

# Case Study Analysis in Support of Forestry Development in the Central West Region, NL



November 2012

Kyle White, Joshua Barrett,  
and Daniel Downey



## Contact Information

**Kyle White** is from Old Perlican, NL and is currently in his fourth year of undergraduate studies, completing Geography major. Email: [ksw355@mun.ca](mailto:ksw355@mun.ca).

**Joshua Barrett** is from St. Johns, NL and is currently in his third year of undergraduate studies, completing a Geography/Political Science double major. Email: [jab327@mun.ca](mailto:jab327@mun.ca).

**Daniel Downey** is from The Goulds, NL and is currently in his fourth year of undergraduate studies completing a Geography/French double major. Email: [djd784@mun.ca](mailto:djd784@mun.ca).

For further information on this report, or the larger research initiative, please visit [www.ruralresilience.ca/?page\\_id=109](http://www.ruralresilience.ca/?page_id=109).

# Preface

Communities and regions across Newfoundland and Labrador, and indeed the rest of Canada, are saddled with planning choices regarding development. These choices come in the form of both challenges and opportunities. How communities and regions respond, or not respond, to these choices shapes their collective future. Unfortunately, these planning and development issues are often unique from neighbouring communities and consume considerable time to discuss and plan.

In the fall 2012, students in the *Community and Regional Planning and Development* course in the Department of Geography at Memorial University of Newfoundland partnered with the Grand Falls-Windsor – Baie Verte – Harbour Breton Regional Council of the Rural Secretariat to explore and examine key land use planning issues. Based on regional priorities identified by the Regional Council, students examined land use planning in five key areas: aquaculture, access to crown lands, forestry, waterfront/cabin development, and tourism and recreation. Over the course of the fall term, students worked with Regional Council members to identify other jurisdictions in Canada dealing with similar opportunities and challenges. From these case studies, students have generated a series of recommendations. Over the past four months, the authors have shifted through academic, government, and community-based literature to generate this report. The concluding recommendations of the report serve as a catalyst for discussion among key stakeholders in the region; they are not to be viewed as prescriptive.

The opportunity for students to partner with the Regional Council is part of a larger community-based research initiative led by Dr. Kelly Vodden at the Environmental Policy Institute at Grenfell Campus, Memorial University (<http://www.grenfell.mun.ca/environmental-policy-institute>). This larger initiative received financial support from the Rural Secretariat, Government of Newfoundland and Labrador. For further information on the larger initiative visit [www.cwlanduse.ca](http://www.cwlanduse.ca).

This report represents a substantial contribution for land use planning in rural Newfoundland. The culmination of this work is a series of recommendations on the land use topic. Congratulations to the authors for building this important contribution and to the Regional Council for their partnership and support on this initiative.

Ryan Gibson.  
Lecturer, Department of Geography  
Memorial University

# Table of Contents

PREFACE .....	1
INTRODUCTION .....	1
LITERATURE REVIEW OF LAND USE PLANNING .....	1
CASE STUDIES.....	4
CASE STUDY SELECTION .....	4
BRITISH COLUMBIA FOREST SERVICE .....	5
<i>Sustainability</i> .....	5
<i>Spatial Relativity</i> .....	7
<i>Human Dimensions</i> .....	8
<i>Economic Feasibility</i> .....	9
<i>Government Interaction</i> .....	10
TIMISKAMING FOREST ALLIANCE INC. ....	12
<i>Sustainability</i> .....	12
<i>Spatial Relativity</i> .....	13
<i>Human Dimensions</i> .....	14
<i>Economic Feasibility</i> .....	15
<i>Government Interaction</i> .....	16
RECOMMENDATIONS .....	18
GOVERNMENT .....	18
PRIVATE INTERESTS .....	19
NON-GOVERNMENT ORGANIZATIONS .....	19
CONCLUSIONS .....	20
ACKNOWLEDGEMENTS .....	20
REFERENCES.....	21

# Introduction

The Grand Falls-Windsor-Baie Verte- Harbour Breton Regional Council of the Rural Secretariat (hereafter referred to as Central West) identified eight areas of potential land use planning initiatives (Mirza et al, 2012). This report identifies the potential of forestry development by analyzing two case studies from within the Canadian industry. This analysis produces a set of recommendations for the Regional Council to consider in the event forestry development proceeds. The two case studies are intended to provide a contemporary model of forestry operations and the processes that enable successful development. Any conflicts or points of interest will be highlighted to provide Central West with an indication of potential situations that may emerge from forestry development.

To effectively present the value of land use planning and the exceptional potential of the forest industry, this report illustrates the evolution of the discipline and contemporary strategies. Following this literature review discussion of the case studies, analysis, and recommendations for the actors in the Central West region are presented. The recommendations section has been further sub-divided to account for the different interest groups in the region. Government, private industry, and non-government organizations are targeted for recommendations as they maintain a critical role in regional/community planning and development. Moreover, collaborative efforts of these actors will unite local residents and secure the betterment of the region through development of a forest industry. Team work and diligence is necessary for the successful development and maintenance of this industry.

## Literature Review of Land Use Planning

This section provides a contextual framework that fits land use planning into community/regional development with a focus on the existing academic literature. To achieve this goal the following discussion focuses on the evolution of land use planning, its incorporation of multiple interest groups, and two of the prevalent themes: economic development and sustainability. Then land use planning literature is applied to forestry development to provide a theoretical overview of this paper's primary subject.

Land use planning emerged in the 1920s as government agencies sought the best method to develop resources and land to achieve the greatest socio-economic benefits. By regulating development and incorporating strategies, better structures were established and greater insight was utilized. The majority of these decisions were unilaterally made by government (LaBelle and Watson, 1997). In order to optimize specific resource developments or implement the best strategies, governments began consulting experts in multiple fields. This included resource specialists, professional developers, and management experts who, combined, provided a scope that would allow successful land use planning (Stine and Byrne, 1982; LaBelle and Watson, 1997). However, the decision making process was still centralised and involved minimal public interaction and participation (Bjork, 1981).

As public-government interaction evolved, the unilateral decision making by governments that had been the method for land use planning became dated and

discouraged. Publics believed that they should contribute to the decision making process and their input should contribute to plans and developing land. Professionals, aboriginal groups, and general interest groups all maintained positions that they desired to voice (Homsy, 2005). It was realized that if there is disconnect between a plan and the land/people it expected to develop then success would be minimized (Booth and Muir, 2011). This shifted the focus of land use planning from rapid development to collaboration and decentralized methods of approaching a situation (LaBelle and Watson, 1997). This shift allowed multiple voices like government, publics, researchers, and development/planning agencies to contribute to the decision making process of land use planning (Bjork, 1981; LaBelle and Watson, 1997; Homsy, 2005). The incorporation of multiple interest groups necessitated methods for evaluating progress and the participation of engaged actors. Evaluation and collaboration then became central tenets to land use planning processes and practices (Benson and Jordan, 2004; Bishop and Jenkins, 2011).

