analysis (Atkinson & Flint, 2001). But, I was interested in making sure that my sample was representative. I recognised that there was potential for bias in using the snowball sampling technique, both in the referrals received from informants, and as the researcher initiating the chain reference because I identified the initial informants. I was concerned that by relying on referrals that were provided by my informants I may be overly representing the opinions of those particular social networks (Atkinson & Flint, 2001). I was also worried that I might be barred access to certain social networks (Atkinson & Flint, 2001). Atkinson and Flint (2001) state that snowball sampling is in fact: “biased towards the inclusion of individuals with inter-relationships, and therefore will over-emphasise cohesiveness in social networks and will
I employed a number of strategies to minimize bias and to enhance the reliability of the interview data. First, to ensure that I was not selecting participants from one specific group, I decided to select people from different employment/career groups. Second, within each employment/career group, I selected people from a range of positions within the hierarchy of each group. For the actual selection of the initial participants I used my own knowledge of having worked and lived in the Prince George Timber Supply Area since 2006 to identify potential participants and also drew from the knowledge I had gained from studying background information about the case (Bradshaw & Stratford, 2010). For the snowball sampling, I applied the same qualifying criteria for referrals that I did to the original participants with the addition of the criterion that the person must receive at least two referrals or must bring a unique perspective, not yet sampled. I also used the snowball sampling as a method for cross checking my initial participant choices.

I began the interview process in late October of 2014 by soliciting potential participants using a formal invitation via email, or by letter. Once potential participants contacted me by email expressing their interest in participating, I sent the information and consent form (see Appendix IV) for them to review and approve. Once they reviewed the information and consent form, arrangements were made to conduct the interview. Participants were also given the option to have the interview questions in advance of the interview. The interviews were conducted in November and December of 2014. I used a digital recording device to record each interview but also used the interview guide that I had
constructed to navigate the questions and to write notes during and after the interview (Dunn, 2010).

Once an interview was complete, I downloaded the digital file from the recording device on to my computer and then erased the file from the recording device to ensure security. Given that I am learning to do research, I chose to do a full transcription of each interview myself for two reasons. First, doing a full transcription meant having a text version of the interview. Second, doing the work myself gave me the opportunity to re-visit the interview and become more familiar with the data (King & Horrocks, 2010). I used the transcription module from the Olympus Dictation Management System software package with the AS-2400 transcription kit which included the RS27 footswitch. I used this software and hardware package because it enabled me to control the speed of the digital track but also control the pause and play using the footswitch, making the task of transcription more efficient.

Member checking is an important part of the interview process and enforces the rigour of the research (Baxter & Eyles, 1997). Upon completion of each interview transcript I then made a copy for editing in which I removed all of the ‘ums’, ‘ahs’, various slang, and otherwise distracting elements used in spoken language from the transcribed text. I then emailed this transcript to the participant in Word document format encouraging participants to read through the document and to make any changes that they wanted to what they said. The process from interview to return of the transcript to the participant for checking and input took between two and four weeks. I asked participants to email me back their approval or disapproval of the transcript and to also include a copy of the changed transcript should they have made any changes. Once a participant approved of the transcript, with or without
changes, that version of the transcript became the official record. Allowing participants to edit what they said not only ensures that you have captured what they said, but allows them to articulate what they meant to say or reconsider what they said. Asking participants to give their approval or disapproval of the transcript gave them every opportunity to withdraw their participation if they so wished.

I used two approaches to analyzing the interview data: template and content analyses. I used template analysis for the specific research questions and the more conventional approach of content analysis to identify themes that occurred outside of the interview questions (King & Horrocks, 2010). Prior to conducting the analyses, I assigned a unique alpha-numeric identifier (P1-P15) to each interviewee and corresponding transcript to preserve the anonymity of each individual during the analyses. These alpha-numeric identifiers were also cross-referenced with the group number. Keeping the identity of the participants anonymous for the analyses served to: guard against my own interpretation or embellishment of the data based on my recollection of the interviews; and from being inadvertently influenced by knowing which transcript belonged to which participant (Van den Hoonnaard, 2012). This strategy also served to reinforce the rigour of my research (Bradshaw & Stratford, 2010).

Template analysis lends itself to a flexible coding structure where the researcher can predetermine the themes in advance of the investigation by constructing a hierarchical theme template (King & Horrocks, 2010). The majority of the interview questions that I asked were very specific because I was seeking clarification and greater meaning to themes I had already identified in the review of other data. I was also using this data as a means to check the validity of my initial conclusions from the other data (Greene et al., 1989). One of the
strengths in using template analysis is that it allows the researcher to look for trends among various participant perspectives (King & Horrocks, 2010). Therefore, because these particular interview questions were already established themes and the questions were asked across three different groups of people (King & Horrocks, 2010), I decided to use template analysis for the specific interview questions.

For the specific interview questions I constructed a template using an Excel spreadsheet that I set up ahead of time with the alpha-numeric identifiers and corresponding group numbers for each question/theme (for question/themes used in this examination, see Appendix V). Before I began putting information into the template I re-read each transcript and the answers to the questions in a separate Word document. I then summarized each participant’s answers further and entered the data into the spreadsheet template. After entering all of the participant’s answers I was able to examine all of the answers given to each question and look for trends within the whole and among the groups.

Not every question that I asked was part of a theme that was analyzed using template analysis. These questions and other dialog were analyzed separately using content analysis. To identify themes within the remainder of the discussion that flowed out of the interviews I began with open coding and progressed to focused coding and finally to the formation of themes (Van den Hoonnaard, 2012). I began by re-reading each transcript several times. Using open coding I took notes of words that seemed to occur often (Van den Hoonnaard, 2012). I then sorted the interview transcripts by group and compiled all of the interview transcripts into one Word document per group, removing the text that belonged to me.
Creating these three master Word documents allowed me to maintain individual anonymity for the study, but retain the group identity. Using the word search navigation function of Microsoft Word, I was able to find and tally specific words. I conducted both manifest and latent content analyses (Dunn, 2010) using the words I had recorded earlier when reading through the transcripts as well as synonymous or associated words. Thus, I was able to tally the number of times a word was used by group and in what context. I used an Excel spreadsheet to track and tally the words searched by group. The next step was to use focused coding to sort the words into subthemes (Van de Hoomoar, 2012). Once the search words were sorted into subthemes I classified the words as subtheme identifiers (see Appendix VI).

Next, I needed a method of separating sub-themes that did not have a specific context as well as the data that were already analyzed in the template analysis. So after forming subthemes I assigned each subtheme the value of either ‘general’ or ‘specific’, as it related to the context of the subtheme. Subthemes assigned ‘general’ were those that had a very general context whereas subthemes assigned the value ‘specific’ had specific context. In addition, all the subthemes were identified as to whether or not they were covered by the first analysis. These subthemes were assigned the value ‘direct’. Those subthemes not covered by the first analysis were assigned the value ‘indirect’. Subthemes that were both ‘specific’ and ‘indirect’ were then sorted into themes, which were topical and contained more than one subtheme. Those subthemes that did not form a theme can be seen in Appendix VI.

The subthemes that had been identified as both ‘specific’ and ‘indirect’ were placed into an Excel spreadsheet where the subtheme identifiers could be tallied by subtheme and by theme. To identify which themes were important to the interviewees, I used the absolute sum
of subtheme identifiers to rank the themes (see Appendix VI for details). After re-reading the transcripts, I inferred that an absolute sum of 100 or greater meant that the theme was important to the interviewees (Gray & Densten, 1998). In other words, the transcripts affirmed that the themes scoring higher than 100 were important because they were easily found within the documents, whereas themes with scores less than 100 were more obscure and difficult to find within the documents. Using this technique was a way for me to limit the power I have as the researcher, deciding what to present and what not to present (Dunn, 2010).

I revisited the participant transcripts to ensure that what came out of both analyses were in fact what the interviewees were communicating. The accuracy checking procedure involved re-reading each interview transcript several times from start to finish and subsequently checking specific transcripts for specific details. The procedure not only served to check the accuracy of both analyses, but also to check my own subjectivity. The themes that were deemed important are presented in the next chapter. For all the themes identified I also made tables that included the subthemes with the relative frequency of subtheme indicators by group. I made these theme tables to demonstrate how often a group talked about the subtheme relative to the other groups, and to identify if there was any solidarity within the groups themselves (see Appendix VI for details).
Chapter 5: Results and Analyses

5.1. Introduction

My research data were acquired through a variety of sources and the scrutiny of these data were as complex as their acquisition. Therefore, for clarity, I have chosen to present the findings in the same format and order that I did in the Data Collection section of Chapter 4. I will begin with what I found out about mill closures from the media scans and document analysis which will be followed by a summary of employment. Next, I will reveal the results of my inquiries regarding the timber harvest and valuation information I obtained from British Columbia’s Harvest Billing System (HBS). Finally, I will demonstrate what I discovered in the breakdown of the semi-structured interviews that I conducted.

5.2. Mill Closures

The media scan of the Prince George Citizen newspaper revealed that during the period between 1997 and 2011, within the Prince George Timber Supply Area, a total of eight lumber manufacturing facilities were closed, one was opened, and two received substantial upgrades. These mill closures were as follows: Northwood PG Wood, Canfor Netherlands, Canfor Upper Fraser, Winton Global Lumber, Canfor Rustads, and Canfor Clear Lake in Prince George District; Pope & Talbot Inc. and Stuart Lake Lumber Co. Ltd. in Fort St. James District. There was also the loss of a plywood plant in the Prince George District due to a fire. Six of the nine closures occurred between 2008 and 2011. During the same time period there was one sawmill opening within the Fort St. James District, one sawmill upgrade within the Vanderhoof District, and one sawmill upgrade within the Prince George District.
As there appeared to be no direct correlation between the mill closures and the changes to legislation in 2003, I needed to look for other explanations for the closures. To compare and contrast the sawmill closures and openings within the Prince George Timber Supply area to other events happening, I constructed an event timeline (see Appendix II). The types of events that I included were those having to do with the mountain pine beetle epidemic, lumber markets, forest policies, and legislation. Looking at all of the events within the context of the forest industry and time period, the event timeline provided me with clues as to why the mill closures occurred. On the surface, mill closures and openings seemed to coincide with events occurring within the lumber markets. An ancillary investigation of the internet for news regarding the mill closures identified above revealed that for some mills, the official closing date was years after the fact (Canfor, 2011). So, for the purpose of this inquiry, the closing date is the date when production ceased.

Using the mill closure criteria listed above, the additional investigation revealed that the six closures within the Prince George Timber Supply Area occurred between 2007 and 2010. In 2007 Winton Global Lumber (Hoekstra, 2011), Stuart Lake Lumber Co. Ltd, and Pope & Talbot Inc. (Hamilton, 2008) were closed. In 2008 Canfor Corporation (Canfor) closed its Rustad mill (Hoekstra, 2010), and then its mill in Clear Lake in 2010 (Hoekstra, 2011). Meanwhile, the mills that remained open reduced their production capacity by reducing the number of shifts at various times (Canfor, 2008; Hamilton, 2008). As for the two defunct mills in Fort St. James, both were purchased by other companies in 2009. Pope & Talbot Inc. was purchased by Conifex Timber Inc., who re-opened the mill in 2009 (Tice, 2009). However, Dunkley Lumber Ltd. chose not to re-open the mill when they purchased Stuart Lake Lumber Co. Ltd. (Nielsen, 2011). Incidentally, Canfor did not rebuild its
plywood plant that was destroyed by a fire; rather, the insurance money was used to invest in upgrades for other facilities (Canfor, 2008).

To understand some of the reasons why these mills were closed, it is useful to look at what was occurring elsewhere in the province. In fact, the Prince George Timber Supply Area was not the only location to experience sawmill shutdowns as there were massive shutdowns occurring throughout the province at that time, both in the Coast and the Interior forest regions (Hamilton, 2008). For example, Pope & Talbot Inc., a company based in the United States with numerous lumber and pulp operations in British Columbia, filed for bankruptcy protection in October of 2007 (VanderKlippe, 2007). For many forest companies like Pope & Talbot Inc., the decline in profitability began in late 2006 when lumber prices began to fall as a result of declining housing starts in the United States. Profitability was further confounded in 2008 when the housing market crisis in the United States began to unfold (Hoberg, 2010). Not only were lumber prices reaching historic lows, the value of the Canadian dollar was high (Hoberg, 2010).

Furthermore, the United States was still British Columbia’s largest consumer of lumber products (BC Stats, n.d.) so these downturns in the lumber market would have had a significant negative impact on the lumber manufacturing sector. The housing crisis in the United States was not the sole cause of the problems facing Pope & Talbot Inc. (VanderKlippe, 2007) or other forest corporations (Hamilton, 2008). Most companies were already stretched financially due to the lengthy legal battle with the United States over softwood lumber and the ensuing high tariffs imposed by the US Department of Commerce in the form of countervailing and anti-dumping duties (Zhang, 2007). From 1997 to 2001 the
export of Canadian lumber into the United States was controlled by quotas established by the Softwood Lumber Agreement of 1996 (Zhang, 2007).

5.3. Employment

BC Stats reveals that there has been a steady decline in employment in the forest industry since 1997, with an overall decline of 43% within the forest industry in British Columbia. However, employment in the forestry and logging sector has had a much greater decline (57%) than that of the wood manufacturing sector (33%) (see Table 1). What is interesting is that if you look at the annual change there are three relatively large negative declines in the forestry and logging sector, 2001 (10,700), 2004 (6,000), and 2008 (6,900). In contrast, the wood manufacturing sector shows only one significant negative decline, it occurred in 2008 with a loss of 10,100 jobs. Cumulative losses from 1997 to 2011 are 18,900 jobs in the forestry and logging sector and 14,700 jobs in the wood manufacturing sector.

Table 1: British Columbia Employment by Detailed Industry, Annual Averages.