The initial theme and dominating component of land use planning is economic development and prosperity. Ideally, plans were meant to provide a strategy to gain the most economic benefits from a resource or physical area; an example would be developing a rainforest into either a timber or tourist industry. How much revenue and job creation would be generated were primary considerations of the plan (Kim, 2011). In many instances multiple uses of land would be developed in an attempt to maximize the area being planned; an example would be establishing an agriculture industry once an area had exhausted its forestry potential (Mahapatra, 2000). While multiple actors were being engaged only one goal (Economic prosperity) dominated land use planning; as people became more environmentally conscious there was a shift in the considerations that contributed to the process (Hannis, 2011).

Sustainable development became a requirement within land use planning, especially in areas that had limited resources in a small geographic space; an example would be Germany in comparison to Canada (Wellmur, 1996). It was further deemed to be essential to the planning process as the increased lifetime of a resource prolonged the economic benefits that could be derived (Chen et al, 2005). Pressures from the environmentally aware public translated into an alteration in the planning considerations. Contemporary practice ensures that sustainability is a caveat of land use planning as it provides the basis for resource development and the longevity of a program (Chen et al, 2005; Hannis, 2011). Governing agencies have also incorporated evaluation strategies into their plans that ensure sustainability is being considered; an example would be Sustainability Appraisals in the United Kingdom. This requires monitoring the planning and development process to ensure sustainable measures are being taken (see Benson and Jordan, 2004 for an example). The sustainability movement has been so drastic in community/regional development, that land use planning is often viewed as the arena where society and the environment experience the most interaction (Lestrelin et al, 2012).

Forests had been viewed as problematic when developing a land use plan as they invoke multiple attitudes in various interest groups. Planners had to mitigate demands from environmentalists and development groups that favoured economic gains (Lapping, 1982). However, once a compromise is achieved forestry can become a highly lucrative industry that enables regional sustainability. This is especially important in Canadian areas where 44% of all land is classified as forests; therefore forestry development can substantially contribute to the national economy (Dunster, 1988). However, forestry planning must consider characteristics outside regional boundaries that may interfere in development; this may include forest fires or invasive species. Planning for these possibilities requires extensive management

and preparation (Gmur, 2012). This complexity requires the incorporation of various experts into land use planning that pertains to forestry development (Stine and Byrne 1982).

Clearly land use planning has evolved since its initial conception and has incorporated new themes and interest groups. It has been considered an important aspect of community/regional development and planning as it facilitates discussions pertaining to future developments and strategies. The prominent approach to this process relies on a decentralised approach to planning that generates community and regional impact and benefits (Bjork, 1981).

# Case Studies

To provide Central West with examples of the managerial and practical aspects of the forest industry the following sections analyses case studies selected by the research group. In an attempt to provide a holistic assessment of the case studies the groups formulated five elements of analytical criteria:

- **Sustainability:** This examines multiple considerations of forest operations such as the longevity of the forest resource as well as the economic and social sustainability. Natural and socio-economic considerations are integral parts of forestry initiatives.
- **Spatial Relativity:** This criterion examines the proximity of residents to their resources and the travel procedures and networks that may need to be in place. Location selection is an important consideration for managers as it determines the functionality of the region and the ease of access of for employees and exporters.
- **Human Dimension:** This criterion is an important consideration for resource development as it assesses the impact of humans. This also includes management of employees, educational endeavors, and regulations concerning human-environment interactions.
- **Economic Feasibility:** For any business to maintain success it must perform adequately and maintain a certain level of economic prosperity. This criterion analyzes the economic success each case study experienced and how this prosperity was attained
- **Government Interaction:** Governments are a necessary actor in forest development as they implement regulations and governance strategies. This criterion focuses on the policies in place in the case study regions and what the Central West region may encounter from communicating with governments.

## *Case Study Selection*

Two key components of forestry development are management strategies and the practical aspects such as extraction, processing, and transportation. The research team wanted to select two cases that exemplified each element amongst other operational features. Management (or governance) is necessary for issuing permits, contracts, and enabling regulations that seek the longevity of the resource (Gmur, 2012).

This management agency ought to consist of a body that consists of government representatives, private operators, public representatives, and regional governance officials. This will ensure adequate vertical and horizontal collaboration that will determine the best means to pursue development and direction. This managerial force will complete the majority of planning and will oversee the implementation of any strategies (Hannis, 2011). The BC Forest Service and the Board of Directors of the Timiskaming Forest Alliance will be examples of this group. The professional relations that will be explored in the BC Forest Service will provide a model on how to manage a forestry resource, who needs to be involved, and what types of regulations/policies need to be in place (BC Forest Service, 2012).



The practical element of forestry development is illustrated via examples drawn from the Timiskaming Forest Alliance. This includes how individual sectors of forestry operative work together towards a common goal; socio-economic benefits and the longevity of the resource. This case illustrates the actors that must be involved in extraction, processing, transportation, and marketing processes to make a forestry operation successful, such as private business and employees. This gives the residents of Central West an indication of who needs to be contacted when they enter the stages of investment and development (Timiskaming Forest Alliance Inc., 2012).

Since field methods are beyond the abilities of this report secondary sources are the sole provider for information on the case studies. Therefore any contemporary information, such as emerging plans and processes, are excluded from this study. However, since the goal of these case studies are intended to provide models for the Central West region, the information presented below is sufficient. If further research is conducted on these case studies, primary data collection would be an asset to compliment this report.

## *British Columbia Forest Service*

The British Columbia Forest Service was established in 1912 by the provincial government to ensure the adequate development and sustainability of BC's forest resources. In 2012, the Service celebrated its centenary anniversary recognizing the hard work and dedication of countless individuals. It is composed of government employees whose professions range from park rangers to intergovernmental ministers. The service provides several opportunities for industry operatives and publics to gain access to the forest resource. They oversee any forest developments within their provincial jurisdiction and implement/enforce any regulations pertaining to forestry (BC Forest Service, 2012). As the service is not composed of a practitioner component it will primarily provide a model for governance mechanisms. The operatives under the Service's jurisdiction will provide data for the practical criteria in the following analysis.

## *Sustainability*

Sustainability is an important aspect of the forestry industry that must be considered. Sustainability can be viewed from a number of different perspectives: economic sustainability, ecological sustainability, the risk to resource (i.e. forest fires, invasive species), and regulations put in place for forestry practice. This assessment is aimed to illustrate important aspects of sustainability that the British Columbia Forest Service is involved in that may be applicable to the Central West region.

The economic impacts the forestry industry of British Columbia has declined significantly since the 1990s. In the early 1990s, the forestry industry accounted for 50% of the province's total exports. As of 2008, the exports of forest products for the province were around 30% (Figure 1). Employment within the forestry service has declined since 1990 as well, as 17,400 people are directly employed in forestry in 2008, two thirds of the 26,300 that were employed in the industry 18 years ago (Forestry and Logging, 2012) The industry currently employs less than 1% of British Columbia's population. This decline in exports is believed to be related to the United States housing crisis of 2006 where BC suffered significant loss in business. Scholars believe that because this downturn is only temporary, the forestry industry is expected to gain an increase of exports by 2020 (Allan, 2012).