<table>
<thead>
<tr>
<th>NAICS*</th>
<th>Sector</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry</td>
<td>1000s</td>
<td>32.9</td>
<td>30.2</td>
<td>29.9</td>
<td>35.5</td>
<td>24.8</td>
<td>25.2</td>
<td>27.1</td>
<td>21.1</td>
<td>21.3</td>
<td>21.4</td>
<td>24.2</td>
<td>17.3</td>
<td>13.9</td>
<td>16.1</td>
<td>14.0</td>
</tr>
<tr>
<td>Resource</td>
<td></td>
<td>60%</td>
<td>59%</td>
<td>62%</td>
<td>68%</td>
<td>61%</td>
<td>67%</td>
<td>61%</td>
<td>61%</td>
<td>58%</td>
<td>50%</td>
<td>52%</td>
<td>39%</td>
<td>35%</td>
<td>40%</td>
<td>35%</td>
</tr>
<tr>
<td>Goods</td>
<td></td>
<td>8%</td>
<td>7%</td>
<td>8%</td>
<td>9%</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>4%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Product</td>
<td>1000s</td>
<td>44.8</td>
<td>43.1</td>
<td>42.1</td>
<td>45.9</td>
<td>48.7</td>
<td>43.5</td>
<td>48.4</td>
<td>45.7</td>
<td>45.1</td>
<td>43.8</td>
<td>43.7</td>
<td>33.6</td>
<td>26.8</td>
<td>28.7</td>
<td>30.1</td>
</tr>
<tr>
<td>Manufacture</td>
<td></td>
<td>23%</td>
<td>22%</td>
<td>22%</td>
<td>23%</td>
<td>25%</td>
<td>22%</td>
<td>24%</td>
<td>22%</td>
<td>23%</td>
<td>23%</td>
<td>22%</td>
<td>18%</td>
<td>17%</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>Goods</td>
<td></td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>13%</td>
<td>11%</td>
<td>11%</td>
<td>12%</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
<td>7%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

The significant loss of 10,100 jobs in the wood manufacturing sector in 2008 can
definitely be linked to the large number of mill closures throughout the province that year
(Hamilton, 2008). However, the significant losses experienced in the forestry sector in 2001,
2004, and 2008 require a more protracted explanation. As jobs in the forestry sector are
linked to the timber side of the business rather than the manufacturing side, one needs to look
at those factors which may have influenced the harvesting activities of firms.

In 2001, the forestry sector experienced a loss of 10,700 jobs. The forest industry
had been under the costly regulatory regime of the *Forest Practices Code of British
Columbia Act* since 1994 (Hayter, 2000; Pearse, 2001), and expiration of the Softwood
Lumber Agreement in 2001 created unsavory business conditions (Zhang, 2007). However, it
was likely a combination of the high countervailing duties placed on lumber and the high
price of stumpage that had the greatest impact on forest sector jobs (Hamilton, 2001; Jackson
& Curry, 2002). Given that the forest industry in the Coast forest region of the province was
having much more financial difficulty, due in part that logging costs there superseded those
elsewhere in the province (Grafton *et al.*, 1998; Pearse, 2001), it is reasonable to assume that
that most of these job losses likely occurred there.

In 2004, the loss of 6,000 jobs in the forestry sector can likely be partially attributed
to changes in technology (MOF, 2001b). Changes in logging and trucking technology
allowed companies to reach higher levels of efficiency (Stirling, 2004), which meant greater
production and fewer jobs. As for the 6,900 job losses in 2008, these can be linked to the
slowdown in the economy triggered by the housing crisis in the United States (Hoberg, 2010).
As a means of preservation, forest companies drastically curtailed the production of lumber
and their harvesting operations (Canfor, 2008; Hamilton, 2008).
More specifically to the Prince George Timber Supply Area, an analysis conducted by Horne (2009) compared forest industry employment in 2006 between the Prince George, Vanderhoof, and Fort St. James Districts (see Table 2).

Table 2: 2006 Direct Employments in Logging and Other Wood Manufacturing Sectors.

<table>
<thead>
<tr>
<th>District</th>
<th>Logging</th>
<th>Percent of Total Direct Employment</th>
<th>Other Wood Manufacturing</th>
<th>Percent of Total Direct Employment</th>
<th>Employment Estimate in Forestry Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prince George</td>
<td>2443</td>
<td>8%</td>
<td>2931</td>
<td>10%</td>
<td>26%</td>
</tr>
<tr>
<td>Vanderhoof</td>
<td>752</td>
<td>18%</td>
<td>992</td>
<td>24%</td>
<td>45%</td>
</tr>
<tr>
<td>Fort St. James</td>
<td>290</td>
<td>19%</td>
<td>418</td>
<td>28%</td>
<td>49%</td>
</tr>
</tbody>
</table>


Note that in terms of relative importance, the employment in the Vanderhoof and Fort St. James Districts is nearly double that of the Prince George District. Horne (2009) also produced a special report for the ministry responsible for forests in 2009 where he reconfigured the alignment of data collected by BC Stats and Statistics Canada in 2006 from Regional District to Forest District boundaries. This data reveal the economic dependency of each Forest District in the province, where it is described using indicators such as regional diversity, dominant basic income sources, dependence on forestry and wood processing, forest sector vulnerability, dependence on underground resources, and dependence on tourism. From this information it is clear that the Vanderhoof and Fort St. James Districts are extremely dependent upon forestry, (see Table 3 for details).
Table 3: 2006 Economic Dependencies by Indicator and Forest District

<table>
<thead>
<tr>
<th>Economic Dependency Indicator</th>
<th>Prince George Forest District</th>
<th>Vanderhoof Forest District</th>
<th>Fort St. James Forest District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Diversity</td>
<td>2</td>
<td>1 = Least Diversified</td>
<td>1 = Least Diversified</td>
</tr>
<tr>
<td>Dominant Basic Income Source</td>
<td>Public Sector</td>
<td>Forestry &amp; Wood Processing</td>
<td>Forestry &amp; Wood Processing</td>
</tr>
<tr>
<td>Dependence on Forestry &amp; Wood Processing</td>
<td>21-26%</td>
<td>27-70%</td>
<td>27-70%</td>
</tr>
<tr>
<td>Forest Sector Vulnerability</td>
<td>4</td>
<td>5 = Most Vulnerable</td>
<td>5 = Most Vulnerable</td>
</tr>
</tbody>
</table>


In addition to the analyses done by Horne (2009), approximate job losses associated with the closing of mills between 2007 and 2010 in the Prince George Timber Supply Area were obtained from the ancillary media scan (see Table 4). For the three year period, there were an estimated 767 direct jobs lost in the wood manufacturing sector in the Prince George Timber Supply Area. The purchase of Pope & Talbot Inc. sawmill by Conifex Timber Inc. in 2009, which was reported to employ approximately 230 people (Tice, 2009), are included in the final total estimate of 767 direct jobs.

Table 4: Approximate Direct Employments Loss Due to Mill Closures in the PGTSA.

<table>
<thead>
<tr>
<th>Mill Closure</th>
<th>Closure Year</th>
<th>Affected Employees</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winton Global</td>
<td>2007</td>
<td>~ 220</td>
<td>Prince George</td>
</tr>
<tr>
<td>Stuart Lake Lumber</td>
<td>2007</td>
<td>~ 100</td>
<td>Fort St. James</td>
</tr>
<tr>
<td>Pope &amp; Talbot Inc.</td>
<td>2007</td>
<td>~ 272</td>
<td>Fort St. James</td>
</tr>
<tr>
<td>Canfor – Rustad</td>
<td>2008</td>
<td>~ 220</td>
<td>Prince George</td>
</tr>
<tr>
<td>Canfor – Clear Lake</td>
<td>2010</td>
<td>~ 185</td>
<td>Prince George</td>
</tr>
</tbody>
</table>

Source: Data for Canfor - Clear Lake (Hoekstra, 2010), all other data (Hamilton, 2008)

Specific employment figures for the Prince George Timber Supply Area are not available to the extent that the provincial figures are. However, the similarities between the timing of mill closures locally and provincially indicate that the Prince George Timber
Supply Area likely experienced similar job losses in the forestry and wood manufacturing sectors. Also important to note is that the estimated 767 job loss in the wood manufacturing sector cannot be added to the work done by Horne (2009), as his analysis was done using official census data and by splitting jurisdictions.

5.4. Timber Harvest and Valuation

For the inquiry using the Harvest Billing System (HBS) data, an assumption was made that logs are processed where they are scaled. Although trading does occur between timber processing facilities, it is assumed that the majority of logs are transported directly to where they will be processed because handling and transporting logs is expensive. Thus, it is assumed that for economic reasons, logs are sorted at the point of harvest so that they are delivered directly to where they will be processed. One particular limitation of using scale data from the Harvest Billing System is that the majority of the logs in the British Columbia interior are weigh scaled (FLNRO, 2011b). As defined by the Scaling Manual (FLNRO, 2011b), weigh scaling is a statistically valid method of scaling where only a sample of the population is measured. So ultimately, the method of weigh scaling results in a certain amount of averaging of the scale data.

Hence, when a truckload of logs arrives at a mill site the truck is weighed and the logs it is carrying are placed into a stratum by the weigh scale operator. A stratum is a defined species mix ratio that is predetermined on an annual basis and are unique to the scale site (FLNRO, 2011b). Each stratum has its own sampling frequency, which determines how often loads are sampled (FLNRO, 2011b). So, after the truck load of logs is placed into a stratum and weighed, the logs are then unloaded and the truck is weighed again on the scale empty to calculate the net weight of the logs. The conversion factor for that stratum is then
applied to the weight of the logs to determine the volume, by species and grade. The conversion factor is derived from the data provided from the sample loads, where each log on the load is measured and graded. So the sample loads provide the conversion factor as well as the species, volumes, and grades that are applied to all loads weighed in that stratum.

I looked at the scale data for each District in terms of how much timber was harvested within each District and of that timber harvested, how much timber was scaled within that same District from which it originated. The results varied for each of the three Districts within the Prince George Timber Supply Area. In Fort St. James District, there is a large gap between the timber harvested within the District and the timber scaled within the District from 2006 to 2011 (see Figure 2).

Figure 2. Forest licence volume harvested and scaled in the Fort St. James District.
In the Vanderhoof Forest District there is a gap between the harvest and the scale between 2003 and 2006 (see Figure 3). In contrast to Vanderhoof and Fort St. James Districts, Prince George District has minimal gaps between the timber harvested and the timber scaled (see Figure 4).

![Forest Licence Volume Harvested and Scaled in the Vanderhoof District](image)

**Figure 3.** Forest licence volume harvested and scaled in the Vanderhoof District.

Of the volume harvested in the Prince George Timber Supply Area by forest licences, the majority is scaled within the Prince George District (see Figure 4). The Prince George District also dominates the Vanderhoof and Fort St. James Districts in the amount of volume that it scales from the harvest (see Figure 5). This inquiry demonstrates the relative shift over time, or not, of wood manufacture and/or harvesting.
Figure 4. Forest licence volume harvested and scaled in the Prince George District.

Figure 5. Volume harvested by forest licences and scaled in the Prince George TSA.
From 1997 to 2011 the majority of the timber that was harvested in the Prince George Timber Supply Area (PGTSA) by forest licence holders was also scaled in the PGTSA. In fact, throughout the entire time span, with the exception of 2003, 2004, 2005 and 2006, at least 97% of the timber harvested within the PGTSA was scaled there as well (see Figure 5). The most notable scaling gap occurs: in the Fort St. James District between 2006 and 2011 (see Figure 2); and in the Vanderhoof District from 2003 to 2006 (see Figure 3). Though the majority of the missing scale volume from Fort St. James and Vanderhoof Districts can be accounted for as being scaled in the Prince George District, and, therefore, within the PGTSA, it does not account for the entire scaling gap.

A closer examination of the scale data shows that the majority of the harvest and scale gap outside the Prince George Timber Supply Area (PGTSA) can be accounted for. In the Fort St. James District the majority of timber was scaled in Nadina District for 2004, 2005, and 2006. In the Vanderhoof District, timber was being scaled in Skeena Stikine District for 2003, 2004, 2005, and 2006, and less significantly in Nadina District for 2003, 2004, and 2005. In the Prince George District, timber was scaled in the following Districts: in the Quesnel District in 2003, 2004, and 2005; in Mackenzie District for 2004 and 2005; and, in the Peace District for 2003 and 2004. What is less clear is the explanation for the scale gaps of 2003 to 2006 outside of the PGTSA.

There are several factors that could help to explain why timber was scaled elsewhere during that time period. First, in 2002 and 2004 the allowable annual cut (AAC) for the Prince George Timber Supply Area (PGTSA) was increased to accommodate the salvage of lodgepole pine being killed by the mountain pine beetle (Pedersen, 2004). Second, according to annual reports compiled by the Economics and Trade Branch of the ministry responsible
for forests regarding the major primary timber processing facilities in British Columbia, there were two companies, Canfor and West Fraser, which had timber processing facilities in other Districts besides those within the PGTSA (MOF, 2004a; MFR, 2005; MFR, 2006a; MFR, 2008b). A final factor could have been that companies were investing in capital upgrades for their mills (Canfor, 2003). The allowable annual cut (AAC) had been increased in the Prince George Timber Supply Area (PGTSA) due to the mountain pine beetle, but the industry at the time may have not had the capacity to mill all of the timber that could be cut. Further, in terms of timber profile, the majority of the timber being harvested was lodgepole pine. Therefore, it is not difficult to suppose that companies were shipping the timber where they needed it most, or where it made economic sense to do so.

So, looking at the scale gaps again, assumptions can be made between the timber harvested, where it was scaled, and the major licensees operating within the Prince George Timber Supply Area. Timber that was harvested from the Fort St. James and Vanderhoof Districts and scaled in Nadina District could have been timber cut under licence by Canfor and/or West Fraser, as both companies had mills located in the Nadina District. These mills in the Nadina District were located in Houston (Canfor) and Burns Lake (West Fraser). In the case of timber harvested in Vanderhoof District being scaled in Skeena Stikine District, the timber may have been shipped by West Fraser, as they had a mill located in Smithers. The West Fraser mill in Smithers could have been experiencing a shortfall in timber supply since the collapse of Skeena Cellulose, but also because of increased competition for fibre from larger producers, like the Canfor mill located in Houston. Timber that was harvested in the Prince George District and scaled in the Quesnel, Mackenzie and Peace Districts could have been harvested by Canfor, as they not only had several mills in the Prince George District,
but mills located in Quesnel (Quesnel District), Mackenzie (Mackenzie District), and in Chetwynd and Fort St. John (Peace District).

When looking at the total revenue generated for the Crown from the timber harvested by forest licences, it is important to note that revenue has declined significantly over time, showing a negative correlation beginning in 2000. The decrease becomes particularly steep between 2006 and 2007. The sharp decline continues to 2010 when it becomes clear that there is no apparent correlation to the amount of revenue collected and the volume harvested (see Figure 6 for details).

Figure 6. Forest licence harvest within the Prince George TSA versus revenue collected.
During the interview process, concerns were raised by several interviewees that the forest licence holders within the Prince George Timber Supply Area were not harvesting enough lodgepole pine relative to other species. To investigate the concern I conducted analyses of the lodgepole pine harvest within the Prince George Timber Supply Area (PGTSA) between 2000 and 2011 to assess the quantity harvested relative to other species and relative to each of the three Districts. An examination of the lodgepole pine harvested between 2000 and 2011 by forest licences in the Prince George Timber Supply Area shows that the percentage of lodgepole pine being harvested increased from 51% in 2000 to 75% in 2009. Since 2009 it declined to 63% by 2011 (see Figure 7).

![Lodgepole Pine Harvested by Forest Licences by District, Relative to the Total Harvest of all Species in the Prince George Timber Supply Area](image)

**Figure 7.** Forest licence lodgepole pine volume harvested in the Prince George TSA.

The results of the relative proportion of lodgepole pine harvested by forest licences in each District can be seen in Figures 8, 9, and 10.
Figure 8. Lodgepole pine harvested by forest licences in the Fort St. James District.

Figure 9. Lodgepole pine harvested by forest licences in the Vanderhoof District.
Figure 10. Lodgepole pine harvested by forest licences in the Prince George District.

The results showed that each District had varying percentages of lodgepole pine harvested relative to other species. Overall, the amount of lodgepole pine harvested relative to other species was less in the Prince George and Fort St. James Districts than it was in the Vanderhoof District. But, the result is not unusual given that the timber types in the Vanderhoof District are dominated by lodgepole pine (Pedersen, 2004; Pousette & Hawkins, 2006).

In terms of the harvest proportion of lodgepole pine relative to other species, the expectation in the Prince George Timber Supply Area (PGTSA) was that stands dominated with lodgepole pine would be the primary target for harvesting (Pedersen, 2004). The lodgepole pine data that I analyzed from 2000 to 2011 showed that the expectation of the Chief Forester was met by forest licence holders in regards to the volume harvested. The limitation of these analyses is that total volume harvested show the species harvested by quantity, not the overall composition of the standing timber where the harvest occurred.
However, analyses done by the Inventory Branch of the ministry responsible for forests in 2007 show that the Prince George Timber Supply Area was achieving the expectation for the lodgepole pine portion of the harvest (MFR, 2007).

With regards to stumpage revenue, I was interested in the distribution of the log grades in the harvest of lodgepole pine as I was hoping that the log grades would help to explain the dramatic decrease in stumpage revenue collected since 2000 (see Figure 6). When looking at the distribution of log grades in the lodgepole pine harvested by forest licences in the Prince George Timber Supply Area, there is a distinct trend of degradation from 2000 to 2011 (see Figure 11), where the volume off grade increased from 18% in 2000 to 94% in 2011. It is also worth noting that in 2007, there is a larger proportion of sawlog grade than there is off grade (see Figure 11).

![Figure 11. Log grade distribution of lodgepole pine harvested by forest licences.](image)
The resulting data show a steady deterioration of log grade over time with the exception of 2007, were the quantity of off grade logs decreased. Though the move towards salvaging lodgepole pine was gradual, the degradation of this timber from the time of death was progressive (Lewis & Hartley, 2006). As such, the degradation would have affected the overall grade of the timber being harvested, and subsequently the stumpage rates applied, as the years from death increased. The decrease in off grade timber volume in 2007 can be explained by the log grade changes made to the Interior log grades in 2006 which changed the definition and categories of sawlogs (FLNRO, 2011b).

While the changes made to the Interior log grades seemed to temporarily delay the off grade status of dead lodgepole pine being harvested in 2007, it did not seem to make much of a difference in terms of the overall stumpage revenue collected. Initially, I thought that the increased proportion of lodgepole pine being harvested, in combination with the decline in the associated log grade, would explain the decline in stumpage revenue. I expected that the increase in off grade would produce a decline in stumpage revenue because there is a significant difference in dollar value between the stumpage rate of sawlog grade and off grade. Currently in British Columbia, the minimum stumpage rate in the Interior is $0.25/m$^3$ (Forest Act, Minimum Stumpage Regulation). The minimum stumpage rate is applied to conifer off grades, which is currently defined as grade 4 and grade 6 in the Interior Appraisal Manual (FLNRO, 2015b).

Clearly the Interior log grade changes alone do not explain the dramatic decline in stumpage revenue over the entire timber profile. It is more likely that the decline in stumpage revenue had more to do with how timber was appraised than how it was graded. There were two changes to how timber was appraised. The first occurred on July 1, 2006 when the
market pricing system replaced comparative value pricing as the method used to calculate stumpage in the Interior (MFR, 2006b). The second occurred on July 1, 2010 when the cruise based, stand as a whole, pricing mechanism was introduced (MFR, 2010b; MFR, 2010c). Basically, the market pricing system takes prices determined through competitive auctions, which are administered by BC Timber Sales, and these prices then feed into a complex calculation that determines stumpage rates (MOF, 2004b). However, the stand as a whole calculation of stumpage was introduced by government as a means of encouraging more utilization of low value timber. At the same time, the ministry responsible for forests made adjustments to the market pricing system to make it more responsive to market signals (MFR, 2010d).

It was not until I looked at the stumpage and log grade details of the non-pine component of the harvests that I realized stumpage rates overall were declining. A comparative analysis was done to calculate the average stumpage paid by forest licence holders annually from 2000 to 2011 for lodgepole pine versus all other species (see Figure 12). When looking at stumpage collected for the timber harvested in the Prince George Timber Supply Area between 2000 and 2011, the average stumpage paid by forest licence holders for lodgepole pine decreased from $31.82/m³ in 2000 to $1.15/ m³ in 2011, with the lowest average stumpage paid being $0.89/m³ in 2010. For all other species, the average stumpage collected also declined over the time period, from $33.31/m³ in 2000 to $2.58/ m³ in 2011. It is interesting to note that there appears to be a positive correlation between the average stumpage price for lodgepole pine and all other species from 2007 to 2011 (see Figure 12).
When the stumpage collected between lodgepole pine and all other species was examined, there was a significant decline in the stumpage rates for non-pine species starting in 2007 (see Figure 12). An important point to emphasize is that the component of off grade for non-pine species averaged 20% between 2007 and 2009 but averaged 41% in 2010 and 65% in 2011 (see Figure 13). A final inspection of the non-pine harvest showed that from 2000 to 2009 there was a fairly consistent proportion of off grade to sawlog grade, averaging 18%. However, there were significant increases in the off grade for 2010 and 2011 (see Figure 13). A closer examination of data in 2010 and 2011 revealed the significance of the cruise based scale. For the coniferous non-pine harvest, 27% of that harvest was billed as cruise based in 2010 and 57% in 2011 (see Figure 14). Note that in Figure 14, the off grade and sawlog together represent the conventional weigh scale for non-pine coniferous species.
Figure 13. Log grade distribution of all other species harvested by forest licences.

Figure 14. Distribution of the scale of coniferous non-pine harvested in 2010 and 2011.
Further inspection of the data revealed that the increase in the off grade component was due to the cruise based component in the billing record. Moreover, the average stumpage rate for the sawlog component of the non-pine coniferous species that was weigh scaled was four times the average stumpage rate for the non-pine coniferous species billed as cruise based. In fact, when the volume billed as cruise based is assigned an 80% sawlog recovery rate, and the average sawlog stumpage rates are used to calculate the revenue, the calculation produces an additional 1.8 million dollars in 2010 and 5.2 million dollars in 2011. Finally, it is important to note that in scrutinizing the cruise based scale data the relative proportions of lodgepole pine to other coniferous species was also examined. It was found that the coniferous non-pine volume contribution did not exceed 30% in either 2010 or 2011, but that the average billed volume in both years consisted of 70% lodgepole pine and 30% other species.

5.5. Semi-Structured Interviews

The participants involved in my research all had informed opinions regarding issues surrounding forest policy and the Prince George Timber Supply Area because they have worked in forestry and lived in the research area. A total of 18 people were solicited, 11 were identified by me and 7 were identified by others. The snowball sampling also confirmed 6 of the 11 potential participants that I identified. In the end, I interviewed 15 people from three employment/career groups: those who work primarily for industry; those who work primarily for government; and those who work at arm’s length to one or both of the other groups. The average number of years working in forestry was 33 years and the average number of years living in the area was 24 years (see Table 4 for details).
Table 5: Interview Participant Statistics.

<table>
<thead>
<tr>
<th>Participant Statistic</th>
<th>Group 1 Industry</th>
<th>Group 2 Government</th>
<th>Group 3 Other</th>
<th>Total All Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Solicited</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Number Interviewed</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Years Working in Forestry (Average)</td>
<td>33</td>
<td>35</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Years Working in Forestry (Range)</td>
<td>25-40</td>
<td>30-37</td>
<td>27-34</td>
<td>25-40</td>
</tr>
<tr>
<td>Years Living in the TSA (Average)</td>
<td>28</td>
<td>20</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>Years Living in the TSA (Range)</td>
<td>24-36</td>
<td>13-34</td>
<td>21-33</td>
<td>13-36</td>
</tr>
</tbody>
</table>

My intent is to remove as much of myself as possible in the presentation of the interview findings and I have written this section to incorporate as many of the participants’ voices as possible. Although I am earnest in my endeavor to present the voices of the participants and extract myself, I cannot fully achieve my goal within the constraints of a Master’s thesis because I have had to make choices as to which quotes to include and which to exclude from the body of my work. As such, I will be summarizing what participants have said as well as using direct quotes to emphasize particular points.

The themes that I identified from the interview process were both developed beforehand in the form of the interview questions themselves, and derived from the interview transcripts. Moreover, though the participant groups were formed as a means of ensuring variability in the sample (Yin, 2016), there were no significant trends found within any particular group. The lack of significant trends within the groups is an interesting finding because it seems to indicate that interviewees were communicating their own perspectives. This is not to say that the perspectives expressed were not those of the employment/career group, rather, that there was significant variability within each employment/career group. As such, specific reference to the employment/career groups in the presentation of the research
findings is limited to the construction of the last four themes. These first seven themes were derived from the findings from the other sources and then were woven into specific interview questions so as to obtain specific opinions.

Theme 1: The Legislative Changes to Forest Policy in 2003

In 2003 a suite of legislative changes were made to forest policy under various bills. These legislative changes were connected to the Liberal election platform in 2001 and specifically to their plan to revitalize the forest industry. This theme involves the specific changes brought about by Bill 29 which allowed the holders of forest licences to consolidate and subdivide forest licences, and transfer agreements. It also allowed companies to determine the number and location of their timber processing facilities. My development of interview questions around this theme flowed from my desire to understand why the changes were made, and ultimately to find out if the changes were successful in strengthening the forest industry. Therefore, I was interested in what participants had to say about events that may have precipitated the changes, what they thought were the factors were that influenced this change, and, what pressures they thought may or may not have been on the government of the day.

When I listed off the particular changes brought about by Bill 29, the majority of participants thought that the changes were good because it freed the industry to operate like a business (P2, P6, P7, P8, P11, P14 & P15). As participant P15 expressed: “I think those were good changes because they allowed business decisions to drive industry directions, and let market forces play a bigger role rather than social engineering” (p. 3). Many also felt that the industry had been unduly over regulated for too long (P4, P7, P8, P9, P11 & P14). As
participant P4 said: “[s]ometimes if we do try to constrain market forces too much, then we sometimes get undesired outcomes” (p. 3). However, there were also participants who were concerned about how the industry would respond to the changes (P1, P10, P12 & P13). Participant P10 stated: “[…] I was very worried about a number of them, the ability to consolidate was one big one that bothered me, and the appurtenancy issue was another […]” (p. 2).

All of the interviewees thought that the reason legislation was changed by Bill 29 was because the forest industry was not doing well at the time. A key reason for the condition of the industry was that the lumber manufacturers were struggling to compete in the global market. According to participant P6: “[a]t one time the forest industry in British Columbia pretty much had a lock on things, but it got very competitive very quickly” (p. 4). But global competition was not the only contributing factor in the minds of participants. Some believed the ongoing softwood lumber dispute with the United States of America also played a large role (P4, P7, P8 & P10). According to participant P7:

 […] getting a new Softwood Lumber Agreement that was part of it. I think without question, some of it was driven by political ideology. […] There was also, I think, recognition that the forest industry wasn’t all that healthy and that there was some structural problems there that needed to be addressed (p. 3).

With all the pressures for change, many participants felt that the changes made to legislation were inevitable (P2, P3, P4, P6, P7 & P15). Participant P7 said of the changes: “[…] some things would have changed anyway. But I think the amount of change and the pace of change was significantly greater because we did have a change in government” (p. 4). However, most also stated that the Liberal government did have a choice in what those changes looked like (P1, P2, P6, P7, P9, P12, P13, P14 & P15). As described by participant
P6: “[…] I don’t think that they were forced to do it, it was something that they ideologically believed was the right thing to do” (p. 5). Still, other participants believed that what the changes targeted and how they were implemented was the product of the Liberal government’s political ideology (P1, P6 & P11). While explaining how the Liberal government was aligned with business, participant P1 revealed: “[…] at the time they came into power, their overall economic philosophy took some heavy cues from Alberta” (p. 5), and participant P11 surmised: “[t]he easiest way to say it is if we would have had a different government in there, I don’t think we would have had the same result’ (p. 5).

Upon concluding the discussion regarding the changes to legislation brought about by Bill 29, several participants commented that in hindsight the timing of the changes was serendipitous, allowing the industry to reconfigure itself to deal with the mountain pine beetle epidemic (P7, P8, P11 & P14). This was expressed by participant P11:

Probably the timing in this one was probably really good, it would be interesting to see what would have happened if we didn’t have mountain pine beetle issues to deal with. How it all would have played out, because there was a sense of urgency to capture value with timber […]. And you know, I think it helped us get there faster, as far as having less mills and more optimum ways to run (p. 3).

Even the participants who were initially concerned about the legislative changes acknowledged that they understood the need for change (P1, P10, P12 & P13). Which was described by participant P12 who said: “I’ve come to see at least that industry needs to be as competitive as it can be and it has allowed them to be more competitive. But it was not good for a lot of communities” (p. 2). The sentiment was also echoed by participant P10: “I understand that you shouldn’t force things to stay open that aren’t economic, except that there is that social component to it” (p. 5).
**Theme 2: The Evolution of the Forest Industry**

When developing this theme I was thinking about how the forest industry might have changed over time and wondered if these changes were connected to the changes made by Bill 29. I also wanted to know that if the changes in the forest industry were connected to the changes in legislation and, if so, how. I asked participants about changes that they saw in the forest industry and if they thought they were influenced by the changes made by Bill 29. Further, I also asked them to give me specific examples of how they thought they were connected. Finally, I asked participants how they felt about the changes and why.