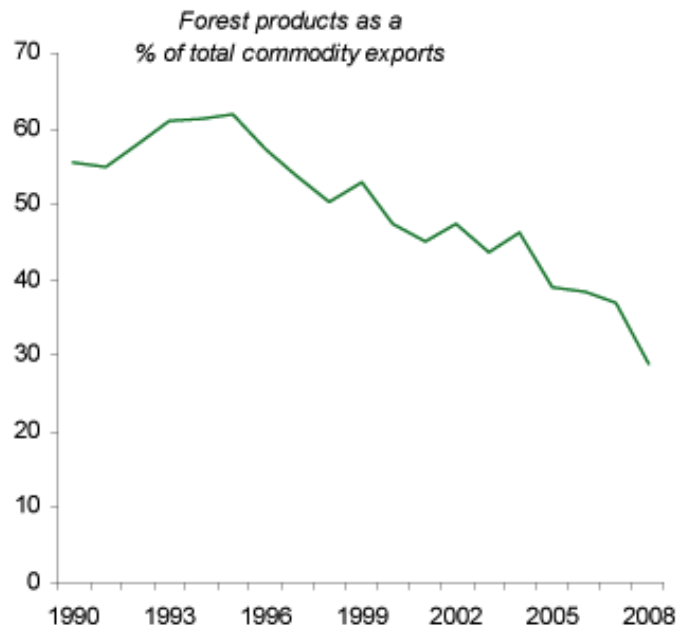


Figure 1. The percent of forest product exports of total exports in the BC from 1990-2008 (Forestry and Logging, 2012).

Ecological sustainability is prevalent within the BC region and can potentially serve as an ideal model for the Central West region. The government of British Columbia implemented the Provincial Non-Spatial Old Growth Order in an effort to effectively manage the forestry opportunities within the region. The intent of the order is to analyze the extent of timber harvesting opportunities while taking into consideration and providing necessary action to conserve the biodiversity and species associated with old growth forests. Old growth trees are trees that are typically over 250 years old, but with hot and dry weather, trees may be considered old growth between 125-140 years old. Lack of forests is not an issue in BC as it consists of two thirds (60 million hectares) of the province's total land mass, yet a significant proportion of these forest areas are considered old growth. No statistics are provided on the percentage of old growth forests. This may be relevant for the Central West region as it consists of a considerable amount of forest and also receives more hot and dry temperatures in the warmer seasons than coastal areas. Necessary actions to apply the old growth initiatives will be alluded to later (Government of British Columbia, 2012).

The BC forest service has several initiatives for resources at risk. There is a wildfire management branch that consists of around 1000 employees to manage wildfires. They have different plans in place to manage different wildfire sizes. There are groups of 15 or so people for smaller fires, and this number can grow to 100 or more firefighters depending on the actual size of the forest fire. The region is susceptible to wildfires due to the dry, hot temperatures. Lightening is also a risk to the forest industry in British Columbia as it can cause forest fires as well. There have been incidents in the past where pine beetle infestation has been an issue to the BC Forest Service. The infestation occurred in different areas around the forest sector and at the time there were no protection initiatives in place in case such a predicament

were to take place. The damage was minimal, however, no initiatives regarding pest infestation are currently available (Government of British Columbia, 2012).

There are many regulations in forestry practice within the British Columbia forest industry. A current one is the Forest and Range Practices Act, which provides regulations to govern activities within the forests of BC it sets requirements for planning, road building, logging, reforestation, and grazing, and maintains high levels of protection for forest values such as watersheds and wildlife habitat. It also consists of an evaluation program that is conducted at different stages throughout the forestry cycle, from when it is harvested, to the manufacturing sector and the pulp and paper industry. This may be something for the Central West region to consider as they have developed an ideal strategy on how to regulate the forestry sector and an evaluation cycle that can be used within many different regions (Forest Range and Evaluation Program, 2012).

### *Spatial Relativity*

The British-Columbia Forest Service Centenary Society (an organization that presents a complete history of the BC forest service) provides a very wide, regional perspective on the areas being exploited, protected, and even renewed. As an examination of the spatial relations of forestry in the BC Forest Service region we will examine three particular programs and their specific spatial dimensions in order to give an idea of the principles and ideals behind the locations of programs throughout the entire region. The programs that are examined are The First Forest Nursery and Plantation in the Interior, the Boundary Forest District programs and the Aleza Lake Forest Experiment Station. Each of these programs offers a unique perspective on how forestry projects' locations are important, as well as how they may be effectively chosen.

The First Forest Nursery and Plantation is a site near the town of Elko, BC in the Southern Interior region. The site selected for the nursery was nearby the Elko Ranger Station. Some of the reasons for this selection according to Wallinger are that the site was located on crown land, it was easily accessible, it was serviceable by hydro power and irrigation systems and, most importantly when it comes to forestry initiatives, the proper geography for the species of trees that were to be renewed was present (Wallinger, 2011). These factors were all important for the forestry activity that was to be performed in the area; electricity and accessibility, as well as nearness to the community of Elko, meant labour was able to reach the site easily. The availability of a water source for irrigation as well as favourable conditions for the intended species (Ponderosa Pine and Interior Douglas Fir) were extremely important to the health and growth of the seedlings. The site being located on crown land also meant that it was obtainable for such an initiative.

The Boundary Forest District re-alignment with the Arrow Forest District in order to cut costs is another important example of the spatial dimensions of forestry in the region administered by the BC Forest Service. The Boundary District was amalgamated into the Arrow District in 2002, which meant a closure of the Boundary District Office and a change in the location of certain staff. The new Arrow-Boundary District would maintain an office in the former Boundary District at Grand Forks, which meant that management issues could still be brought to the local office, instead of having to go the new District Office which was headquartered in the former Arrow District. This reorganization of management of the district meant that there less staff in the same area, but it also meant lower costs. With less administrative costs for a separate district, however, this allowed the maintenance of

the ranger presence in the area, which made appropriate control over the industry possible (Boundary Forest District, 2002).

Aleza Lake Forest Experiment Station stands as an area for experimental work in forestry. That is to say that it does not focus on the actual harvesting of timber, but instead on development of techniques and strategies that are relevant to the industry. This is an ideal place for such extraction of the resource in that it was far from the standard patrol areas of the Forest Service, meaning it was far off the beaten path, far from people. What makes this an ideal place for experimentation is its distance from the general population, meaning externalities from experiments are far enough away from people to not pose a threat. (BC Forest Service, 2012). This demonstrates that it is not only important for the resources to be accessible to the population, but it is also important to protect the population from any negative side effects of exploitation of the resource.

### *Human Dimensions*

The BC Forest Service was established in 1912, making 2012 the centennial year of operation. Since its formation humans have been an integral part of management and process within the organization. This includes out-of-province citizens that have become involved with the service and the employees that constitute the organization's labour force. Human dimensions are especially important in this case as British Columbia maintains one of the largest forest resources in Canada and public involvement is essential to its conservation (BC Forest Service, 2012).

The Service was established to oversee management and sustainability of the forest resources in British Columbia but that consisted of much more than overseeing the use of trees. Ensuring the successful operation and longevity of a resource necessitates the incorporation and observation of humans into a management plan. To accommodate high levels of forestry operatives, the Service has implemented legislation via the Minister of Forest, Lands, and Natural Resource Operations Steve Thompson. This legislation enables the establishment of task forces to resolve conflicts and problematic situations as well as regulate the operations in BC forests (BC Forest Service, 2012).

The Service grants permits to any individual, business, or group wishing to utilize BC forests in some way; this may include recreational as well as extractive purposes. Any actor that does not adhere to regulations is subject to the legal ramifications. This ensures that human-nature interactions are conducted with maximum security and respect; the Service will not permit any use of the forests that will result in degradation or compromised operations (BC Forest Service, 2012).

As well as maintaining a strong timber industry in the province, the Service must also oversee the maintenance of recreation and tourism industries. Some of the activities established in these industries, like hiking and sight-seeing, require very little monitoring. However the Service has converted some of their former look-outs and offices into cabins and tourist destinations that contribute to the regions influx of visitors; some examples of these converted sites include Kamloops lookout cabins, Mt. Cartier Dominion forest lookout, and Sprout Mountain Lookout. A notable provision of the Service is the Alexis Creek Forest District that provides a safe arena for target firing with BC forests; this is a great attraction for tourists entering BC (BC Forest Service, 2012).

The Service has played a key role in the education of forest professionals for the past century. The best example of this role was the establishment of the Green Timbers training school. At this facility post-secondary students would participate in courses

that taught forest safety and allowed graduates to become official park rangers; this fostered higher education as well and job creation. The popularity of the school continued and numerous people gained awareness and professionalized training about the need to protect and manage forests. This trend continued under the Service until it was privatized in 1967. By establishing a training center within the Service's jurisdiction, they can train their future employees and ensure they obtained adequate knowledge and experience (BC Forest Service, 2012).

The Service also provides environmental education opportunities to tourists entering the BC forest regions. This is intended to generate awareness about the importance of forest resources and the need to respect and conserve nature. The best way the Service interests people in forest conservation is the Tree Seed Center; this is a green tourist attraction that allows people to purchase and plant seeds. The operators provide visitors with seeds, but also an appreciation about re-planting trees in areas that have witnessed severe natural loss. This is performed with the intent of educating people about the environment and encouraging them to inform people they contact; this establishes a network of environmental respect and conservation (BC Forest Service, 2012).

While adding a human dimensions component to forestry management creates more work and complexity, it generates the greatest environmental benefits. The BC Forest Service encourages stewardship among their employees and operators in their jurisdiction; they also seek to share this knowledge with people temporarily entering the region. This will create large-scale efforts to support sustainable forestry development and appreciation. By gaining public support and ensuring sustainable practices among industry operatives, the Service guarantees the longevity of successful forestry development (BC Forest Service, 2012).

### *Economic Feasibility*

Economic feasibility is another aspect that must be considered when analyzing the BC Forest Service. Some ways to take this into account is examining the amount of public and government investment the sector has received, the economic and non-economic costs of the industry, as well as whether or not the industry is in an optimal state in regards to technology and, obsolescence. By studying these factors, this assessment provides information the Central West region may utilize for their own forestry sector.

The amount of investment into the forest industry must be considered when providing an appropriate assessment. As alluded too previously in the paper, the industry is made up of 17,400 people directly employed in the industry with an average wage of \$25.22 per hour. This is \$3.76 per hour more than the average wage in BC, yet it only consists of less than 1% of the BC total population. That said, it makes up for 30% of the province's annual exports, yet declined 20% from what it's high in 1990. An important note, however, is that the forest industry is based on a renewable resource and is expected to be a more profitable industry by 2020 (Allan, 2012). The investment within the industry is predominantly within the manufacturing sector, the largest being paper production. Realizing that historically, pulp and paper production has been predominant in Central West, this assessment may be ideal for their decision making process (Forestry and Logging, 2012).

The costs associated with the forest industry must also be considered when provided an appropriate assessment. Because of the nature of the industry and how the processes affiliated within the sector may only be done during warmer months, so unemployment is a significant issue. From 1990 to 2008, unemployment rates in the

forest industry have averaged about 13.5%, which is 5.7% higher than the rate for all other industries. This brings obvious consequences for those involved in the unemployment circle. It should also be noted that in 2008, one in four workers in the industry were self-employed. Many of these positions were contract based where the BC Forest Service would hire people for a specific job during a certain time frame (Forestry and Logging, 2012).

There are ecological or non-economic costs that are linked to the forestry sector as well. BC consists of one of the most endangered ecosystems in Canada, the Coastal Douglas Fir Ecosystem. As of April 2012, the area contained less than 2% of the remaining wild ecosystem. This spot is a significant tourist area as many people travel to observe the rare plants and animals within the ecosystem as well as enjoying the walking trails. Unfortunately, this is just one example of many whereby the government allows the forestry sector to continue their practices within these endangered areas. Although there are regulations put into place to conserve biodiversity and ecosystems within regions, many of these documents only state high risk areas and allow for forestry practices to continue elsewhere. It is known the Central West region provides many opportunities for tourists to enjoy the forests and the landscape. Seeing the value that the tourism industry brings to Central West, decision makers are encouraged to set higher regulations for the forestry industry within the region. These regulations would ensure that there would not be forestry practices in areas that would be detrimental to the tourist's experience.

The state of the BC Forest Service must also be provided during this assessment. From a technology perspective, the industry is adapting to the new technology devices that's being made available. Coming into the 2000's, many workers saw the value in investing in Blackberry devices to be able to check their email while on the job. This made it easier for members of the Forest Service in the office to contact those who were in the field, and vice versa. During this time they also upgraded their computer software to GUI (graphical user interface) which allows technicians upgraded applications with increased colour graphics (BC Forest Service, 2010). Universities in BC also offer a number of academic programs for people to get involved within the forest industry, ranging from one year certificate programs, upwards to a four year degree program. In their studies, students are required to use up to date learning technologies for their learning experience that will be beneficial for them once they get out to the work force in places such as the BC Forest Service (Vancouver Island University, 2012). There is minimal information given regarding technologies in the different manufacturing sectors of the industry.

## *Government Interaction*

The BC Forest Service has a long and storied history of resource stewardship that began in the year 1788 with the first export of BC timber, continued through the industrialisation of forestry, stood the test of time through many different transitions and under several different names. It remains an important policy-maker in the province's forestry sector today, more than 200 years after the beginnings of forestry in BC (BC Forest Service, 2012). It should be noted that the Forest Service as it exists now was only introduced in 1912, but its roots are in government and policy-making. The 1912 introduction of the Forest Act and the creation of the BC Forest Service was one of the most important policy moves in terms of forest management and stewardship in BC (Reid, 1985). This piece of legislation is the most important policy that we will be examining.

The Forest Act, first passed in 1912 and amended over the past 100 years, established a Forest Service as well as providing strict guide-lines and rules for

forestry development in the province. The Act begins with a sensible legal framework, defining forestry-related terms in an alphabetised glossary detailing the meaning of each term within the document. It also includes the processes by which timber licenses can be obtained, who can obtain them, how to maintain them and how they must be used. This policy document also delineates some very important things when it comes to the economic development of a community: regulations for performing value-adding processes to the timber in the province, the process of reviews, appeals and penalties (Province of British Columbia, 2012). The important things to consider when it comes to this policy document are the implications these policies have. The terms in the beginning make the legal document a comprehensible one, which is particularly important when it comes to government policy. If a policy is incomprehensible it is not transparent to the general population. The inclusion of a review, appeals and penalties policy is another especially helpful section of this document in that it clearly provides legislation for what constitutes a review, how decisions made by the government may be appealed legally and the penalties for clear violations of the Forest Act. This document is a strong, well-rooted policy document that is organised, readable and helps to facilitate citizen action.