All of the participants agreed that changes made to legislation in 2003 definitely played a role in the evolution of the forest industry because it allowed business decisions to be made which in turn facilitated the consolidation and rationalization of the industry. Most of the participants felt that this change had been positive for the following reasons: it had unlinked the timber supply to the processing facility (P4 & P9); it allowed the industry to increase utilization and production (P2 & P12); and it resulted in an industry that is more stable and competitive (P3, P6, P9, P10, P14 & P15). One participant felt that the industry was more diverse because the constraint of where timber processing was located in relation to the timber harvest was removed (P11). Other participants felt that by increasing utilization and production, the industry was able to efficiently face the challenges created by the mountain pine beetle (P7, P8 & P12). As participant P12 emphatically stated: “[w]ell, I believe we have if not the most efficient, certainly one of the most efficient sawmilling industries in the world” (p. 5). Regarding the increased stability of the industry, participant P1 commented on the lumber manufacturing sector’s resilience during the last recession: “[… ] there’s no doubt in my mind that the recession, the 2007 to 2009 recession, it would
have been way worse I think in the forest sector, had it not been for those policy changes in 2003” (p. 7). The stability was further explained by participant P7: “[…] if you’ve got fewer mills that have a higher margin, they can operate through different parts of the market cycle […]” (p. 7). Conversely, a few participants had the opposite view as to the evolution of and the state of the forest industry, in particular that it was far less diverse in the number of players, especially in the value-added sector (P1 & P13), and that there were far less jobs in the industry (P5). Regarding the strength of the forest industry post 2003, participant P13 said the following:

I don’t know that we are stronger, […] I think we’re more one or two people operate on the land base scenario, is where we are at. And I think we would have been stronger having a more broad, group of companies (p. 7).

Theme 3: The Centralization and Capitalization of Manufacturing

The third theme emerged from results that I found from the media scan of sawmill closures, the employment statistics from BC Stats, as well as the harvesting and processing information I analyzed from British Columbia’s Harvesting Billing System (HBS). What I found was that there were many closures of sawmills within the case study, primarily in the Prince George District, while over time manufacturing remained constant. As well, the employment statistics revealed that over time, there were fewer people employed within the forest industry. What I wanted to know from participants is if they thought the current industry was stronger as a result and why. I also was interested in what participants thought the implications were for forest dependent communities.
All of the participants agreed that the consolidation and capitalization of the lumber manufacturing sector was hard on communities, especially those whose economies were more reliant on forestry. The following participants noted:

[…] our mills are incredibly efficient. They have smart people running them. The ones that weren’t smart aren’t in business anymore. […] Unfortunately, it means fewer jobs. They’re producing more lumber with fewer people, way fewer people […] (P12, p. 5).

[…] there’s always a human cry when a mill goes down, or there’s some consolidation or a mill burns […]. People depend on those mills for jobs and community stability and they don’t see what another option is for them (P6, p. 9).

Nevertheless, despite being hard on communities, the majority of participants felt that the industry was stronger because investment in capital made the industry more efficient (P1, P2, P3, P4, P12, P14 & P15), more flexible (P5, P7, P8, P9, P10, P14 & P15), and able to operate within smaller economic margins (P1, P6 & P11). None of the participants were that surprised by the consolidation of industry because, according to participant P15: “[…] the investment in technology and infrastructure leads to concentration of the manufacturing into fewer areas, fewer communities” (p. 5). Again, as noted by participant P9: “[t]hey can move the wood to wherever they need it for their other mills. So it’s allowed probably more big mills, more efficient mills, or more modern mills to evolve” (p. 4). Participants also revealed that Prince George has always been a hub of industrial activity (P2, P7, P12 & P14). As participant P8 explained:

Prince George has always been the centre for consolidating and the accumulation of all the bush mills, Sinclair, Penny, southeast, they all come to Prince George, so I’m not sure that the concentration issue has changed that much over the decades (p. 6).
When speaking specifically about the impact on communities, participants generalized beyond the geographic scope of the Prince George Timber Supply Area commenting that there were definitely communities that benefited and those that did not. Despite the fact that communities were negatively impacted, many participants still felt that communities benefit from having an industry that is more stable (P2, P3, P6, P7, P8, P9, P12, P14 & P15). As well, the forest industry may still be a part of the community economy even though it does not have a timber processing facility. Participant P2 explained: “[s]o what ends up happening in those smaller communities is we have a community of loggers but we don’t have a community of millers” (p. 6). Conversely, though the Prince George Timber Supply Area as a whole may not be among the most economically vulnerable to changes in the forest industry, it still has communities that are. The outcome for these forest dependent communities, according to participant P4 is that: “[…] stability and employment is no longer a given. […] it means that the communities are more susceptible to industry reallocations of timber supply and logging” (p. 5). There will be even bigger implications in the future because as the timber supply declines and the industry is reconfigured (P1, P2, P4, P6, P7, P8, P11, P12, P14 & P15), communities will need to learn to adapt:

It has kind of forced some unpleasant things on communities with regards to the resource sector, but it’s a cyclical nature of the business. And I think that if you are a town or your principal economy is based on forestry, the real answer should be is if you understand the business and the cycle, then you have to recession proof your economy for when things aren’t good (P11, p. 7).

**Theme 4: Other Changes in the Industry**

This theme of other changes in the industry arose from wanting to know from participants what other changes they observed in the forest industry since the changes made
by Bill 29. The questions I developed for this theme allowed me to explore aspects of change within the forest industry that I had not thought of, and that may or may not be connected with Bill 29. Therefore, I asked an open-ended question because I wanted to know what participants observed and considered important to mention, with regards to other changes within the industry.

Not all of the participants commented, but those that did noted the following changes: the move from the *Forest Practices Code of British Columbia Act 1995* (Code) to the *Forest and Range Practices Act 2004* (FRPA) (P1, P3, P5, P8, P11 & P13); the rise in the number of community forests (P4, P7, P8, P9, P10, P11 & P15); the increased participation with and opportunities given to First Nations (P7, P8, P10, P14 & P15); the creation of BC Timber Sales (P3 & P8); and, the modernization and mechanization within the logging sector (P4 & P6). The move to the FRPA was a move away from government being overly prescriptive to a more results based model. The magnitude of the shift was commented on by participant P3: “[s]o huge changes in terms of the long industry involvement in meeting objectives and the whole move to professional reliance […]” (p. 6).

While the transition from the Code to the FRPA was occurring prior to the Liberals coming to power, participant P8 speculated the following:

[…] I think the changes were thought out, that FRPA and appurtenancy and all those things were all linked together I think, to help transition that move from the Practices Code, to industry being responsible and government stepping back from managing (p. 5).

As for the increased involvement with and for communities and First Nations, the involvement was seen as a positive by many and as a means of both creating opportunities as
well as providing compensation (P4, P7, P8, P9, P10, P11, P14 & P15). The sentiment of redistribution was held by participant P7, who said:

[…] the whole Bill 28 take back, and redistribution of some of the volume. Clearly, that has helped facilitate a couple of things: 1) more smaller community-based tenures, which has been interesting and has been, I think, generally positive, and the same thing with First Nations volume. You know, government buying that back that volume has provided the opportunity for a whole lot more First Nations groups to have a more active part in the forest industry, which I think really helps (p. 8).

**Theme 5: Timber Stewardship**

During the mountain pine beetle epidemic the choice was made to accelerate the harvest to accommodate the salvage of lodgepole pine timber before it lost its economic value. One of the consequences of the choice to accelerate the harvest for the study area is that there will be a substantial reduction in timber supply for the mid-term. Further, in 2012 the Auditor General of British Columbia criticised the stewardship of timber in British Columbia. Both the accelerated lodgepole pine salvage harvest and the Auditor General’s criticism served as the context in which I developed this theme. I wanted to know from participants if they thought that timber stewardship had been compromised by the changes made through Bill 29.

At different points during the interviews many participants made reference to the transition from the *Forest Practices Code of British Columbia Act 1995* (Code) to the *Forest and Range Practices Act 2004* (FRPA), and these references continued during the discussion about timber stewardship. Several participants felt that the Code, for all its flaws, was a superior stewardship regime to that of the FRPA (P1, P5, P12 & P13). While for others (P2, P3, P6, P9 & P15) the suggestion that timber stewardship and Bill 29 were connected seemed
inconceivable. As participant P6 said: “I don’t think that the stewardship and the actual milling of the timber are connected at all” (p. 14). The sentiment of separation between stewardship and harvesting was also alluded to by participant P3, who said:

Did 2003 really help, particularly, the shift to the professional reliance model helped bring more accountability on the industry side, I personally think that… if you go back into the 80s, there is just no comparison as to the Code era and into FRPA era, significant improvements on the stewardship side of the business (p. 7).

While the majority of the participants were of the opinion that the timber resource had not been compromised (P1, P2, P3, P4, P6, P9, P11, P14 & P15), some thought it could have been managed better (P4, P6 & P11). As participant P4 stated,

I think some of the fundamental issues around stewardship of the resource weren’t addressed in the Forestry Revitalization Act because even when you’re talking about Community Forests it sounds great, but I mean essentially it’s about reallocation of timber rights and harvesting to certain people (p. 7).

There were also participants who thought that the stewardship of the timber may have been compromised (P7, P8, P10 & P12), but their reasons varied. For example, participant P10 thought that a lack of timber stewardship arose from different factors:

We have had some problems for a while, and I think it comes outside of those Acts, just lack of funding coming into inventory, lack of funding going into research and those kinds of things, which weren’t necessarily linked with the Acts (p. 6).

While the others felt that the timber stewardship may have been compromised because the timber resource has been over allocated (P7, P8 & P12), as participant P8 pointed out, “[…] there’s too many players on the land base” (p. 11). Still, others believed that the timber stewardship had been compromised primarily because of a shift in governance (P5 & P13). As participant P5 explained:
I thought that the period in history when we went through CORE and LRMPs, was a highlight of good governance. I thought we did a very good job reaching accommodations and restoring the public’s faith in the landlord of the province, and I thought that that as well secured the future of the forest industry. I actually think we’ve taken a step back […] (p. 5).

**Theme 6: The Conversion of Forest Licences to Tree Farm Licences**

In the spring of 2013, the government unsuccessfully tried to introduce legislation that would allow the conversion of forest licences to tree farm licences. Prior to 2013, in August 2012, the Special Committee on Timber Supply released its report and one of the recommendations made to the legislature was to explore the possibility of converting volume based tenures to area based ones. I was curious if government was indeed acting on the recommendation of the committee so I asked participants about this theme.

When I asked the participants about what they thought motivated government some thought that it was to provide industry with more security (P2, P3, P8, P9, P10, P11, P12 & P14), while others thought that it was a mitigation strategy for the mid-term timber supply (P1, P4, P5, P6, P7 & P15) as well as to provide investment incentives while transferring silviculture liabilities (P7, P8 & P13). In reality, all of the aforementioned reasons could be connected with the mountain pine beetle epidemic, which was summed up by Participant P15 who said: “[m]y short answer is that I think it was a desire to improve stewardship and investment in the forest basically” (p. 7).

There was a lot of discussion by a few participants (P2, P4, P6 & P15) regarding the fallacy that equates area based tenures, as opposed to volume based tenures, with better stewardship. The aforementioned logic is typically based on a set of assumptions made regarding the greater certainty offered by area based tenures: that greater certainty will lead
to better investment on the land base; and that better investment in silviculture can potentially lead to a larger timber supply (P2, P6 & P15). However, as participant P2 argued: “[p]eople have to want to increase stewardship and they have to want to increase timber supply […] area based tenures have not done that […]” (p. 8).

The participants were almost equally divided on the question of whether or not they supported the idea of such a large timber tenure conversion. However, even those who did support it would only support the conversions where it made sense to do so, not a broad-based conversion of all forest licences (P4, P5, P6, P7, P8, P9, P11, P12, P14 & P15). Participant P4 said:

Part of the problem of volume based tenures is that, by their nature, they don’t promote the culture of stewardship and care of the land base… if you are worried about where your volume is coming off it, and you are competing with many other people, you can’t have thoughtful stewardship (p. 8). […] So I think where it’s economically or ecologically appropriate, area based tenures are a very good thing (p. 9).

There were several participants who were not in support of converting forest licences into tree farm licenses. A few participants thought that the conversion would equate to giving lumber producers tree farm licences (P1 & P13). Another participant thought that the conversion was not practical, citing that government would have to find suitable land base in the midst of needing to fulfil commitments made to First Nations (P2). Finally, participants did not support the conversion given the general uncertainty surrounding the implications of a declining timber supply over the mid-term (P10 & P13). The uncertainty was addressed by participant P13, who said:
You and I can’t predict what’s going to happen five to ten years from now with our land base, or the issues that any government or any community is going to face, so putting it under tenure for sawmills might not be the right thing (p. 13).

**Theme 7: Future Forest Policy Needs**

I developed this theme of future forest policy needs because, despite all of the change that has occurred within the past fifteen years, the forest industry is still facing multiple challenges moving forward. Policy must continually evolve to remain effective and relevant to that which it governs. I purposely left the questions open-ended so as to find out from participants what they deemed important to ensure that the forest industry remained strong now and into the future.

The conversation with participants about future policy needs that would ensure the survival of the forest industry ranged from managing the land base, to managing our obligations to First Nations and communities, to managing the timber supply. On the subject of managing the land base, several participants thought that the *Forest and Range Practices Act 2004* needs be updated because government needs to be clearer about what it wants from the land base (P3, P6, P7, P8 & P13). Some participants talked about all of the provincial land use plans and the need to have them updated (P4, P6 & P14). Participant P6 commented:

> We’ve got good land use plans, however, I think the land use plans need to be updated, I think they need to be modernized, I think they need to be nurtured and cared for in a Crown land model. I think the government needs to be clearer on its objectives (p. 16).

Other participants recognized the significant role that First Nations will play moving forward (P3, P6, P7 & P14). Participant P14 observed: “[…] the natural evolution and development of
public policy I think will change significantly based on the Tsilhqot’in decision\(^4\) of this past summer” (p. 12). Participant P7 agreed, and made the following recommendation:

> So I think collectively we’ve got to get our heads around, how do we transition to a place that recognizes the fact that there is title out there and that First Nations have to get benefits, how do we transition to that in a way that doesn’t unduly impact the finances of either the companies or government (p. 10)?