Another important policy document for the management of BC's forestry industry is the Forest and Range Practices Act, adopted in 2004. This piece of legislation was partially a result of a Forest Stewardship Plan review, which was a forum open to residents (Government of British Columbia, 2006). It focuses on forest stewardship and therefore includes legislation for the protection of valuable natural and cultural resource uses such as wildlife habitat and watersheds (Ministry of Forests, Lands and Natural Resource Operations, 2012). This indicates that in a previous Stewardship Plan review, participants listed these as areas of concern and were heeded when it came time to make policy decisions when the act was passed to replace the Forest Practices Code. While a more detailed record of the Forest Stewardship Plan review was not available, making it difficult to determine exactly how well residents were engaged, it is a good sign of governance initiatives that this public review was enacted.

Forestry in British Columbia has a long history and began almost exclusively as a deal between the crown and the North-West Company, then the Hudson's Bay Company after that, but over its long history it has become a strong, important industry to the province (BC Forest Service, 2012). The legislation passed unilaterally by the government allows for public engagement in certain forestry activities, while more recent endeavours have made the shift towards a more positive, cooperative governance-based model. The policy enacted here may not be perfect, but it is a positive model as well as a good example of a shifting of power from private companies and government deals to a more transparent policy-model.

## *Timiskaming Forest Alliance Inc.*

The Timiskaming Forest Alliance Inc. is located in Northern Ontario in the Timiskaming district, named after the region's first nation's people. The Alliance encompasses more than 10 000km<sup>2</sup> and includes multiple interest groups including: Resolute Forest Products, Cheminis Lumber Inc., Eacom Timber Corp., Georgia Pacific, Greg Woollings, Liskeard Lumber Ltd., Paiement & Sons Ltd., and Rosko Forestry Operations Ltd. These groups manage and operate within Timiskaming with the intent of maintaining a financially lucrative industry as well as a sustainable resource. Via their community involvement and regional support, the Alliance is one of the best examples of how to incorporate actors into one successful unit. The discussion drawn from their practices will provide an operational overview of successful forestry processes and initiatives. This will also provide the decision-makers of Central West with an example of what actors need to be included in a successful business (Timiskaming Forest Alliance Inc., 2012). Figure 2 illustrates the location of the Timiskaming region within Ontario.



Figure 2: Timiskaming Region. Retrieved from: [http://en.wikipedia.org/wiki/Timiskaming\\_District](http://en.wikipedia.org/wiki/Timiskaming_District)

## *Sustainability*

Timiskaming Forest Alliance Inc. (TFAI) partakes in sustainability that the Central West region can ideally use as a model. Similar to the B.C. Forest Service, this analysis focuses on ecological sustainability, economic sustainability, different risks to the resource as well as regulations in place for forestry practice.

Ecological sustainability is fundamental when it comes to the sustainability of different forest practices. As the BC industry was mostly focused on economic outcomes, TFAI largely focuses their practice promoting sustainability with their vision statement noting "Corporate Commitment to Forest Sustainability" (Timiskaming Forest Alliance Inc., 2012). Through their industry, they have a Safety, Health, and Environmental Policy which they abide by when they take part in forestry initiatives. One of their mandates is to helping sustain the forest environment by preventing pollution and allow for safe working conditions. Furthermore, they are committed to planting 5 to 6 million trees annually to compensate for their yearly



harvests in an effort to provide for rich forests and forest industries in years to come (Timiskaming Forest Alliance Inc., 2012).

Economic sustainability must also be considered when compiling a study on a forest industry. As a private company, TFAI consists of eight shareholders that are partnered in the decision-making process as well as management roles. They are in charge of providing contracts for independent logging companies and larger forest product producers. In 2006, TFAI developed a management plan that will be in place until 2026. This plan consists of analyzing the forests within the Timiskaming region and identifying the different economic opportunities each forest provides. The plan will involve creation of new jobs (how many is not currently known) to maximize efficiency yet keeping to their sustainability practices. It should also be noted that while many of Ontario's forest harvest rates have declined significantly since the new millennium, Timiskaming's harvest rates have remained high, and this is due a large part to their sustainability processes (Timiskaming Forest Alliance Inc., 2012).

There have been some risks associated with TFAI's forests in the past. One prevalent issue is fires. Although fires within the forest region have not occurred during the past five years, they have still damaged their forests historically. This aside, the trees within the forest are relative young to middle age. As there are younger trees, there is a common belief that the economic and ecological impacts of the forest will be sustainable for years to come. Employees for TFAI also prefer the soil that has resulted from the burning of trees in the past as it consists of richer minerals that will assist in tree growth. There are no initiatives developed by TFAI at this time in case of forest fires. Timiskaming forests also consist of the highest concentration of moose in Ontario. Although historically this created issues, TFAI has managed to partake in forestry activities while conserving the biodiversity (Arbor Vitae Environmental Services, 2010).

TFAI has also be a part of the development of regulations for forestry practices in their region as well as across Ontario. One of these regulations is the Niagara Escarpment Planning and Development Act which was made official in 1973. This province wide act ensures that there is a balance in protection, conservation and sustainable development within the natural environments across Ontario. Since the original development of the plan there have been amendments in 1994 and 2005 in an effort to further enhance their original cause. TFAI is also required to complete an audit every five years so the province will have an analysis on how they are contributing to their initiatives. The audits study every section of TFAI and make appropriate evaluations. These audits also provide recommendations, ways they can improve their industry, and suggestions on different policies that they should consider (Arbor Vitae Environmental Services, 2010; Government of Ontario, 2008).

### *Spatial Relativity*

The TFAI has a very well-defined jurisdiction, which allows the organisation to have goals and practices that are specific to the regional area. The Timiskaming Forest extends for approximately 10,000km<sup>2</sup>, from the Quebec/Ontario border 166 kilometres west, and from Lake Timiskaming north to Lake Abitibi (Timiskaming Forest Alliance Inc., 2012). This is a fairly large area comprised of several communities and aboriginal territories, and the management of the forest in this area passed from the government to a collaborative corporation of forestry businesses in 1994 (Timiskaming Forest Alliance Inc., 2012). Some of the larger communities contained within the forest management area are Kirkland Lake, Elk Lake, Matheson, Gogama and Engleheart. The three First Nations included are Wahgoshig, Matachewan and Mattagami (ArborVitae Environmental Services, 2010).

This established, well-defined space also contains a vast forest and several forestry operations, ranging from small independent logging operations to large forest product manufacturers. Here we examine the spatial dimensions of this forestry management and how it affects the industry as well as its residents.