There was also considerable discussion around what the implications of a reduced timber supply would look like for industry as well as for communities. Some participants felt that the industry needs to be more diverse and that there should be more area based tenures on the landscape (P1, P9, P10 & P12). As well, timber rights need to be more secure (P4 & P12) and processes streamlined (P11). There was certainly concern regarding how communities would fare as the timber supply shrinks and the forest industry reconfigures itself once more. As participant P3 pointed out:

> […] we have a number of communities that will be hit pretty dramatically so that’s probably the biggest thing to watch, is how we handle diversification with the limited opportunity that we have in a declining AAC […] (p. 10).

Some participants felt that government should give communities more say regarding the forests that surround them (P5 & P10). But, as participant P10 warned:

> […] government has to be more engaged in developing the whole package, or helping to support that anyways. People are incredibly entrepreneurial if you can give them an opportunity and some education and a way to make money that hasn’t been considered before. You can’t just throw land at people and expect it to work out (p. 7).

\(^4\) The Tsilhqot’in decision was a recent historical ruling in which the Supreme Court of Canada established that the Tsilhqot’in Nation had both rights and title to a specific area within their asserted traditional territory (*Tsilhqot’in Nation v. British Columbia*, 2014).
A few participants discussed the need for creating industrial forest zones, where intensive timber management could be practiced so more volume per hectare would be produced (P2 & P15). One participant talked about the need to create a plan for how to divide a reduced timber supply amongst many licensees (P13), while others talked about managing cumulative effects (P3) and adjusting timber pricing to reflect changing conditions (P6). However, regardless of the repercussions the industry will face during the mid-term, participant P9 was hopeful about the long term timber supply, saying: “I think the forest industry is going to survive alright, just because we have lots of area and lots of trees out there; so we just have to wait for them to grow up” (p. 11).

These next themes were identified from the interview transcripts through a number of iterations to formulate and amalgamate subthemes. Each of these themes has an associated table that shows the relative number of times the subtheme was discussed by each group. These four themes were deemed relevant because they scored greater than 100 for all subthemes and groups. See Appendix VI for the remaining themes identified. As well, in these last four themes, the relative frequencies of subtheme indicators by group are shown in tables to demonstrate the theme construction (see Tables 6 to 9).
**Theme 8: Factors that Influence Business Decisions**

Table 6: Theme 8 subthemes and the relative frequency of subtheme indicators by group.

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Group 1 Industry</th>
<th>Group 2 Government</th>
<th>Group 3 Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Bottom Line</td>
<td>45%</td>
<td>36%</td>
<td>18%</td>
</tr>
<tr>
<td>Centralization</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Compensation</td>
<td>50%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td>Labour Force</td>
<td>42%</td>
<td>34%</td>
<td>25%</td>
</tr>
<tr>
<td>Logistics</td>
<td>17%</td>
<td>0%</td>
<td>83%</td>
</tr>
<tr>
<td>Shareholders</td>
<td>9%</td>
<td>27%</td>
<td>64%</td>
</tr>
<tr>
<td>Timber Profile</td>
<td>25%</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Transportation</td>
<td>22%</td>
<td>66%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Identifying what factors influence business decisions is helpful to understand why lumber producers make the business decisions that they do. Some of these business decisions have to do with where sawmills are strategically located, and some of the factors that influence these decisions are not as obvious as others. For example, the top three factors identified by participants were the economic bottom line, labour force availability, and transportation (see Table 5). The interconnected nature of these factors was explained well by participant P8, who said:

One of the economic decisions that is made is where logs should be delivered to enable a profit to be made. If factors such as mill technology, work force availability, operating costs (such as energy costs) transportation availability (ie trucks or rail) allow a facility to run at a profit and conversely another mill at a loss, business decisions would now allow the wood to be hauled to a profitable facility rather than a non-profitable facility (p. 7).

Participants discussed other factors that influence the business decisions of lumber manufacturers, such as the following: the centralization of manufacturing, as a matter of capturing the economies of scale; the compensation paid to the industry by government for the loss of timber harvesting rights; and, the reality that many lumber manufacturing firms
have shareholders to whom they must answer. Almost everything influencing a business
decision can be traced to improving profitability and viability. Even operational factors like
logistics (the location of timber versus the mill, versus the market) or the timber profile (the
species, size, and grade of timber being harvested) influence business decisions. As described
by the following participant:

[…] they don’t have a lot of duplication in their operations. What I mean by that is
where you might have had two or three stud mills before, and one dimensional
lumber mill, maybe depending on how you revamped your operations with regard to
your timber supply […], you might be able to position those mills in better places
depending on what the products are coming in (P11, p. 5).

Perhaps the most surprising factor influencing the business decisions of lumber
manufacturers is labour force availability. Finding capable employees is, as participant P7
noted, “[…] another complicating factor which is that rural BC… rural Canada’s all moving
to town” (p. 7), and the problem is ongoing. It is not only finding people who want to live in
smaller communities, but having to compete with the oil and gas sector:

Drawing people to some of the smaller communities is problematic given the
shortage of workers today. I don’t think the province or industry at the time realized
how difficult it is to draw good people to some of the outlying locations (P8, p. 15).

**Theme 9: The Competitive Log Market**

Table 7: Theme 9 subthemes and the relative frequency of subtheme indicators by group.

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Group 1 Industry</th>
<th>Group 2 Government</th>
<th>Group 3 Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC Timber Sales</td>
<td>35%</td>
<td>53%</td>
<td>12%</td>
</tr>
<tr>
<td>Log</td>
<td>36%</td>
<td>50%</td>
<td>14%</td>
</tr>
<tr>
<td>Log Market</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Tenure Reform</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Value-added Sector</td>
<td>22%</td>
<td>41%</td>
<td>37%</td>
</tr>
<tr>
<td>High End Products</td>
<td>40%</td>
<td>20%</td>
<td>40%</td>
</tr>
</tbody>
</table>
During the interview discussions participants had quite a bit to say about the competitive log market, particularly the value-added sector, or lack thereof. This theme is important because the development of a competitive log market was a key component of the Forest Revitalization Plan. As participant P1 explained:

[…], when you read the Forest Revitalization Plan there was a whole suite of outcomes that they expected around stimulating the value-added wood industry, […] and those things have not come to fruition. The value-added wood sector has actually withered under the Forestry Revitalization Plan […] (p. 5).

According to the participants, one cannot discuss the impact of Bill 29 without considering the role that Bill 28 played. Bill 28 involved the ‘take back’ of timber volume by government from the forest licence agreement holders in order to reallocate timber for community forest agreements, First Nations, and woodlots, as well as provide volume for BC Timber Sales (BCTS) (Bill 28, 2003).

The key role of BC Timber Sales (BCTS), as explained by participants, was to provide a competitive log market. The creation of BCTS served two purposes: to create the Market Based Pricing System, upon which provincial stumpage rates were generated; and to provide a supply of logs for other would be entrants to the market. Some participants felt that the forest industry has become more diversified as a result. Still, despite a diverse group of players, many participants felt that there is still too much focus on lumber manufacturing. Participant P14 noted:

We’re still not there as an industry when you take a look at some of the species that we have in the province of British Columbia and you take a look at just making commodity based lumber out of it. There seems to be a disconnect […] (p. 17).
While a few participants believe that the value-added sector was just not a profitable venture, especially given the high costs of labour and transportation, others suggested that the absence of the sector had more to do with a lack of timber supply for would be investors. Referring to the lumber manufacturing firms, participant P5 stated: “[t]he big boys didn’t want it, so they killed it” (p. 9). Participant P12 explained:

Most of them focus way too much on dimensional lumber. And they don’t look enough at alternate markets. In fact, they don’t want alternate products to succeed. They didn’t want the value-added sector to succeed, so the value-added sector didn’t succeed… for the most part because the big boys didn’t want that competition. […] For the wood! Not the market, because it’s a totally different market (p. 6).

Although participants did not agree on the reasons for the absence of a flourishing value-added sector, many agreed that too many high value logs are converted into commodity lumber, as was voiced by participant P10,

I really think we need to start making better investments into figuring out better ways to use every cubic metre that we have. Changing that industrial model, not 100% away from what it currently is, that’s always, probably always be the bread and butter for BC (p. 8).

**Theme 10: The Disposition of Timber Rights**

Table 8: Theme 10 subthemes and the relative frequency of subtheme indicators by group.

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Group 1 Industry</th>
<th>Group 2 Government</th>
<th>Group 3 Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber Allocation</td>
<td>59%</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>Timber Rights</td>
<td>42%</td>
<td>31%</td>
<td>27%</td>
</tr>
<tr>
<td>Operating Area</td>
<td>50%</td>
<td>50%</td>
<td>0%</td>
</tr>
</tbody>
</table>

The disposition of timber rights in the future will be increasingly important, particularly moving into a much smaller mid-term timber supply where the competition for timber supply is already fierce. As participant P11 illustrated:
what we never really thought about is, on the land base, there are always too many constraints, and so, how do we make it all fit? And you know, if you look at some of the other future states, of what the tenure system might look like, how to try to fit in First Nation Woodland Licences for example, at the end of the day you only have so much pie, and right now the pie’s pretty much already spoken for (p. 4).

Though it seems inevitable that the shrinking timber supply will force another rationalization by the forest industry, concern remained among participants as to what these changes will mean for the timber rights currently held. To confound the issue is the reality that government has some outstanding obligations to fulfill to First Nations:

[...] [it is] absolutely critical that as we look at mid-term timber supply and then we look at adjustments to annual allowable cuts, how that reduction in cut is handled and how it is proportionally shared between big companies and small companies. [...] The other challenge for us will be again the Tsilhqot’in decision has made it very clear that First Nations will play a much much larger role on the landscape, and what does that mean in terms of timber supply [...] (P14, p. 11).

Participants explained that many licensees have seen their operating areas shrink over time due to increased constraints and the number of licensees operating on the same land base. The uncertainty around timber rights has caused considerable angst for them not only in terms of timber supply, but in terms of managing the land and running a business. A few participants noted that in some cases the overlap of tenures has created so much competition that different licensees are literally chasing the same tree. It is not just about who can get ribbon around the timber first, it is about who can log the timber first.

Despite the situation of an already crowded land base, many participants acknowledged the importance of involving First Nations and giving them timber tenures on the land base. The primary concern expressed by many participants was that any reallocation
of timber supply needs to ensure that it is both inclusive and equitable to all. However, as participant P8 reminded me:

Government has to govern for the best outcomes for the province and communities need to ensure benefits, employment, sustainability, and sound forest management on the forests that directly affect them. The debate of who owns the trees, the rights to manage the forests, and the economics generated from the forests will always be there (p. 8).

**Theme 11: The Lumber Manufacturing Business**

Participants discussed various aspects regarding the lumber manufacturing business, which makes this theme important because it gives a broader perspective, which will foster a greater understanding of the current forest industry. The key to the success of any lumber manufacturer is to maximize the utilization of the entire log profile and to keep costs as low as possible, which involves not only creating efficiencies, but utilizing the waste stream. The concept was explained well by participant P8, who said:

By-products directly from the forests or from sawmill facilities is a significant portion of revenue/costs for any forest company. To reduce costs there must be an outlet for the by-products, such as chips, sawdust, log waste. The industry has responded well in the past decades with pulp mills, pellet plants and now energy plants. These facilities exist as a result of the primary harvest and saw milling components of the forest industry (p. 8).
The concept of maximizing utilization of the log is particularly true for lumber manufactures in the Prince George Timber Supply Area given the cost of capital investments and distance to markets. For example, “[t]o continue to produce commodity based lumber, you are looking at a 100 million dollar investment to be competitive with modern day scanners” (P14, p. 5).

Then the product has to get to markets around the world:

[… ] these are mills in northern British Columbia that have to mill their product and get it to markets that are a long way away. They’re not sitting in the southern United States, or on the eastern seaboard. They have to ship their product all the way from northern BC into Chicago, down the railroad, into the southern US, or into Texas, into California, it has to go a long way, or across the ocean into Japan or Europe (P6, p. 6).

According to some participants, the investment in capital upgrades for sawmills that are strategically located has meant that more lumber can be produced more efficiently with less waste, and that those waste products have a market. Further, the high production capacity of these modern sawmills is flexible, in that it can be increased or decreased by adding or subtracting shifts. The flexibility of production has allowed producers to be more responsive to market demand, as well as respond to the milling demand created by the mountain pine beetle epidemic.

On the harvesting side of production costs, participants noted that the logging systems and trucking configurations have also adapted to the pressure of greater production. For example, logging systems switched to roadside processing and short log lengths, which enabled the short log truck configurations to haul more logs per truck load. Participants explained that the change on the harvesting side of the business was a necessary shift because the harvest in the Prince George Timber Supply Area was focused on salvaging lodgepole pine, which meant Forest Licensees were traveling greater distances from their milling facilities for timber that was of marginal quality and relatively small.
Another cost of concern when producing lumber, as explained by participants, is the price that is paid for the timber; the price of stumpage. While lumber producers are always concerned about how much they are paying for timber, there was some concern among participants that stumpage in the future might be increased to accommodate revenue sharing with First Nations, which would most certainly make lumber production costs prohibitive. Meanwhile, some participants were concerned that the current appraisal system unfairly discounts the publicly owned resource in favour of lumber producers. Although this concern could not be substantiated by any facts, participants were unwilling to discuss the issue further, citing the ongoing softwood lumber dispute with the United States.

5.6. Conclusion

These research findings have demonstrated the interconnectedness of seemingly independent events within the broader context of the forest industry, the forest economy, and the forest landscape through time following the forest policy choices of that were set in motion in 2003. While certain aspects of particular events have been explained, the explanations are incomplete because of the influence exerted by other events that were happening simultaneously. Hence, this story is only a partial story of about how lumber manufacturing companies in the Prince George Timber Supply Area responded to the changes made to legislation in 2003 by Bill 29. In the next chapter I will draw upon the literature to connect this case study to the broader theories therein.
Chapter 6: Discussion

6.1. Introduction

This chapter will connect the key findings from this case study to the theories explained in Chapter 3. The chapter will begin by discussing the key findings and impacts resulting from the rationalization of the forest industry, which will be followed by a discussion regarding the timber harvest and valuation. Next, the impact of the mountain pine beetle will be discussed in light of how the forest industry and government responded to the crisis. Finally, the discussion will shift to answering the research questions which will determine how the theories explained in Chapter 3 inform this case study and where this case study fits within the broader context of British Columbia.

6.2. Rationalization of the Forest Industry

Although the closure of Pope & Talbot Inc. and Stuart Lake Lumber Co. Ltd. could be linked to financial difficulty (Hamilton, 2008), according to several interviewees (P1, P2, P4, P6, P7 & P14), as well as documentation found within an annual report (Canfor, 2011), the remaining mill closures in the Prince George Timber Supply Area were part of the ongoing rationalization being undertaken by local forest companies as a means of remaining competitive in the global marketplace. Decisions were made as to which mills to close and in which mills to make capital investments. These business decisions considered things like the geographic location of the mill relative to the location of an appropriate timber supply, which was one of the driving reasons for the closure of Canfor’s Clear Lake sawmill (Canfor, 2011). In the case of Canfor’s Rustad sawmill, the cost of upgrading was deemed too costly (Canfor, 2011).
Perhaps the greatest impact of the consolidation and capitalization of the lumber manufacturing sector was the negative impact that it had on many communities, particularly those whose economy was dependent on the forest industry. While all of the interviewees agreed that the consolidation of the industry had a negative impact on communities, some interviewees (P7, P8, P11, P14 & P15) felt that the overall stability of the industry had improved. Still other interviewees (P3 & P15) speculated that these negative impacts to communities were in some cases partially mitigated by the timber volume expropriated by Bill 28, which allowed government to reallocate those timber resources to communities in the form of community forest agreements (Bill 28, 2003). In terms of First Nations communities, several interviewees (P7, P10, P14 & P15) noted that there has been a significant increase in participation by First Nations within the forest industry, in the form of partnerships with other industry stakeholders, revenue sharing agreements, and the allocation of timber tenures.

Provincially, the job losses in the forestry sector for 2004 and 2008, and the wood manufacturing sector for 2008 were directly related to the changes brought about by Bill 29. By freeing the industry to rationalize the lumber manufacturing business, companies were not only free to decide how to best configure the manufacturing side of their business, but, the timber harvest as well. So, the process of rationalization impacted employment within the wood manufacturing sector and the forestry sector. According to interviewees, the logging sector underwent a period of consolidation and reconfiguration which reduced the number of logging contractors. Forest companies were now able to demand leaner business practices from their logging and trucking contractors and technology provided the means to do so (for more information see Theme 11: The Lumber Manufacturing Business in the previous chapter, pages 111-113).
In terms of diversity within the forest industry in the Prince George Timber Supply Area, there were mixed views held by interviewees. A few interviewees felt that the industry as a whole is more diverse as a result, citing the rise of the bio-energy sector (P3 & P11), whereas others thought that the industry was less diverse, stating that there are only one or two companies and virtually no value-added sector (P1 & P13). Yet, it appears that in the Prince George Timber Supply Area, at least in the lumber manufacturing sector, that there is a good mix of medium and large sized companies. Of the eleven large lumber manufacturing mills located within the Prince George Timber Supply Area in 2011, five are owned and operated by larger publically traded companies, three are medium sized independent companies that work cooperatively together, and two are medium sized independent and family run companies (FLNRO, 2015a).

From an employment standpoint, diversity which includes smaller independent lumber manufacturing companies may bode well for communities as recent studies have shown that these smaller firms may offer more stable employment. In one study, smaller, more specialized timber processing firms located in the southern interior of British Columbia were found to be more stable in terms of employment and more resilient to economic shocks (Pinkerton & Benner, 2013). Furthermore, another study that examined employment stability in the wood processing sectors in the United States and Japan between small, medium and large companies found that the greatest employment instability was found in the large companies (Lee & Eckert, 2002).

Since the rationalization of the forest industry through the 2000s, one factor regarding employment has changed, it is that people in rural areas are commuting for work more than they did in the past (Haan, Walsh & Neis, 2014). An increase in commuting was
noted to occur within the Prince George Timber Supply Area by a few interviewees (P4, P7 & P8), who said that people do not necessarily live where they work anymore. Haan et al. (2014) term the phenomenon, employment related geographical mobility, which they describe as a non-traditional form of commuting where people in Canada are not just commuting from rural places to the city, but from the city to rural places, or from rural places to rural places. The increase in commuting has to do with the increasing demand for the workforce to be more flexible (Haan et al., 2014), but also because people are more willing to live where they want to live and travel to work (Halseth & Sullivan, 2003).

The trend of increased commuting for work between rural areas and from urban to rural areas is interesting to note because as of December, 2011 there were a total of 11 large lumber manufacturing mills located within the Prince George Timber Supply Area (FLNRO, 2015a), and over half of these mills were located outside the boundaries of nearby municipalities. Perhaps the shift in workforce flexibility could also be seen as a result of the changing work place location. According to interviewees, there are several strategic advantages to having these geographic locations (for more information see Theme 8: Factors that Influence Business Decisions in the previous chapter, pages 106-107). The first is that these companies do not have to pay the taxes associated with being located inside a municipality (Martin, 2013). The second is that they can draw employees from more than one municipality (Haan et al., 2014).

The potential advantage of locating outside of municipal boundaries can be illustrated using companies located within the Prince George Timber Supply Area. For example, Canfor has a mill located at Bear Lake and another at Isle Pierre. Bear Lake is located approximately 74 km north of Prince George and 109 km south of Mackenzie, while
the Isle Pierre mill is located approximately 50 km west of Prince George and 50 km east of Vanderhoof. Similarly, Dunkley Lumber Ltd. has a mill located at Strathnaver, which is approximately 79 km south of Prince George and 43 km north of Quesnel. Many interviewees identified that there is an ongoing shortage of labourers, millwrights, and professionals. So perhaps choosing to keep and invest in mills situated mid-way between communities has allowed companies to draw from a larger labour pool (for more information see Theme 8: Factors that Influence Business Decisions in the previous chapter, pages 106-107).

Perhaps stability for individual people does not mean what it used to. In other words, the kind of stability that accompanied the booming forest industry of the 1960s in British Columbia does not meet with the same standard today. In the 1960s, individual personal stability likely meant living in the same town that you worked in and that you had a steady well-paying job throughout your entire career. Whereas today’s definition may be more flexible in that people are expected to have to change careers multiple times in throughout their lives. Maybe individual personal stability today means having enough steady income to be able to live where you want to. In which case, the location of the lumber manufacturing facility would be less important to employees than the resilience of the mill.

6.3. Timber Harvest and Valuation

The results from the harvest data and interview analyses clearly demonstrate that both the Prince George District and the Prince George Timber Supply Area (PGTSA) serve as processing hubs, for the Timber Supply Area itself and for the northern interior. As the PGTSA is the largest contributor to the provincial allowable annual cut (AAC), it was important to investigate the concerns raised by interviewees, that too much non-pine and
spruce was being harvested. The fact that the ministry responsible for forests (MFR, 2007) and this research show that the expectations of the Chief Forester appear to have been met does not mean that the concerns raised have no validity. On the contrary, I think that their concerns speak to the stewardship of the timber resource rather than to the specific adherence to the Chief Forester’s expectations. In short, concern that harvesting more green timber now means less available for harvest later, for the mid-term. Recently, both Canfor and West Fraser were found to be harvesting more green timber than they were supposed to be in the Morice Timber Supply Area (Hunter, 2015).

In the Prince George Timber Supply Area licensees were also found to be harvesting more non-pine leading and spruce leading stands in the 2012-2013 and 2013-2014 fiscal years and less lodgepole pine (Forest Practices Board, 2014). Both cases revealed that the alleged violations would not or could not be enforced by government. In the case of the Prince George Timber Supply Area, the allowable annual cut (AAC) uplifts (Pedersen, 2004) and subsequent partitions (Snetsinger, 2011) are classified as expectations of the Chief Forester, which are not bound by legislation and, therefore, are not enforceable (Forest Practices Board, 2014). The evidence noted above is by no means conclusive, yet, it does suggest that perhaps government expectations of licensees do need to be regulated through statutory law so that they can be enforced.

While my research did not find any excess harvest of non-pine coniferous timber, it did reveal that the cruise based appraisal of non-pine coniferous species produced a much lower stumpage value than the conventional appraisal method in 2010 and 2011. Unfortunately the stumpage appraisal system is complex, consisting of a myriad of variables, all of which are used to calculate stumpage rates. Some of the factors that feed into the
stumpage calculation include, but are not limited to: administration costs; development costs; road management costs; basic silviculture cost estimates; low grade percentage adjustments; market pricing system selling prices; estimated winning bid variables; log transportation; specified operations; and a consumer price index (MFR, 2010c). It is because of the above noted complexity that there is no way to know for certain if there was a loss in stumpage revenue due to the cruise based appraisal, when a full appraisal may have yielded similar stumpage rates. What is certain is that forest licence holders were increasingly using the cruise based method of stumpage billing, which demonstrates that there was an economic advantage to do so, be it through lower stumpage rates or reduced administrative costs.

Still, in terms of revenue, British Columbia is receiving less in the form of stumpage than it ever has in the past, with stumpage revenues falling in the Prince George Timber Supply Area from $292 million to $15 million from 2000 to 2011. As my results show, part of the revenue decline was due to the focus on harvesting lodgepole pine and part is due to the degrading timber and the application of the minimum stumpage rate. Finally, despite the complexity of the appraisal system, it may be that the factors that feed into the calculation of the stumpage rate are the variables that explain the much lower stumpage rates from 2007 to 2010. The Market Pricing System began to be used in 2006 for the Interior timber appraisal process, as a system of reflecting market conditions more accurately. Hence, it could be argued that the extremely poor lumber market conditions from 2007 to 2010, combined with factors that were reflecting more costly development and logging costs as the lodgepole pine

5 The current minimum stumpage rate of $0.25/m³ was established by Order in Council 1935 (OIC 1935/1987) on September 24, 1987, and it has been in effect ever since. This new minimum stumpage rate of $0.25/m³ was part of the comparative value pricing package put in place to change the way stumpage was calculated (Grafton et al., 1998). While it is known when and why the minimum stumpage rate was changed to $0.25/m³, I could not ascertain why the minimum stumpage rate was set to $0.25/m³, nor could I find any justification as to why this minimum rate has not changed since 1987, not even to reflect inflation; if inflation were taken into account, the minimum stumpage rate would have been $0.44/m³ in 2011.
harvest moved further away from processing centres, contributed to the low average stumpage rates.

Another important aspect to consider is that the interests of the forest industry are not necessarily the interests of government, or at least they should not be. The business interests of the forest industry are driven by profit, as illustrated by Canfor’s President and Chief Executive Officer, Donald B. Kayne, in his address to shareholders:

In 2011, Canfor made substantial progress in delivering on our vision to be the world’s most competitive forest products manufacturer. Our strategy is three-pronged: to aggressively build global demand for our products, to secure the high-quality, sustainable fibre supply to meet the demand we create, and then run efficient production facilities to make high-quality products cost effectively (Canfor, 2011, p. 4).

While it is true that our provincial economy benefits from a healthy forest industry, the benefits to the province have been clearly demonstrated by this case to be declining. The above noted strategies are all components of mass production, a strategy that maximizes production and minimizes cost (Edenhoffer & Hayter, 2013a; Nelson et al., 2007). Ultimately, the owner of the timber is interested in getting the highest price for the log, whereas the manufacturer wants to buy the timber at the lowest possible cost. Clearly there is a conflict between the two interests which cannot be easily reconciled.

6.4. The Impact of Mountain Pine Beetle

Although the significance of the mountain pine beetle epidemic did not seem to be on the government’s radar at the time that Bill 29 was being established (MOF, 2000; MOF, 2003; Nelson, 2007), the changes brought about by Bill 29 allowed the forest industry to respond effectively to the crisis. Indeed, many interviewees (P7, P8, P11, & P14) commented that had it not been for the changes made through Bill 29, the industry might not have been
able to deal with the magnitude of the salvage harvest. As it was, the epidemic drove companies to modernize with new technologies and capital improvements to lumber manufacturing facilities to leverage the economies of scale.

The increasing degradation of quality in the lodgepole pine logs also forced the increased utilization of the logs, as there was increasingly poor lumber recovery. Increased utilization by the industry was confirmed by interviewees who explained that finding value in the waste stream is critical for making lumber production economically viable (for more information see Theme 11: The Lumber Manufacturing Business in the previous chapter, pages 111-113). These investments also mean that the industry is able to produce more products using fewer mills and a much smaller labour force; it also means that the industry is more flexible in terms of production, by simply modifying the number of shifts operating at any given time a company can reduce its output and its expenses. The question is what will happen when the timber supply to these mills is reduced?

From a timber supply perspective the falldown for the mid-term supply in the Prince George Timber Supply Area will be significant in that the allowable annual cut (AAC) is predicted to be half of what it is today (Snetsinger, 2011). The successive increases to the allowable annual cut (AAC) to accommodate the rapid salvage of lodgepole pine killed by the mountain pine beetle epidemic helped to create a very efficient lumber manufacturing industry by design, one that processed a lot of inexpensive timber over a very short time. How will these high volume manufacturers be able to maintain their economic viability without compromising either the future timber supply or the fair remuneration to the Crown in the form of stumpage once the timber supply is reduced? Perhaps the most important
thing to ascertain when the reduction in allowable annual cut (AAC) occurs is just what is a sustainable level of harvest, and for whom?

According to some interviewees (P2, P7, P8 & P11), companies are, at least for the interim, augmenting their supply from other Timber Supply Areas (TSAs), like the Mackenzie TSA. In the same way that timber cut in the Prince George Timber Supply Area was processed in other locations outside of the Timber Supply Area (TSA), likewise timber cut in another TSA can be processed in the Prince George Timber Supply Area. However, some companies are already transitioning in light of the reduced timber supply and are invoking the ability to transfer their timber tenure agreements. For example, in 2013, Canfor announced that it would close its sawmill in Quesnel in early 2014, and that it was making a deal with West Fraser to exchange its timber harvesting rights in the Quesnel TSA and some in the Lakes TSA for some West Fraser timber harvesting rights in the Morice TSA (Canfor, 2013). In this case, the agreement would have benefited both companies, as West Fraser had substantial investments in Quesnel (Quesnel TSA) and Burns Lake (Lakes TSA), whereas Canfor had substantial investment in Houston (Morice TSA). While the full impact of a reduced timber supply has not yet come to fruition for the Prince George Timber Supply Area, several interviewees (P2, P7, P8 & P14) indicated that the reduction in timber supply will force another round of rationalization by the forest industry.