According to the Annual Work Schedule for the Timiskaming Forest, between April 1, 2012 and March 31, 2013, 24, 538 hectares of forest are scheduled to be harvested, with only 54% of this number represented in the planned harvest area, and only 20% expected to be completed. In addition to these planned harvesting areas, 7,561 hectares of trees are set to be planted, with an expected output of around 4,000 hectares. 9,099 hectares of forest will be tended aerially with herbicides during this work-period as well Invalid source specified.. While all these worksites are not necessarily very accessible, there have been workarounds made to work. The size of the forest district means that aerial herbicide dispersion is a feasible option, saving from construction of infrastructure and saving several thousand hours of labour. Some infrastructure must be constructed for the harvesting area, including 101.1 km of primary roads and 40.8 km of branch roads, which represents a significant cost to TFAI. These roads are not consistently public or private; some portions of road are deemed risky or dangerous, or simply too high-traffic to open to the public. Furthermore, some roads are decommissioned after completion of a forestry initiative, but some are left and even maintained based on security and use (MNR Kirkland Lake & Timmins District, Northeast Region First Resource Management Group Inc., 2012). One notable issue that is not addressed here is the enforcement of this authorization, but one possible explanation is that the signs that are required to be posted on unauthorized roads may exonerate TFAI from legal responsibility.

Some other important spatial issues with regards to the management of the Timiskaming Forest are safety, particularly from fires and jurisdictional issues. Work sites in the forest are located so as to minimise risk to communities within the forest, but there are still several available firefighting services in the area (MNR Kirkland Lake & Timmins District, Northeast Region First Resource Management Group Inc., 2012). This is a good way to mitigate potential danger to communities. The jurisdictional issues come from the locations of the main offices of the TFAI. The Gogama Area office, for example, has some issues responding to all issues pertinent to its jurisdiction because it covers approximately 30% of the forest district and has a very high turnover of staff Invalid source specified.. These issues are foreseeable ones, but difficult to manage based on the high spatial dispersion of communities in the forest.

## *Human Dimensions*

The TFAI maintains three distinct features that are of interest in human dimensions research. These features are ensuring the safety of employees, public consultations with an array of interest groups, and seeking widespread results of their operations. This provides the context for optimal private-public interaction within the forest industry.

Providing a safe working environment for employees is not only an important business practice but also a method for enhancing public opinion. This safety precaution is achieved via adherence to the strict Occupational Health and Safety instructions that are supported by provincial government legislation. This is made obvious on the company website by their proud display of licenses and stewardship pieces. Accidents are inevitable in the forest industry given specific circumstances and actors. However, the management staff in Timiskaming ensures immediate reports of any and all injuries that occur in the job sites. This profession handling of

problems guarantees sufficient compensation and accelerated process. This contributes to the Alliance's claim that they have leading edge management strategies that ensure the betterment of their employees (Timiskaming Forest Alliance Inc., 2012).

A key component that maintains high public opinion of the Alliance is their avid public interaction. This interaction often includes announcing contemporary developments to the public during the approval procedures. However, acquiring land may involve gaining trust and/or consent from land owners; this most common technique for achieving a hearing with a particular interest group is facilitations. These facilitations involve the landowners/interest group and members of the TFAI board of directors or their managerial staff. These facilitations are intended to provide into the other interest group's desires and opinions concerning the land or issue in question. Often the groups resolve any conflicts by verbalizing their positions and working towards a collective solution. Other facilitations are used by the Alliance as a means to explain particular issues or developments to an intended audience (Timiskaming Forest Alliance Inc., 2012).

On one specific occasion the Alliance sought to develop a piece of land in Northern Ontario; this generated concerns with First Nation groups. Members of the Alliance held a separate consultation with the First Nation representatives other than the public facilitation. This allows a particular interest group to express their concerns without their voices being diluted in the greater public. A follow up study of the session illustrated the satisfaction the First Nation members gained from the consultation. This provided the Alliance with increased credibility among aboriginal groups and increased their capacity for public interaction (Arbor Vitae Environmental Services, 2010). Maintaining respect for various interest groups is essential for developing land use plans (Timiskaming Forest Alliance Inc., 2012).

On the Alliance's website they discuss their desire to maintain continuous support for the communities in the Timiskaming region. This consists of over forty communities and multiple First Nations land reserve. This statement is supported with numerous public-private contributions that have funded an array of local events. These actions have increased the Alliance's public awareness and bettered their reputation. This translates into trust and compliance with the Alliance's development initiatives and processes (Timiskaming Forest Alliance Inc., 2012).

### *Economic Feasibility*

Understanding the economic feasibility of the TFAI is important for the analysis of this forestry industry. Examining this feasibility is done from a number of perspectives; public and industry investments, the costs of the industry, as well as the actual state of the industry. By reviewing this case study in such a way it aims to give Central West key information on how it can be applied for their own region.

The amount of investment TFAI receives must be considered when providing a study of its economic feasibility. The Timiskaming forestry industry is a very small business as it only employed 25 people as of 2011. This is up from 15 as the provincial government provided funding to expand the roles of TFAI in an effort to help the local economy. These positions are primarily in forest harvesting as it does not consider those employed in the manufacturing sector such as paper mills. The Timiskaming forest industry has also been maintaining higher harvest values compared to other forest industries across the province. In 2009 about 50% of the industry's forest harvesting have decrease from what is was in the early 2000's, yet TFAI's has been consistent and remained high (Government of Ontario, 2012).

Economic and non-economic costs of the industry is also be examined for the purpose of this summary. In 1996, TFAI branched away from the provincial government to become a private industry. Since their incorporation into the private sector, they have managed to significantly decrease the economic costs of their business. Today they are able to harvest their trees with average savings of \$5.00 per cubic metre. As the total land mass the Timiskaming forest industry accounts for over 10,000km<sup>2</sup> as the savings can easily be in the hundred thousands, if not millions of dollars, on an annual basis (First Resource Management Group, 2012). Experts on the matter believe this can be accounted for because there is less "red tape" private industries need to go through in order to be efficient, unlike the greater part of the public sphere. Although TFAI is committed to developing sustainable forests, there have been ecological costs in the past. Timiskaming and the Northern Ontario area has been a popular spot in the past for residents to engage in a number of outdoor activities such as hiking, camping, and hunting. Unfortunately, it is difficult to contribute to a forest industry that does not have the potential to damage the nature of these activities in some way or form. Be that as it may, the socio-ecological deteriorations that occur in Timiskaming are not as significant as what occurs in the B.C. Forest Service as here there have been no major causes of destruction to walking trails, traditional scenic areas, etc., in recent years (Timiskaming Forest Alliance Inc., 2012).

Determining the state of the industry is another important indicator of whether or not the TFAI is economically feasible. TFAI has been improving from its past and it appears to have a bright future. Since their decentralization from government in 1996, they have been expanding their harvesting areas while being sustainable and have been receiving an increase in economic benefits annually. As a result, they have been able to invest in new technologies, such as Virtual Earth Technologies. With the new technology, the industry is able to identify their harvesting plans in a more efficient manner and prepare for future projects. With the investment into different technologies and receiving increased economic benefits, one can see that TFAI is not becoming obsolete, but growing. The state of their product is also highly valued. Aside from occasional forest fires in the past, there have been minimal natural problems that would decrease the value of their timber. There have been rare cases of invasive species in the area as well, again showing that natural problems do not tend to have an effect on the Timiskaming forest industry (Arbor Vitae Environmental Services, 2010). By recognizing that the Central West region consists of rich forests that have not been significantly affect by forest fires or invasive species and consists of a relatively sustainable industry, policy-makers are encouraged to determine how TFAI and their region are related and how it can affect their decision-making process.