There was also speculation from a few interviewees (P1 & P8) that forest corporations will choose to invest outside of British Columbia in the future. In fact, there is evidence that companies within the Prince George Timber Supply Area are investing elsewhere, specifically, Canfor (Canfor, 2015), West Fraser (West Fraser, 2016), and Conifex (Penner, 2015). One motivation might be for companies to shock proof their investments
given the short-lived and volatile nature of the Softwood Lumber Agreement (Penner, 2014), another may be that companies are looking for an alternative and inexpensive source of softwood fibre, like Conifex, which recently purchased a sawmilling facility in the State of Arkansas (Penner, 2015). It is also possible that forest companies in British Columbia are choosing to invest in the Southeastern United States because the regulatory burden is significantly less there than it is in British Columbia (Cashore, Mcdermott, Auld & Newsom, 2006).

In the case of Canfor, it has been consistently investing and divesting in assets as a strategy to improve its market share for some time. Canfor began applying the strategy in 2000 with the purchase of Northwood Inc. in British Columbia (Canfor, 2000). The strategy was continued with the following acquisitions: a small sawmill in Quebec in 2003 (Canfor, 2003); Slocan Group in British Columbia in 2004 (Canfor, 2004); New South Companies Inc., with facilities located in North and South Carolina (Canfor, 2006); a sawmill located in Darlington, South Carolina in 2007 (Canfor, 2007); and, the solid wood processing facilities from Tembec Industries Ltd. in British Columbia in 2011 (Canfor, 2011). Throughout the 2000s Canfor has not only acquired mills, it invested in upgrading for some while closing others, and sometimes it invested in upgrades only to close the facility a short time later (Canfor, 2000-2011). At present count, Canfor has invested in 17 timber product manufacturing facilities in the Southern United States, 12 of which were acquired since 2011. By comparison, Canfor has 18 such investments in Canada, 16 in British Columbia and 2 in Alberta (Canfor, 2015).

It is important to look at how the forest industry and government conducted themselves because it may be that while dealing with the multiple crises that occurred during
the past decade, a resource economy that is addicted to low cost commodity exports (Burda & Gale, 1998; Freudenburg, 1992) helped to create an industry that is committed to mass production and one which may now be addicted to a low cost supply of timber. It also shows that perhaps the forest industry is indeed in the final stages of its lifecycle (Edenhoffer & Hayter, 2013b).

6.5. Research Questions Revisited

Though British Columbia may have not been leading the way globally in terms of its forest governance mechanisms, it is recognized as being relatively progressive among forest jurisdictions in Canada (Luckert et al., 2011; Haley & Nelson, 2007). In fact, other forest jurisdictions in Canada are following British Columbia’s lead (Haley & Nelson, 2007). For example, in 2011 the Ontario government revealed its plans to change its forest tenure arrangements to something similar to those brought into effect in British Columbia by Bill 29 (OMNRF, 2011). So, while my research did not reveal any indication that British Columbia looked to other forest jurisdictions for insight for its forest policy reforms, numerous interviewees in this study (P1, P2, P5, P9, P12 & P13) stated that the BC Liberals consulted heavily with the forest industry regarding forest policy changes. In fact, several interviewees in the government group suggested that the forest policy changes of 2003 did not follow the normal course of policy development in that the new government did not consult the ministry responsible for forests. Rather, the government came in to power with the policy changes ready to implement.

Looking back to my research questions, I do believe that the legislative changes brought about by Bill 29 did help forest companies become globally competitive, but I wonder if the cost to do so was worth it for British Columbia. Burda and Gale (1998) warned
that British Columbia’s addiction to low cost commodity forest products would compromise its future, yet, British Columbia still subscribes to the model of sustained yield forest regulation, which continues to support the current forest industry. I argue that this case study demonstrates that Bill 29 has weakened the overall forest economy of British Columbia by reducing the contribution of the forest industry to the provincial GDP and limiting the choices of future governments.

The recent consolidation of the forest industry was facilitated by Bill 29 in two ways: by repealing the appurtenancy clause from the *Forest Act 1996*; and by allowing the consolidation and subdivision of forest licences, as well as the ability to transfer forest licences (Bill 29, 2003). The removal of the appurtenancy clause provided forest companies with the investment flexibility to decide which mills to invest in and which to close without incurring contractual penalties (Bill 29, 2003). The result was the consolidation of timber processing facilities through rationalization. Consolidation of the forest industry also occurred by reducing the number of corporate groups and companies that hold major timber tenures in the province and as a result, concentrating the bulk of the available timber rights into fewer hands.

In the Prince George Timber Supply Area, there is substantial evidence of the rationalization of timber processing facilities. This rationalization is illustrated best by Canfor’s decisions to close the Rustad and Clear Lake mills in the Prince George District while making capital investments in the Plateau mill in the Vanderhoof District. However, when Dunkley Lumber Ltd. purchased the holdings of the Stuart Lake Lumber Co. Ltd., the choice to not re-open the mill in Fort St. James District was more than just an illustration of investment flexibility. The purchase made by Dunkley Lumber Ltd. is a prime example of
how some forest companies were able to take advantage of the crises that were impacting the financial viability of other forest companies in British Columbia. With no appurtenancy clause company holdings, which included forest licences, could be sold without the obligation to run the mill originally attached to the forest licence.

Provincially, in 2011, the top five corporate groups and companies held 23% of the existing major timber tenure agreements in the province (excluding woodlot licences and community forest agreements), and 55% of the available timber supply (FLNRO “Apportionment”, n.d.). There was not much difference in March 2000, where the top five corporate groups and companies held 19% of the existing major timber tenure agreements and 50% of its available timber supply (FLNRO “Apportionment”, n.d.). But, a closer evaluation reveals that 26% of the major licence holders had greater than a 1% share of the provincial allowable annual cut (AAC) in 2000 as opposed to only 17% of the major licence holders in 2011 (FLNRO “Apportionment”, n.d.). The situation has continued to worsen and as of April of 2016, only 13% of the major licence holders in the province had greater than a 1% share of the provincial allowable annual cut (AAC) (FLNRO “Apportionment”, n.d.).

As for the Prince George Timber Supply Area, not much changed in the apportionment between 2000 and 2011 (FLNRO “Apportionment”, n.d.). The exception being that Dunkley Lumber Ltd. acquired an additional renewable forest licence: A18169, which formerly belonged to Stuart Lake Lumber Co. Ltd. This is not to say that companies with processing facilities located within the Prince George Timber Supply Area did not purchase renewable forest licences in other Timber Supply Areas, or that they have not purchased such licences since 2011. Bill 29 has enabled a trajectory of acquiring timber rights, but the full extent of its reach has yet to be comprehended. Bill 29 also allows the
transfer of timber rights from one Timber Supply Area to another (Bill 29, 2003). As such, it could be argued that the transferability of timber rights further strengthens sustained yield forest regulation and the conversion to a normal forest.

In terms of contributing to the provincial economy, the forest industry is providing far less jobs today than it once did. In 1998, the British Columbia Council of Forest Industries (COFI) estimated that there were approximately 275,000 direct and indirect jobs in forestry in British Columbia (COFI, 1999). However, in its recent economic impact report, COFI estimated that there were approximately 145,800 direct and indirect jobs in 2013 (COFI, 2015). Provincially, the employment figures provided by the British Columbia Council of Forest Industries (COFI) indicate a 47% decrease in jobs between 1998 and 2013. While COFI claims that the British Columbia forest industry is still important to the province’s economy, in terms of its contribution to the provincial GDP, the forest sector’s contribution to that GDP has fallen nearly 48% since 1998, from $23 billion (in 2015 dollars) (COFI, 1999) to $12 billion (COFI, 2015). Given the reduced provision of employment and contribution to provincial GDP it could be argued that the forest industry will garner much less political capital going forward. However, given the entrenched commitment by the government of British Columbia to continue to support the forest industry, it is unlikely that the forest industry will lose its political capital anytime soon.

The irony of sustained yield forest regulation in British Columbia is that it was not just about supporting communities, or mollifying the boom and bust business cycles of commodity markets; it is primarily about liquidating old growth in order to produce a normal forest, which is as idealistic as it is simplistic (Prudham, 2007). As the sustained yield forest regulation model has neither supported communities by offering stable employment, nor
mitigated the boom and bust cycles of commodity markets (Byron, 1978; Edenhoffer & Hayter, 2013a), it can be assumed that it only supports the liquidation project of producing a normal forest. Furthermore, the commitment to sustained yield forest regulation has entrenched the commitment of British Columbia to continue to support the forest industry (Prudham, 2007).

One does not have to look very far back in time to see that the government of British Columbia is still committed to sustained yield forest regulation and the support of the forest industry. Consider the mountain pine beetle epidemic. A natural disaster of this magnitude has the potential to have significant environmental repercussions, yet, the government framed the mountain pine beetle epidemic as a timber supply problem, not an environmental one (Nelson, 2007). As well, the government also felt that it needed to create incentives for industry to utilize more of the low value timber profile by introducing stand as a whole stumpage appraisal (MFR, 2010d).

It is interesting that the government felt it needed to provide incentives to the forest industry to utilize low quality timber, because according to a number of interviewees creating value from the residual products of lumber manufacturing is necessary for the business to remain economically viable (for more information see Theme 11: The Lumber Manufacturing Business in the previous chapter, pages 111-113). Of course, the utilization has to do with processing a log that has already been delivered to the mill, not the timber in the forest. But with increasingly economically marginal stands being harvested the forest industry will maximize utilization because it reduces costs. It could also be argued that the government provided these financial incentives not solely for the purpose of encouraging utilization, but so that licensees would harvest these economically marginal stands.
The commitment of British Columbia to support the forest industry is within the mandate of the ministry responsible for forests and is embedded within the timber tenure and timber pricing systems (Rayner et al., 2001). The regime of sustained yield forest regulation has been in place nearly 70 years and any attempt to make any change it would be difficult as it is an institution in its own right (Prudham, 2007; Fréchette & Lewis, 2011). Not only are there substantial legislative changes to contend with (rules), but, the existing sub-sector, which is made up of the timber tenure and pricing systems, has so far been very effective at blocking any attempt to thwart the trajectory of supporting the forest industry (Rayner et al., 2001). Further, the regime, which is rooted in ideology, is also a tenet of scientific forestry in British Columbia and, therefore, within the curriculum taught to those studying forestry. Students who go on to become forest professionals then have the position of elite expertise, occupying positions within the forest industry and government (Prudham, 2007). Finally, membership is restricted to government and the forest industry (Rayner et al., 2001).

Perhaps the government of British Columbia has gone too far with placing forest management in the hands of the forest industry. Although government does set the objectives for managing components of forest ecosystems, it is constrained by the very legislation it has created to manage the forest resource and regulate the forest industry (Petersen & Stuart, 2014). These legislative changes, that were influenced by neoliberal ideology (Hayter & Barnes, 2014; Young & Matthews, 2007), have granted a much more significant role to forest companies (Petersen & Stuart, 2014). Specifically, Bill 29 removed several major constraints of holding timber rights which effectively granted unfettered access to public timber to the wood manufacturing sector. These legislative changes may have also challenged the

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6 The specific objectives set by government objectives can be found in the Forest and Range Practices Act under the Forest Planning and Practices Regulation, Part 2, Division 1.
institutional relationship between the provincial government and the forest industry.

Although the provincial government still has the constitutional authority to make the rules that apply to provincial forests (Fréchette & Lewis, 2011), the power to decide what the rules are may have shifted to the forest industry (Petersen & Stuart, 2014).

One thing that is clear: should the government of British Columbia wish to retract timber rights from existing timber tenures it would have to compensate the holders of those rights (Luckert et al., 2011). The compensation for the 8.2 million cubic metres of timber retracted through the Bill 28 allowable annual cut expropriation was budgeted to be $200 million dollars (Niquidet, 2008). Given that the current volume held by replaceable forest licences in the province is 28.7 million cubic metres (FLNRO, 2016b) the compensation that would have to be paid for these existing timber rights would be unaffordable. It is more likely that the current regime of sustained yield forest regulation will have to run its course before any substantial changes can be made to British Columbia’s timber tenure and pricing systems. As Edenhoffer and Hayter (2013b) have stated, the current forest industry in the province’s Interior forest region is most certainly in the final stages of its life cycle. It is possible that like the Coast forest region (Edenhoffer & Hayter, 2013a; Pearse, 2001), once the viable timber supply is exhausted, the forest corporations that currently dominate the forest industry in the Interior forest region will divest themselves from British Columbia to make way for the much smaller, but more diverse value-added timber processing sector. In the meantime, there most certainly will be further rounds of rationalization in the Prince George Timber Supply Area once the timber supply is drastically reduced.
Chapter 7: Conclusion

7.1. Introduction

British Columbia’s choice to support the forest industry has had mixed results. On one hand the support likely enabled the investment and expansion of the forest industry into the northern interior of the province, providing good paying jobs and initial wealth. But, the choice to support the forest industry has played a significant role in creating the forest industry we see today, an industry dominated by a few companies. It is easy to criticize decisions that were made in the past when you have the benefit of hindsight and that was not my intent. Rather, my intent was to understand the context in which these decisions were made and some of the repercussions of those decisions. What my research demonstrates is that the current forest management regime in British Columbia is rooted in institutions that are driven by ideology. As such, both the present condition of the forest industry and the contextual condition limit the choices available for forest management in British Columbia moving forward.

7.2. A Way Forward

What will actually play out post mountain pine beetle in the Prince George Timber Supply Area remains to be seen. Whatever forest policies the government intends to use to combat the issues surrounding the dilemma of a reduced timber supply, it would also do well to remember to pay close attention to the regulatory environment of other competing forest jurisdictions and the influence of the global economy (Cashore et al., 2006). Meanwhile, with a declining timber supply post mountain pine beetle, Patriquin, Wellstead and White (2007) predict that negative impacts to communities will be unevenly distributed so their advice to government is to tailor the response to each community.
As discussed in the previous chapter, decisions regarding the forest economy will be much more difficult to make going forward. Perhaps small incremental changes in the current institutions will begin with a much smaller timber supply in the post mountain pine beetle reality. With insufficient timber supply to fuel their ambitions, perhaps companies will divest themselves from British Columbia as so many companies did in the Coastal forest region in the latter part of the 1990s (Edenhoffer & Hayter, 2013a; Pearse, 2001). Maybe then, just like the Coastal forest region (Edenhoffer & Hayter, 2013a), the Interior forest region will support a much more robust value-added sector.