### *Government Interaction*

The vision of the Timiskaming Forest Alliance Incorporated is "Corporate commitment to forest sustainability" Invalid source specified.. This vision declares the general purpose of the Timiskaming Forest Alliance Inc. (TFAI), setting them up for a statement of goals and objectives, followed by policy initiatives that could help them reach these objectives within a particular time period. The constituents of the TFAI, forestry companies, must take their vision seriously if they hope to reap the maximum benefits for themselves and the residents of the Timiskaming forest region. Their website provides a strong set of policies and objectives with the express goal of sustainable forestry activity in the Timiskaming forest region. It also goes into the implementation of these policies and the governance structure in the TFAI.

In the Safety, Health and Environmental Policy of its website, the TFAI lays out a more definitive, specific set of objectives with regards to policy. They declare that the organisation believes that the long-term prosperity and sustainability of their company and of the communities they live and operate in is dependent on the continued health of the forest (Timiskaming Forest Alliance Incorporated, 2012). This continues by claiming that to preserve the health of the forest they will operate in a safe, environmentally sustainable and cost-effective manner (Timiskaming Forest Alliance Incorporated, 2012). These claims demonstrate a policy rooted in sustainable development of the forest resources intended to be beneficial for both communities in the region and the constituent businesses of the TFAI.

The actual policy document, located on the same website, lists seven policy points. These points are primarily related to maintenance of health and safety to the forest environment and the residents of the forest environment, as well as holding all constituent and contracted firms responsible with policies that require transparent operations and communication with the general public (Timiskaming Forest Alliance Incorporated, 2012). These policies show a general commitment to ethical business practices that will allow the forestry initiatives to continue without issue in the region by maintaining health and safety practices. The document also demonstrates a willingness to be audited clearly and openly by the residents of the forest region through reports and open communication. These reports and open communication also help to demonstrate an attitude of cooperative governance between the TFAI and residents of the region, which helps to empower the residents and facilitates regional development through this cooperation. This intended regional cooperation is also fairly easy to maintain due to the relatively small size and high accessibility of the region, meaning that the policies can be efficiently applied.

The policies are not perfect, however. One problem we did not see addressed in any of the literature, including an independent audit, is the lack of commitment to local employment or resource processing. Local resource processing may be implied in that 6 of the 9 constituent firms of TFAI are timber product firms (Timiskaming Forest Alliance Incorporated, 2012). The employment issue, however, has not come up. One possible explanation for the lack of a dedicated policy for this issue is that it simply has not been an issue, and TFAI has maintained a strong record of local employment. Another issue absent from the policy document was that of aboriginal resource rights, but according to an independent audit "First Nations and Aboriginal communities expressed satisfaction with the overall level of involvement in forest management planning" (ArborVitae Environmental Services, 2010). These are the issues that leapt at me as potential problems with the TFAI, and all seem to be absent in the policy because they simply do not exist as problems in the region, demonstrating a strong, pragmatic policy, but one which could have more foresight.

# Recommendations

The following three sub-sections present the lessons learned from the previous two case studies. In order to encourage some direction for interest groups in the Central West region the research group identified recommendations for specific actors. The most critical actors are government, private interests, and non-government organizations and are the targets of the following recommendations. The recommendations may require emendations that will allow them to become even more applicable to the Central West region's operatives. The following will, however, contain sufficient insight into industry operations that have been supported by existing theory to allow interest groups to make an informed decision on the pursuit of forestry development.

## *Government*

- Encourage and coordinate the assemblage of a task force in the Central West region composed of forest experts that will assess any altercations in forestry development. This will include implementing regulations in the event of ecological hazards (such as invasive species) and monitoring/enforcing regulations implemented in the industry.
- Engage in multi-level governance with municipalities in the Central West region and non-government organizations that participate in planning within the region. This will provide firms with a unified governing system that can make decisions and regulations based on information gathered from within the operating region. Moreover, this will enable multiple actors in the region to share their opinions and participate in public decision making. Modelling governance mechanisms after the BC Forest Service will generate the intergovernmental organization that allows interregional collaboration and above-adequate resource management.
- Ensure adequate forestry and stewardship regulations in the province and re-evaluate these regulations to ensure their relevance as forestry evolves in the province. Enable groups in the Central West region that will oversee the implementation/enforcement of these regulations and ensure their effectiveness in the overall forest industry.
- Ensure the infrastructure in the Central West region is capable of supporting a forest industry; this would include adequate roads and shipping routes, Internet service, and a suitable communications grid. As the industry will contribute to provincial revenue the trade-off will be positive for government funds.
- Provide public and encourage private methods of education for those in the Central West region who are interested in forestry to gain the education that will lead to employment. This will stimulate the provincial economy as well as improve education levels. This could also become an incentive for people to work in the region or come to the province in search of specific education furthering economic contributions.

## *Private Interests*

- Incorporate ecotourism into regular business practices so that forestry is not the only form of income. This will provide alternative means of profit in the event the demand for forestry products declines. This will also encourage environmental awareness among those visiting the region and ensure economic and ecological sustainability.
- Establish industry with a proximity to the labour force to make their access simplistic and reasonable. However, distance must be maintained from the general public to avoid any accident liabilities. Furthermore, signage must be present to warn the public of any potential hazards during hours of operation.
- Seek new techniques and strategies from external regions in an attempt to incorporate new developments and processes into contemporary developments. This includes collaborating with similar operatives in other regions to attain current information and new technologies. This will increase the capacity of participant businesses and allow advancements in economic strategies.
- Utilize the capabilities of regional planning agencies as a means to further business strategies and increase capacity. Seek their assistance on matters such as research, government interactions, and bettering business affairs. Working with these agencies will provide insight into external means of production and methods of enhancing capabilities.
- Engage the public in the industry so they will become knowledgeable about the environment and the industry. This will gather public support for any firms and possibly inspire a future labour source. Interacting with the public at events such as fundraisers will increase awareness and acceptance of new businesses. Educating youth will interest them in the industry and provide a basis that could translate into future employment.
- Provide on-site training to those being educated in forestry in the province. This will generate awareness of the potential employment source and focus education on the skills required to work in a specific site. Engaging students may encourage them to seek employment once their education is concluded.

## *Non-Government Organizations*

- Advertise ecological and economically sustainable practices among emerging firms to ensure the longevity of the resource and its benefits. This can be accomplished by advertising sustainable business strategies and facilitating discussions among interest groups on how to best extract and process the resource so that benefits are extended into the future.
- Collaborate with private interests to plan multiple initiatives in the Central West forests. This would include tourism establishments such that educate visitors about the forest industry as well as green activities. This will increase profits in the region as operators will benefit from tourism and forestry.
- Increase the emphasis on collaboration to ensure information flows within the region and better business practices. Work with firms to seek new methods of operations that allow the betterment of business, increased capacity, and industry awareness. Provide the research capacity for firms to utilize as they attempt to gain better insight into alternative methods of production.