7.3. Limitations and Future Research

One limitation of my research was the scope of the case study that I chose. Both the size and complexity of the study area itself made data collection and analyses challenging. Yet, some analyses like the low stumpage rates from 2007 to 2011 for coniferous non-pine species would have benefited from a provincial scope. Another limitation was that I chose to only draw upon public information. My choice to use only public information limited the type of queries that I could generate for the Harvesting Billing System (HBS) which consequently constrained my analyses.

There are several topics for future research that I can think of that can stem from this case study: first, a study of the market pricing system in the Interior region of the province; second, a study of First Nations involvement in the forest industry post Tsilhqot’in decision and; third, a study of the ministry responsible for forests. A study of the market pricing system in the Interior from 2006 until post-mountain pine beetle that looks at the prices generated from auction and the appraised stumpage charged to licensees. This study would be difficult to accomplish because researchers would need to have access to government
databases so that timber harvest activity could be linked to the corresponding information supplied for the appraisal of that timber. In light of the Tsilhqot’in decision, the government has committed itself to giving more timber rights to First Nations. It would be interesting to see what the outcome of this decision would be and what the outcomes are of business to business relationships that are formed between forest companies and First Nations. Finally, it would be fascinating to explore how the ministry responsible for forests has changed throughout time, particularly since 2001 and how these changes have impacted forest management in British Columbia.

In closing, I am leaving the reader with an excerpt from a poet who explored his own life experiences growing up in the forest resource dependent town of Quesnel, British Columbia. In reading his personal account, I could see him wrestling with his morality as he struggled to come to grips with the economy of the forest sector and his concern for the impact that this economy has had on both human and wild environments. The story he shared spoke volumes to the collision that occurs between the exploitation of a resource, and the natural ecosystem and raises the question of how we as humans will survive if we are the cause of our own undoing. He is not alone in this quandary, and his words speak to me.
stage 6

the working forest
in the way dust collects on the bark of fallen trees
in the way lending seems to outweigh return

the swing of economies
to extract and make ready

waiting for the language
to fall, to be weighed out

caulks and leather hands on chain and teeth
diesel smoke climbs and steel cables skid

prescription and outcome
are of different realities

and the contexts move

politics of the nonhuman
washed out by the sound of economics

stumpage left lingering
as subtle violence

and they don’t get time at the bargaining table

when our wants out-weigh our needs
consumption becomes a marker of status

the nexus of parts
as we work towards some tragic end

non-reciprocal relationships emerge
and debt is at the tip of every tongue

on paper it suggests otherwise
but still the forest remains

unemployed

(Foster, 2012, p.77).
References


MFR – Ministry of Forests and Range (2010d). Notification letter sent to all Interior licensees regarding changes to Market Pricing System in response to the mountain


Pearse, P. H. (2001). *Ready for change: Crisis and opportunity in the coast forest industry*. A report to the Minister of Forests on British Columbia’s coastal forest industry.


Appendix I – UNBC Research Ethics Board Approval

UNIVERSITY OF NORTHERN BRITISH COLUMBIA

RESEARCH ETHICS BOARD

MEMORANDUM

To: Tammy Baerg
CC: Tracy Summerville

From: Michael Murphy, Chair
Research Ethics Board

Date: May 16, 2014

Re: E2014.0414.026.00
Prosperity or Crisis? Examining the Efficacy of British Columbia’s
Forest Policy Choices to Support the Forest Industry

Thank you for submitting revisions to the Research Ethics Board (REB) regarding the
above-noted proposal. Your revisions have been approved.

We are pleased to issue approval for the above named study for a period of 12 months
from the date of this letter. Continuation beyond that date will require further review and
renewal of REB approval. Any changes or amendments to the protocol or consent form
must be approved by the REB.

If you have any questions on the above or require further clarification please feel free to
contact Rheanna Robinson in the Office of Research (reb@unbc.ca or 250-960-6735).

Good luck with your research.

Sincerely,

Dr. Michael Murphy
Chair, Research Ethics Board
### Appendix II – Event Time Line 1997 to 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Mill Opening/Closing *</th>
<th>Mountain Pine Beetle (MPB) Epidemic **</th>
<th>Lumber Market Impacts ***</th>
<th>Forest Policies ****</th>
<th>Legislation ****</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td>Asian Economic Crisis (Hoberg, 2010)</td>
<td>Jobs &amp; Timber Accord</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Closure - Northwood P.G. Wood (Prince George)</td>
<td>MPB - All Districts</td>
<td>Lumber Prices Decline</td>
<td>Protected Areas Strategy</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>Closure - Canfor Netherlands (Prince George)</td>
<td>MPB - All Districts</td>
<td>Expiry of Softwood Lumber Agreement (SLA) (Zhang, 2007)</td>
<td>MPB Action Plan</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>MPB - All Districts</td>
<td>MPB substantial Vanderhoof</td>
<td>SLA counter veiling Duties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
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* Source: Prince George Citizen 1999-2011 using UNBC Library Electronic Database

** Source: BC Forest Health Survey - Pest Overview of Mountain Pine Beetle (1999-2007) GIS Layers available through the Provincial Land and Resources Data Warehouse

*** Source: Ministry of Forests, Lands and Natural Resource Operations website unless otherwise noted, http://www.gov.bc.ca/for


Appendix III – Interview Guide

Preamble: I want to investigate how forest corporations have responded to the forest policy changes made by government in 2003 which were designed to revitalize the forest industry, and how this may have subsequently impacted the forest industry.

I am currently employed with the Ministry of Forests, Lands and Natural Resource Operations, however, this research is in no way related to the duties of my employment, nor am I representing my employer. I am conducting this research independently and want to assure you that what you say during this interview will be kept confidential and that your anonymity will be protected.

Before we begin the questions about the forest policy changes, I would like to find out more about you and the role you have played in the forest industry. I myself have worked in forestry for almost twenty years both in the private and public sectors.

The personal information that you provide in Question 1 will be used by me for analysis purposes only and will not be documented so as to reveal your identity, rather it will allow me to establish your experience and background for the questions that will follow.

1. How long have you been involved in forestry?
   • What sorts of roles have you played?
   • How long have you worked in the Prince George Timber Supply Area?
   • What was your position from 2001 to 2003?
   • What is your position now?

Preamble: The Forest (Revitalization) Amendment Act 2003 was aimed at revitalizing the forest industry. The changes made to legislation enabled forest corporations to: consolidate and subdivide forest licenses, transfer agreements, and determine the number and location of timber processing facilities within British Columbia.

2. Were you directly or indirectly involved in the formation of the policies that ended up in the Forest (Revitalization) Amendment Act 2003?
   • Were you in favour of these changes?
     ○ Why or why not?

3. In your opinion, what precipitated these changes to the legislation?
• What role, if any, do you think that globalization has played?

• Do you think that there was pressure from the British Columbia forest industry or other governments to make these changes?

  o In other words, do you think that the Liberal government had much choice in the direction that they took with the legislation?

CHECK IN POINT

4. Looking back over the last decade, do you think that these changes have influenced the way in which the forest industry has evolved?

If yes…

• Can you give me some specific examples?

Data I have already collected shows that there has been a decrease in the number of lumber manufacturing facilities within the PGTSA in the last 15 years, and that this manufacturing has been concentrated within the Prince George District. Further, BC employment statistics show a dramatic decline in both the forestry/logging sector and the wood product manufacturing sector over the past 15 years.

• Given this data, can you comment on what makes the present forest industry stronger?

  o How do you think this translates for communities whose economies are reliant upon the forest industry?

If no…

• Can you elaborate on why you think the changes were not helpful to the forest industry?

• Why do you think that this attempt to strengthen the forest industry was not successful?

  o What would have had to be different to make it successful?

Data I have already collected shows that there has been a decrease in the number of lumber manufacturing facilities within the PGTSA in the last 15 years, and that this manufacturing has been concentrated within the Prince George District. Further, BC
employment statistics show a dramatic decline in both the forestry/logging sector and the wood product manufacturing sector over the past 15 years.

- Given this data, can you comment on what makes the present forest industry stronger?
  - How do you think this translates for communities whose economies are reliant upon the forest industry?

CHECK IN POINT

5. Have you witnessed any other changes over the past fifteen years in the forest industry that you believe are connected to these legislative changes?

Preamble: Despite that Prince George Timber Supply Area is one of the more diverse Timber Supply Areas in the central interior, it too is facing an imminent reduction to its Annual Allowable Cut because of the devastation caused by the mountain pine beetle and subsequent salvage logging. In 2012 a Special Committee on Timber Supply was struck in response to the Auditor General’s report which criticized the stewardship of timber in BC.

6. In your opinion, do you think that stewardship of the timber resource has been compromised in any way by these legislative changes?

- Can you elaborate?

CHECK IN POINT

Preamble: Following the report released by the Special Committee on Timber Supply, the government tried to introduce legislation in the spring of 2013 that would enable volume based Forest Licences to be converted to area based Tree Farm Licences.

7. In your opinion, what do you think motivated the government to attempt to make these changes?

- Do you support the idea of converting Forest Licences to Tree Farm Licences?
  - Why or why not?

- Who would benefit from a change like this?
  - Industry? Community? Government?

8. Moving forward, what sort of changes do you think need to be made to forest policy to ensure the survival of the forest industry in British Columbia?
Preamble: In closing, I would like to ask you a few more questions to ensure I have been thorough.

9. Is there anything else that you would like to tell me about that we haven’t already covered?

10. Is there anything that you would like to ask me?

11. Are there other individuals who are knowledgeable in this subject that you think I should interview?

Thank you for taking the time to do this interview with me and participate in this research. I will forward you a summary of the interview when I have completed the transcription so that you can review and edit anything that was said. Please don’t hesitate to contact me at any time if you have any questions or concerns about the interview, or the research process.
Appendix IV – Information and Consent Form

**Research Topic:** Prosperity or Crisis? Examining the Efficacy of British Columbia’s Forest Policy Choices to Support the Forest Industry

**Disclosure:** I am currently employed with the Ministry of Forests, Lands and Natural Resource Operations, however, this research is in no way related to the duties of my employment, nor am I representing my employer. I am conducting this research independently.

**Purpose:** This research will examine the response by forest corporations to policy changes brought in by the *Forest (Revitalization) Amendment Act 2003*, which were aimed at revitalizing the forest industry. The changes made to legislation enabled forest corporations to consolidate and subdivide forest licenses, transfer agreements, and determine the number and location of timber processing facilities within British Columbia. While these changes were designed to strengthen the forest industry by providing greater flexibility, and in turn benefit the citizens of British Columbia, these benefits have yet to be determined.

**How You Are Being Asked to Participate:** You are being asked to voluntarily participate in an interview with the researcher, Tammy Baerg. You are not being asked to represent your employer, rather you are being asked to express your own opinions based on your own observations. This will be a semi-structured interview that will be recorded using a digital recording device and will last approximately 45 minutes. In this interview you will be asked to answer several questions regarding the specific forest policy changes made by the Forest (Revitalization) Amendment Act in 2003 that were designed to assist the forest industry. You will also be asked your opinion as to what you have observed over time as a result of these changes.

**How You Were Chosen:** You were identified either by the researcher, Tammy Baerg, or by other local people, as someone with considerable knowledge of the *Forest (Revitalization) Amendment Act 2003*, as well as either the events that led up to it, or the events that followed as a result, or both.

**Anonymity and Confidentiality:** Neither your name, or any other information that may identify you, will be used in any of the material that is reported. As well, the information that you provide in this interview will be kept in strict confidence by the researcher. All written records will be kept in a locked cabinet in a room at the researcher’s residence that is only accessible to the researcher. All electronic records of written materials will be stored on the password protected computer that belongs to the researcher and it will be kept in a locked research space at UNBC. As this research is part of completing a UNBC Master’s degree, the final thesis will be available to the public in the UNBC library. All information pertaining to this interview will be kept for two years after the publication of the researcher’s thesis, at which time they will be destroyed.
Potential Risks and Benefits: This project has been reviewed by the UNBC Research Ethics Board. As the sole researcher of this project, I have not identified any risks to your participation, nor has my supervisor. I believe that your contribution will provide a richer explanation to the research questions being asked and could very well serve to inform not only future forest policy, but future policies surrounding other natural resources.

Voluntary Participation: Your participation in this interview process is entirely voluntary and as such you have the right to discontinue the process at any time. You may also choose not to answer particular questions or may change your mind about how you answered. The interview will be audio recorded and the researcher will provide you with a summary for you to review. You will then have two weeks to provide the researcher with any changes that you want made. You have the right to end the interview at any time or withdraw from participating. Should you withdraw your participation you also may request that any information that you have provided be destroyed.

Complaints: If you have any complaints or concerns regarding your rights as a participant in this research please contact the UNBC Office of Research at (250) 960-6735 or by e-mail at reb@unbc.ca.

Research Results: Please advise the researcher if you would like a copy of the completed thesis and one will be provided to you. Also, should you have any questions regarding the research results please contact the researcher, Tammy Baerg, or her supervisor, Tracy Summerville.

Contact Information:
Researcher - Tammy Baerg, phone 778-349-4907, email baergt@unbc.ca
Supervisor - Tracy Summerville, phone 250-960-6637, email Tracy.Summerville@unbc.ca

I have read the above description of the research and I understand the conditions of my participation. My signature indicates that I agree to participate in an interview.

___________________  ____________________
Name (please print)      Signature

___________________
Date
Appendix V – Template Analysis Themes/Questions

Theme 1: The Legislative Changes to Forest Policy in 2003 – Why did it happen?
  What precipitated the changes?
  What were the factors of influence?
  Were there external pressures on government to change?

Theme 2: The Evolution of the Forest Industry – What were some of the consequences?
  Did the changes influence the evolution, if so how?
  Was this a good or bad thing and why?

Theme 3: The Centralization and Capitalization of Manufacturing – What are the implications?
  What makes the industry stronger?
  What does this mean for forest dependent communities?

Theme 4: Other Changes in the Industry – What other changes may have been an influence?
  What other changes have been observed over the last 15 years?

Theme 5: Timber Stewardship – Did the policy changes influence behaviour by licensees?
  Has stewardship of the resource been compromised?

Theme 6: The Conversion of Forest Licences to Tree Farm Licences – Recently proposed policy
  What motivated the proposal?
  Who would benefit from a change like this?

Theme 7: Future Policy Needs – What are changes that need to be promoted for the future?
  What policies need to be pursued to ensure the survival of the forest industry?
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### Theme 14: The Social Contract

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### Theme 15: Control

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### No Emergent Theme

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