- Direct and educate business owners on how to apply for items such as funding, permits, and land claims. Host sessions that will allow increased knowledge and awareness in the industry as well as the provincial setting. This will be important if foreign interest groups are involved. This will be instrumental during start-up initiatives for firms.
- Participate in any educational endeavours related to forestry to ensure adequate establishment and operation. This may include coordinating an educational facility in collaboration with the provincial government. Engaging the public in this process and encouraging their participation would be an essential task that would provide a vital aspect of forestry development and continuation.

## Conclusions

This report is intended to provide the public, government, and other decision makers of the Central-West region with insight into the operations of the forest industry. Via the case studies, the operations in the industry should be clear; the recommendations will accompany these examples if forest development is further pursued. Forest development requires cooperation from multiple actors and the dedication of those engaged. However, if actors adhere to government regulations and the concerns of the public economic success will follow. Maintaining respect for the natural and social components of the region will translate into maximizing resource use and public support. Utilizing the social capital of the region and engaging with organizations designed to aid enterprises will allow the forest industry to attain superior status in the region.

## Acknowledgements

The authors would like to extend a special thanks to Ryan Gibson for his exceptional instruction and editorial contributions. Appreciation is also extended to the Council members of the Central West region for making this study possible and providing valuable feedback. Finally the authors would like to extend their gratitude to the Geography 3350 class for their feedback and support.



# References

- Allan, J. (2012, July 3). The B.C. forest industry: A bright future. Business Vancouver. Retrieved from <http://www.biv.com>.
- ArborVitae Environmental Services Ltd. (2010, February 1). Timiskaming Forest Independent Forest Audit April 1, 2004- March 31, 2009. Ontario, Canada.
- Boundary Forest District. (2002). Boundary District history. Community/place of publication: Boundary Forest District.
- BC Forest Service. (2012). Welcome to the BC Forest Service's Centenary website! Retrieved from: <http://www.bcfs100.ca/bscripts/timeline.asp>
- BC Forest Service. (2012a). Aleza Lake Forest Experiment Station. Retrieved November 18, 2012, from BC Forest Service Centenary Society: [http://www.bcfs100.ca/bscripts/places-expanded-view.asp?item\\_id=17&search\\_page=6&search\\_filter\\_char=all&search\\_keyword=Search+by+Name](http://www.bcfs100.ca/bscripts/places-expanded-view.asp?item_id=17&search_page=6&search_filter_char=all&search_keyword=Search+by+Name)
- British Columbia, Ministry of Forests, Lands and Natural Resource Operations. (2012). Forestry and logging. Retrieved from <http://www.guidetobceconomy.org>.
- British Columbia, Ministry of Forests, Lands and Natural Resource Operations. (2012). Forest and range evaluation program. Retrieved from <http://www.for.gov.bc.ca>.
- British Columbia, Ministry of Forests, Lands and Natural Resource Operations. (2012). Forest and Range Practices Act. Retrieved from <http://www.for.gov.bc.ca/code/>.
- Beinhauer, F. (2011). History of information technology in the BC Forest Service. Victoria, Government of British Columbia.
- Benson, D., Jordan, A. (2004). Sustainability appraisal in local land-use planning: Patterns of current performance. *Journal of Environmental Planning and Management* 47(2): 269-286.
- Bishop, P., Jenkins, V. (2011). Planning and nuisance: Revisiting the balance of public and private interests in Land-use development. *Journal of Environmental Law* 23(2): 285-310.
- Bjork, G.C. (1981). Life, liberty, and property: the economics and politics of land-use planning and environmental controls. Place of publication: Free Press.
- Booth, A.L., Muir, B.R. (2011). Environmental and land-use planning approaches of Indigenous Groups in Canada: An overview. *Journal of Environmental Policy and Planning* 13(4): 421-442.
- Chen, C.H., Liu, W.L., Liaw, S.L., Yu, C.H. (2005). Development of a dynamic strategy planning theory and system for sustainable river basin land use management. *Science of the Total Environment* 346(1-3): 17-37.
- Dunster, J.A. (1988). Land use planning in Canada. An overview of the forestry aspects. *Land Use Policy* 5(1): 83-93.

- Forest Management Planning in Northeastern Ontario. (2009). Timiskaming forest. Retrieved from <http://www.web.net/nwatch/fmp/index.html>
- Foy, J. (2012). Endangered forest ecosystem destruction in B.C. *Watershed Sentinel*. 22(2).
- Gmur, P. (2012). Forestry development planning and land use planning. *Schweizerische Zeitschrift für Forstwesen* 163(8): 288-290.
- Hannis, M. (2011). Land-use planning, permaculture and the transitivity of 'development'. *International Journal of Green Economics* 5(3): 269-284.
- Homsy, G.C. (2005). The land use planning impacts of moving "partial takings" from political theory to legal reality. *Urban Lawyer* 37(2): 269-298.
- Kim, J.H. (2011). Linking land use planning and regulation to economic development: A literature review. *Journal of Planning Literature* 26(1): 35-47.
- LaBelle, J.M., Watson, A.E. (1997). An introduction to planning and land use management in the United States, with comparisons to Canada and England. *Environments* 24(3): 66-78.
- Lapping, M.B. (1982). Rural development and land-use planning: A forestry perspective. *Journal of Forestry* 80(9): 583-602.
- Lestrelin, G., Castella, J.C., Bourgoin, J. (2012). Territorialising sustainable development: The politics of land-use planning in Laos. *Journal of Contemporary Asia* 42(4): 581-602.
- Mahapatra, A.K. (2000). Planning economic land-use models for dryland farm forestry in India. *International Journal of Sustainable Development and World Ecology* 7(1): 25-40.
- Mirza, R., Skeard, J., Vodden, K. (2012). A scan of land use issues in the Grand Falls-Windsor – Baie Verte – Harbour Breton region. St John's: Memorial University.
- MNR Kirkland Lake & Timmins Districts, Northeast Region First Resource Management Group Inc. (2012, February 28). Annual Work Schedule for the Timiskaming Forest. Kirkland Lake.
- Ontario, Ministry of Natural Resources. (2012). Niagara Escarpment Program. Retrieved from <http://www.mnr.gov.on.ca>.
- Stine, S.E., Byrne, J.G. (1982). Land-use planning: opportunity for resource professionals (forestry). *Journal of Forestry* 80(9): 581-582.
- Timiskaming Forest Alliance Inc. (2012). What is Timiskaming Forest Alliance Inc.? Retrieved from: [http://timfor.com/?page\\_id=4](http://timfor.com/?page_id=4)
- Timiskaming Forest Alliance Inc. (2012). Shareholders. Retrieved November 22, 2012, from: [http://timfor.com/?page\\_id=9](http://timfor.com/?page_id=9)
- Timiskaming Forest Alliance Incorporated. (2012). Safety, Health and Environmental Policy. Retrieved November 23, 2012, from: [http://timfor.com/?page\\_id=17](http://timfor.com/?page_id=17)
- Vancouver Island University. (2012, March 29). Forest resources technology. Retrieved from: <http://www.viu.ca>.
- Wallinger, D. (2011). The First Forest Nursery and Plantation in the Interior. Vancouver, BC, Canada: BC Forest Service Centenary Society.

Wellmer, F.W. (1996). Resource development, land-use planning and sustainability in Germany. *Zeitschrift für Angewandte Geologie* 42(1): 62-65.